

STUDENT TIMELINE FOR STUDENT INFORMATION SYSTEM



*The Project submitted to
Sant Gadgebaba Amravati University, Amravati
towards partial fulfillment of the Degree of
Bachelor of Engineering
in
Information Technology*

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2022- 2023**

**SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGINEERING
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2022-2023

CERTIFICATE

This is to certify that **Ms. Anjali Rathod, Mr. Omkar Mante, Mr. Prananjay Kandekar, Ms. Vrushali Pawar** students of final year B.E. (Information Technology) in the year 2022-2023 of Information Technology Department of this institute has completed the project work entitled "**STUDENT TIMELINE FOR STUDENT INFORMATION SYSTEM**" based on syllabus and has submitted a satisfactory account of his/her work in this report which is recommended for the partial fulfillment of degree of Bachelor of Engineering in Information Technology.

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ABSTRACT

Student management is of the most important term in institutional organization; Organizations will have to keep a track of people within the organization such as employees and students to maximize their performance. Managing or we can say keeping track on there records is not a simple task. Getting those are easy but keeping them manual is major issue and hard to handle. For this, an efficient Web-based application for student Information system is designed to track student's activity in the overall academics. This Web application keep hold of records of all students and showcase thereachievements in TimeLine. This system design using the Model, View, and Controller (MVC)Framework, and implemented using the power of Laravel Framework, for front end we used Plain HTML,CSS along with some Bootstrap. We are using MYSQL for saving those records. This System make sure every Student in organization gets his/hers information from Student Information System and not only for academics but also you can get your information after your Graduation this is main Purpose of System. This where our System get Separated from all other Existing System

Keywords:Laravel framework, MVC, HTML, CSS, MYSQL, Bootstrap, model, view,controller

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1. INTRODUCTION

1.1 PREFACE

As a part of a curriculum and also to gain some hands-on experience with new Technologies in IT industry we have developed this project. It is an Application student timeline for students. Time management is an essential skill for students to succeed academically. A well-managed timeline allows students to allocate time to various academic tasks, including assignments, readings, and exams. Students who fail to manage their time effectively often struggle with academic performance and can fall behind in their coursework. This examines the importance of time management for students and its impact on academic success. The study aims to investigate the factors affecting students' ability to manage their time effectively and create a timeline for their academic tasks. A Student Timeline System is a tool designed to help students manage their time effectively and efficiently. It provides a visual representation of tasks and deadlines, allowing students to prioritize their workload and meet their academic goals.

The system typically includes a calendar or planner, task manager, and reminders to help students stay on track and avoid procrastination. If you are introducing a Student Timeline System, you may want to briefly discuss the importance of time management for academic success and the challenges that students face in managing their workload. You could also discuss the benefits of using a Student Timeline System, such as improved productivity, reduced stress, and better time management skills. It may also be helpful to provide a brief overview of the features and functionality of the system you are researching, including any unique or innovative aspects.

MySQL is an open-source DBMS that supports relational databases. There are many others, including commercial products such as Oracle and DB2. The different database products compete on factors such as performance, ease of development and management tools, factors that can be critical for large, busy databases.

1.2 STATEMENT OF PROBLEM

A student information system (SIS), student management system, school administration software or student administration system is a management information system for education sector establishments used to manage student data. It integrates students, parents, teachers and the administration. Student information systems provide capabilities for registering students in courses; documenting grading, transcripts of academic achievement and co-curricular activities, and the results of student assessment scores; forming student schedules; tracking student attendance; generating reports and managing other student-related data needs in an educational institution.

Information security is a concern, as universities house an array of sensitive personal information, making them potentially attractive targets for security breaches, such as those experienced by retail corporations or healthcare providers.

A Student Information System, or SIS, is a web-based platform that helps colleges take student data online for easier management and better clarity. That's at its most basic. The SIS system is able to collect college-wide data online so that it can be easily accessed by teachers, parents, students, and administrators. That includes personal student information, grades, records of tests, attendance, appraisal performance, and plenty more. Essentially, SIS allows the school to make data points for lots of areas in one place so that it's easy to keep track of progress and performance.

The existing student information system stores all the academic data as well as personal data this includes personal student information, grades, records of tests, attendance, appraisal performance, etc. which is usually taken by many colleges. So in this student information system, there is no system to store technical academic data like internships done in a particular time period, technical courses done by students that are assigned by college faculty as well as done by themselves to gain technical knowledge and to get proficient, certificates earn by completing courses, workshops and by participating in hackathons, national level competition, etc. throughout the academics and non-academic data of students like sports participation, outdoor activities and social media blogs, etc.

1.3 OBJECTIVES

The Student Information System is a resource that offers a self-service solution for students to get their administrative tasks done in one place. Equally, it can support faculty and staff by helping to simplify and integrate work processes. Since the SIS can be used as a digital Dropbox, it's ideal for parents who want to access information on their child, communicate with the school, and even make payments. The ability to standardize data formats between divisions means a more unified and clear data readout at a glance, ultimately saving time. Data integrity, privacy, and security can all be protected in an open-access environment.

When it comes to student records, an SIS offers high efficiency as all data is automatically organized and stored for easy access whenever it is needed. Since the platform is cloud-based, it can be reconfigured as needed to make sure it grows with an institution. Most SIS offer open interfaces and integration with other campus applications and database systems, making for ease of use.

The main objectives of The Student Information Timeline for SIS are as follows-

1. To provide a student timeline system to maintain their academic as well as non-academic activities technical academic data like internships done in a particular time period, technical courses done by students that are assigned by college faculty as well as done by themselves to gain technical knowledge and to get proficient, certificates earned by completing courses, workshops and by participating in hackathons, national level competition, etc. throughout the academics and non-academic data of students like sports participation, outdoor activities and social media blogs, etc.
2. Students can also be able to see their overall progress in a four-year degree program on a single screen and can maintain it by participating in various activities throughout the year.
3. After storing all their information in a timeline this information can be used while placements drives with the use of data filled by students to get pre-mapped with companies that required the students with specific skills.

1.4 SCOPE AND LIMITATIONS

SCOPE-

1. One of the biggest opportunities is that the Student Information System or SIS gives institutes easy access to information. As we know, it is the era in which the most important thing is to get the right information, at the right time to the right person. And hence SIS gives you a clear benefit in the competition.

2. Furthermore, it allows easy data editing and management. It is a convenient solution that allows you to protect the most important information of the student and securely use it to perform various tasks at the institute. It increases accuracy in data management and allows effective, and convenient access.

3. Furthermore, you can analyze the data easily by integrating the database with reliable solutions such as Business Intelligence, ML, AI, and more. Reporting and analytics are another added benefit – the better the data management, the more creative you get in using it for improved decisioning. With an SIS, you don't have to put hours and hours, into flipping the pages of a record book to answer the most crucial questions about your students and institute.

Limitation-

Not necessarily a limitation, but one of the biggest concerns arising with digitalization is that of security. Education institutes tend to hold personal, financial, and general information of students, and parents/ guardians. And thus, education ERP solutions are a big target of cybercriminals in the hope to get hold of this sensitive information. Also, to store a large amount of data means a higher initial investment which may not be affordable for many institutes as they struggle to make ends meet with limited resources. Furthermore, more students mean more data and hence a constant need for scalability. The efficiency of the server to tackle operations and data would increase and hence regular investment in upgrading the digital infrastructure is a challenge.

2. LITERATURE SURVEY

For the deep analysis of the subject we studied different journals and papers. The detailed study of papers helped us understand the concepts more clearly. So here is our literature survey to present the knowledge we got from different studies.

In software development the modeling and the standardized notations allow to express complex idea sin a precise way, facilitating the communication among the project participants that generally have different technical and cultural knowledge. MVC architecture has had wide acceptance for corporation software development. It plans to divide corporation software development of interface control logic and data access, this facilitates the maintenance and evolution of systems according to the independence of the present classes in each layer.

With the purpose of illustrating a successful application built under MVC, in this work we introduce different phases of analysis, design and implementation of a database and web application using UML. As central component of the application, it has a database made up by fifteen relations and a user interface supported by seventeen web pages.[1] Systems analysis and design produce models built by means of diagrams that use a specific notati3n. UML is mainly a graphic language to represent the concepts that are needed in the development of an object-oriented information system. This classification locates the objects in a natural way inside the components of MVC. var classifies the objects in:

1. Entity objects: objects with long life times related with persistent data, they can be databases tables, files ,and cache or session data (MVC model)
2. Boundary objects: objects that communicate to the system with their environment, they can be screens ,windows, menus, or any graphic interface element(MVC view)
3. Control objects: objects that carry out the usecase actions are used to filter out the data to be presented to the user (MVC control).

This analysis imposes the following rules:

- 1) Actors can only talk to boundary objects.
- 2) Boundary object can only talk to controllers and actors.
- 3) Entity objects can only talk to controllers
- 4) Controllers can talk to boundary objects an identity objects, and to others controllers, but not to actors.

In this work, we present like case study a database and Web application (SAF) to control the asset information owned by an educational institution. Its modeling was made using UML .

In the MVC paradigm the user input, the modeling of the external world, and the visual feedback to the user are explicitly separated and handled by three types of object, each specialized for its task. The view manages the graphical and/or textual output to the portion of the bitmapped display that is allocated to its application. The controller interprets the mouse and keyboard inputs from the user, commanding the model and/or the view to change as appropriate. Finally, the model manages the behavior and data of the application domain, responds to requests for information about its state (usually from the view), and responds to instructions to change state (usually from the controller). The formal separation of these three tasks is an important notion that is particularly suited to Smalltalk-80 where the basic behavior can be embodied in abstract objects:

View, Controller, Model and Object. The MVC behavior is then inherited, added to, and modified as necessary to provide a flexible and powerful system.[2]Views are designed to be nested. Most windows in fact involve at least two views, one nested inside the other. The outermost view, known as the top View is an instance of Standard System View or one of its sub Classes. The Standard System View manages the familiar label tab of its window. Its associated controller, which is an instance of Standard System Controller, manages the familiar moving, framing, collapsing, and closing operations available for top level windows. Inside a top View are one or more sub Views and their associated controllers which manage the control options available in those views. The familiar workspace for example has a Standard System View as a top View, and a String Holder View as its single sub View. A sub View may, in turn, have additional sub Views although this is not required in most applications. The sub View/super View relationships are recorded in instance variables inherited from View. Each view has an instance variable, super View, which points to the view that contains it and another, sub Views, which is an Ordered Collection of its sub Views. Thus each window's top View is the top of a hierarchy of views traceable through the super View/sub Views instance variables. Note however that some classes of view (e.g., Binary Choice View, and Fill In The Blank View) do not have label tabs, and are not resizable or moveable. These classes do not use the Standard System View for a top

View; instead they use a plain View for a top View .The model, the view and the controller involved in the MVC triad must communicate with each other if an application is to manage a coherent interaction with the user. Communication between a view and its associated controller is straightforward because View and Controller are specifically designed to work together. Models, on the other hand, communicate in a more subtle manner.

A. The Passive Model :

The controller can assume responsibility for notifying the view of any changes because it interprets the user's requests. It could simply notify the view that something has changed -- the view could then request the current state of the string from its model -- or the controller could specify to the view what has changed. In either case, the string model is a completely passive holder of the string data manipulated by the view and the controller. It adds, removes, or replaces substrings upon demand from the controller and regurgitates appropriate substrings upon request from the view. The model is totally "unaware" of the existence of either the view or the controller and of its participation in an MVC triad. That isolation is not an artifact of the simplicity of the model, but of the fact that the model changes only at the behest of one of the other members of the triad.

B. The Model's Link to the Triad

The methods that provide the indirect dependents communication link are in the "updating" protocol of class Object. Open a browser and examine these methods. The message "changed" initiates an announcement to all dependents of an object that a change has occurred in that object. The receiver of the changed message sends the message update: self to each of it's dependents. Thus a model may notify any dependent views that it has changed by simply sending the message self changed. The view (and any other objects that are registered as dependents of the model) receives the message update: with the model object as the argument. [Note: There is also a changed: with: message that allows you to pass a parameter to the dependent.] The default method for the update: message, which is inherited from Object, is to do nothing. But most views have protocol to redisplay themselves upon

receipt of an update: message. This changed/update mechanism was chosen as the communication channel through which views can be notified of changes within their model because it places the fewest constraints upon the structure of models.

C. The View - Controller Link

The View takes responsibility for establishing this intercommunication within a given MVC triad. When the View receives the message model :controller: it registers itself as a dependent of the model, sets its controller instance variable to point to the controller, and sends the message view: self to the controller so that the controller can set its view instance variable. The View also takes responsibility for undoing these connections. View release causes it to remove itself as a dependent of the model, send the message release to the controller, and then send release to any sub Views.

It is mainly a framework in web development programs. It provides various tools for developing a program. In this topic main discussion is about what is the application. This topic also briefs about the problems facing while implementing a thesis about Laravel. Later part of this topic also has an overview solution about problems. This topic also reviews what can Laravel be changed in this assignment. Laravel is a framework developed for website designing or web applications. Frameworks are synonymous to a cage or a net where it processes resources or packages integrated within it and provide a glue-like feature. This glue-like feature holds all packages together. Larvel framework is written in programming language PHP. Hypertext preprocessor PHP is known for embedding frameworks like mentioned above. PHP or Personal Home Page is an available scripted programming language that has been used for embedding HTML servers.[3]Frameworks have created for developing code efficiently and while making codes in team frameworks such as Laravel makes coding very easy. Every framework has its own enchanting, and Laravel has it. Main difference between Laravel and core PHP is that core PHP is only uses for making dynamic web pages where Laravel can need skills for coding.

Laravel gives a developer a massive advantage over other frameworks. Advantages mentioned below:[4]

- **Authentication structure**

Laravel keeps its authentication application very simple for developers. Nearly every code of authentication has implemented in Laravel. It controls logic and resources very efficiently.

- **Support of mail system**

Mail service is convenient for a developer. It is tough to think about a web application, which has no email service in it. Laravel offers simple API support for mail systems. Laravel also supports SMS service so that a user can communicate easily.

- **Integrated tools**

Laravel has included some integrated tools in order to develop a webpage. It helps to develop an application faster without losing its functionality. Larval mainly uses tools such as file-cached drivers that can gather cached information in a file system. Laravel also can use multiple caches.

- **Flaws and exception management**

Error handle management is a vital critical point of Larval framework. Error management has included in Laravel out of the box. Laravel's Monolog library system helps to manage flaws in a program

- **Web address rerouting technique**

A user can go through a website by clicking on a link. This link is called URL or web address. In order to see context of a web site, a user can go through that website by simply clicking on that link. Laravel framework has an inbuilt route option such as "http://routes.php" file which by default loaded on Laravel framework

- **Task scheduler**

A developer needs to create a task to make a new application. This method is irritating for a developer. However, Laravel has its task scheduler that can help developers automatically.

Laravel is one of the fastest and smartest frameworks for a developer. A website must act fast in order to be synchronized with a user, and Larval helps a developer to code it easily. These are the main reasons why a developer sometimes finds that it is hard to upgrade from laravel.

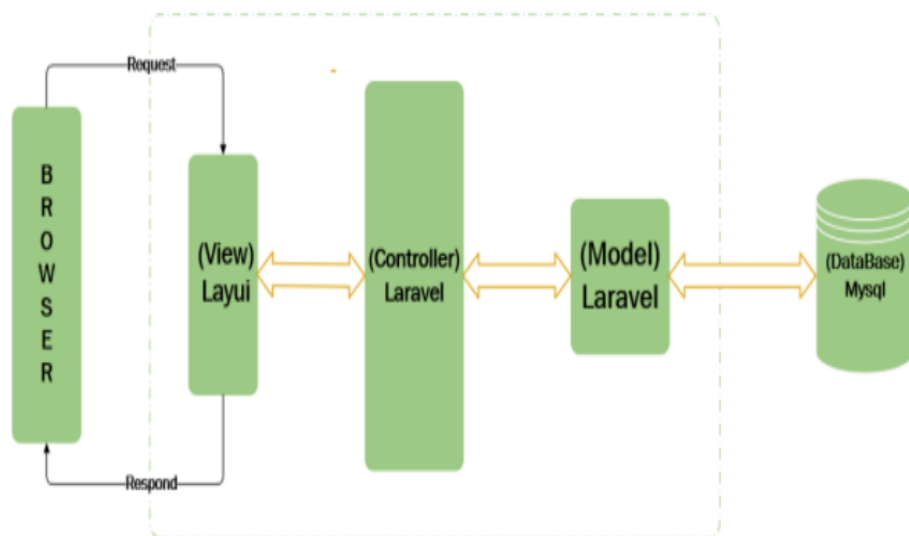
Laravel is a framework that conforms to MVC design pattern. It places both layer of View and Controller in the directory of "Resources" and "Routes" respectively. In the Model layer, the Laravel framework provides "Database" directory that is used for data operation. At the same time, the Laravel framework also sets "Public" directory. In order to simplify the test process, the Laravel framework places related automatic test files of application program in "Tests" directory. In terms of performance optimization, the Laravel framework places the files generated by the framework for it in the "Cache"

directory alone. Our platform is designed and developed in MVC design pattern and characteristics of PHP.

Also, this system uses the Laravel framework based on PHP and the front-end framework: Layui. As shown in Fig.2.1, our platform constructs View layer, Controller layer, and Model layer separately. It uses Layui framework to construct the View Layer and uses the Laravel

framework to construct the Controller Layer and the Model Layer. The Layui framework supports modular development of code components and the Laravel framework supports ORM and the Routing Controller. Therefore, this platform has the following characteristics:

1) This platform supports a large number of users in requesting messages at the same time.



Fig(2.1).Digital Platform Scheme Based On MVC

(2) The Model Layer can provide many forms of data representation for multiple Views. Next, Model layer and View layer are independent of each other. When creating a new View Layer, we don't need to rewrite Model layer.

(3) The changes of data in the Model Layer will be announced through a refresh mechanism. By this mechanism, each View registered in the Model Layer can know the changes and refresh itself accordingly.

(4) The Model layer can be reused by multiple Views. Also, it is independent of the View Layer. So, the Model Layer is possibly migrated to a new platform independently. Based on the above features, when developing the View Layer, developers only need to consider how to lay out a good user interface. In the process of establishing and developing the Model Layer, developers only need to focus on business logic and data maintenance. Therefore, the development efficiency of the digital platform is improved.[5]

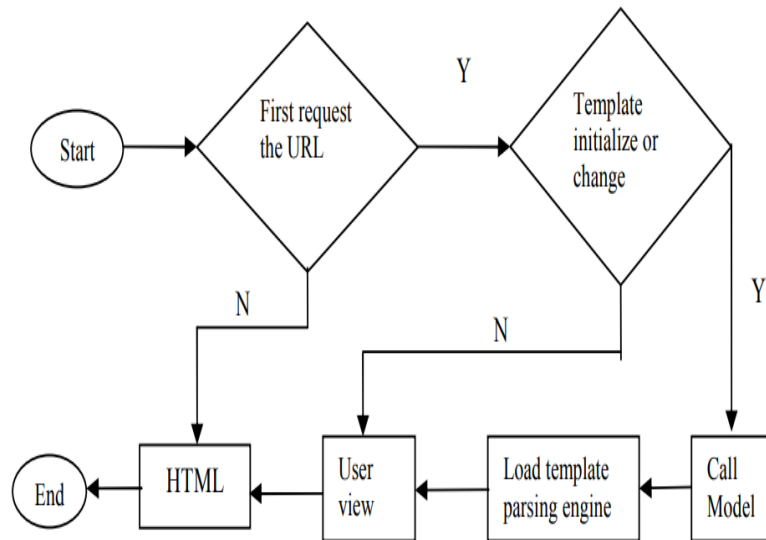
As simple as that even an MVC- web development framework like LARAVEL, is not entirely free from negativity. Even though LARAVEL is built to maintain ease of PHP language-based web developers, this framework faces some problems like negativity. Even though LARAVEL is built to maintain ease of PHP language-based web developers, this framework faces some problems like:

- Payments feature of specific applications is not supported.
- This framework does not offer smooth upgrades.
- Since LARAVEL is based on a PHP command line, this programming language is unnecessarily complicated, and amateur web developers cannot build web applications built on that.
- Any PHP -based framework like LARAVEL does show problems for a long-time support version , which ultimately hinders in getting upgrades.
- Page reload longer in case of mobile applications than websites.

Web sites are often a mixture of static sites and programs that integrate relational databases as a back-end. Software that implements Web sites continuously evolve to meet ever changing user needs. As a Web sites evolve, new versions of programs, interactions and functionalities are added and existing ones are removed or modified. vulnerability analysis can be used to observe and monitor the evolution of security vulnerabilities in subsequent versions of the same software package. Suggestions for further research are also presented.

Software systems continuously evolve to meet ever changing user needs. As a system evolves, new functionalities are added and existing ones are removed or modified. Many Web applications are used to distribute information from organizations to different users over a network. Most often, these applications that accept interactions from users, and perform some accesses to databases (DBs), are based on assumptions about legitimate input and legitimate code that are used to build SQL queries. These applications are possibly vulnerable to SQL-injection attacks , which rely on some weak validation of the textual input that is some how used to compose SQL queries.[6] In this paper, the evolution of SQL-injection vulnerabilities caused by external input or internal programming is addressed, in the perspective of discrepancy between "granted authorization" and "required security" levels at DB accesses in source code. an SQL-injection prevention approach based on the automated construction of security wrappers called "guards" has been presented. Guards implement run-time syntactic validation of SQL query patterns at DB access call sites and they can be automatically constructed from dynamic analysis profiles of instrumented applications.

The rapid development of the internet for web application development brought forward a higher demand of efficiency, reliability, maintainability and scalability. PHP has features of intuitive, easily top of hand, run fast, cross platform, open source, etc, thus it became one of the most important Web development language. While, the PHP development model mixes the code of data access, the processing of business logic ,and web presentation layer together, as a result, it brough about many problems in the web applications . MVC design pattern is a proven effective way of the generation of organized modular applications, [3]. As a design pattern, MVC is common to split an application into separate layers that can be analyzed, and sometimes implemented, separately. By decoupling models and views, MVC helps to reduce the complexity in architectural design and to increase flexibility and reuse of code. This study will propose a development framework of PHP based on the MVC design model, which might be an effective separation of data access, logic processing and user interface, and thus it could promote the efficiency and quality of PHP development.



Fig(2.2)Framework Cache

Model, view and controller (MVC) is a well-known three-layer development architecture used for web-based applications developments. This paper gives some details related to the MVC layers, its uses, advantages, disadvantages. We have stated the three layers of MVC in detail and their functionalities. The main objective of the study is to give overview on all the layer of the MVC and main functionalities. Model view controller (MVC) is an architectural pattern usually used in web-based applications. It provides 3 main layers; model, view, and controller. Most of the developers use MVC as a standard web-design pattern. It is a complete framework. Most of the languages like Java, PHP, Python, C#, etc. use this pattern to develop the applications. In Java, it is known as Spring-MVC framework, in PHP it is known as cake PHP, Microsoft introduced a framework called ASP.Net MVC and so on. MVC provide three types of classes[12].

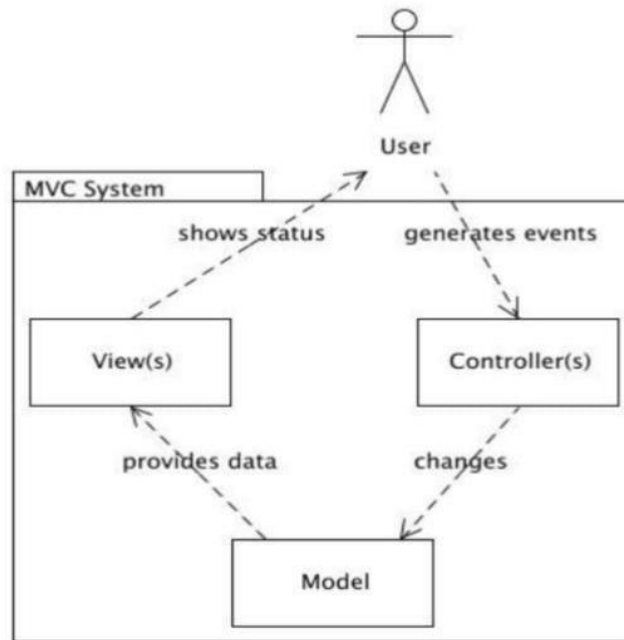


Fig (2.3) Functionality of each layer in MVC architecture

Currently, the work of freelancers is very much in demand. Because freelancers can work anywhere and anytime without being bound by a contract with a company or person. But freelancers have difficulty managing their tasks and projects because there Development of Laravel Digital Platform Based on MVC Design Pattern for Complicated Data structure Dept IT,SSGMCE Shegaon Page 13 is no system to monitor and manage the project. Therefore, the solution is to make the project freelancer monitoring system by implementing the MVC (Model View Controller) architecture model with the PHP Laravel and Slim framework. MVC design patterns are well-known patterns and are used for interactive software system architectures. The way the MVC method works is to separate the main components such as data manipulation (model), display/interface (View) and the process (Controller) so that it is more neat, structured and easily developed. The purpose of this study also compares the MVC Laravel and Slim framework architecture with a performance comparison method on load/stress testing on the dashboard page using Apache JMeter tools with 3 scenarios from samples 1, 100, and 500. Tests are done offline and report format results of performance tests is a Summary Report. The results obtained from performance comparisons using Apache JMeter are that the slim framework is faster and better than Laravel's framework. There are many Frameworks that are popular

and widely used for development written in different languages that are built around the same structuring facilitates the learning and understanding of a Frameworks, among them the PHP frameworks, including Laravel and Slim which are the most used by the developers. Each of these two frameworks has advantages and provides a specific implementation that should be taken into account to make its choice³. The author⁴ claims that the Laravel framework is the best for complex enterprise-level applications, and to quickly and efficiently enrich the institution's information system. This is why author choose Laravel for the development project. The author in their study of PHP frameworks declare that the Laravel framework makes it possible to develop the PHP code in an elegant and simple way, avoiding the "spaghetti code." And that Slim frameworks is a complete framework designed to optimize the PHP code; development of Web applications based on the Model View Controller pattern (MVC).

The purpose of this study is to examine how significant Laravel framework on the website can be used to strengthen the brand image of Higher-Education Institutions (HEI). Laravel is currently known as the best programming tool for PHP-based web development that is very interactive and intuitive. The methodology used was literature study, observation, interviews, questionnaires, as well as the collection of related documents.

The study was conducted by a case study on the website of one Private University in Bandung. Validity test was performed by Alpha Cronbach formula; reliability tests by Spearman's correlation and Man Whitney test were performed on the questionnaire data to analyze the significance of Laravel framework towards each brand image indicator. The results showed that the application of Laravel framework on the new website could support the brand image of HEIs significantly on all indicators of brand image of Reputation, Recognition, Affinity, and Brand Loyalty when compared to the old web without Laravel framework.

The implication of the research result is due to the Application of Laravel framework has a broad function to support quality of the new website. The results can be used as useful information for web development strategies to strengthen the brand image of the HEI.

Brand image of Higher-Education Institutions (HEI) is distinguishing features of the HEI to other HEI; reflecting its capacity to meet the needs of stakeholders, providing trust, and providing quality education services.

The World Wide Web (Website) technology has opened up many opportunities to communicate and disseminate information to stakeholders, has been a tool to strengthen the brand image of HEI, and has become one of the valuations for the world rank of an HEI. The website also provides an overview of an HEI and generally serves as an e-marketing communication tool for the HEI. An attractive, easy-navigated, and well-informed website is very important because it determines the decision of prospective students to choose the HEIs. The design of an interactive and mutual website can be used to gain a competitive advantage and is an important part of the education process.

The most widely used programming language in web design is PHP due to its reliability, effective cost, and easy navigation that it can create highly interactive websites. One of the best and superior frameworks for PHP compared to other frameworks is Laravel. Laravel is designed to improve software quality, simplify authentication, ease routing, ease access, and increase the power within the website framework. Laravel is a framework application with elegant syntax and has broad functions such as security, password storage, reminders and reset passwords, encryption, and validation. According to a survey conducted in March 2015 concerning the popularity of the PHP framework, Laravel was the most popular framework, consecutively followed by Symfony2, Nette, CodeIgniter, Yii2, and others.

This study focuses on a case study of the designing of a new website with the Laravel framework at Universitas Komputer Indonesia. In order to gather complete and accurate data, data collection techniques through questionnaires dispersion containing 15 statements on 100 respondents, interviews with website designers, and collection of related reports/documents were implemented to achieve data refinement. The statements representing the brand image indicators such as Reputation, Recognition, Affinity, and Brand Loyalty were distributed on September 30, 2017. The population of this study was all stakeholders as the users of the website

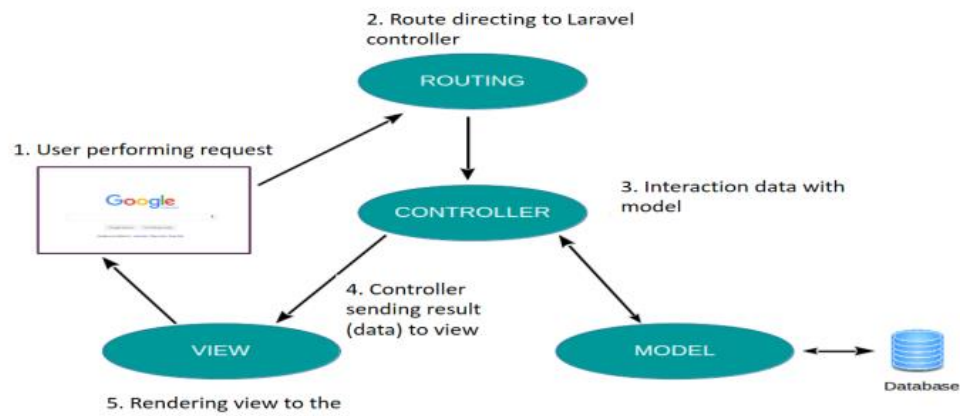


Fig (2.4)Route of Laravel Framework

PHP is a popular general-purpose scripting language that is especially suited to web development . Originally developed in 1995, today php is used for the majority of websites and server side applications. Actually PHP is a server side scripting language which is used for connecting Web Page with a DataBase such as asp or jsp.

PHP interpreter like any other interpreter is a software that executes PHP code one line at a time. PHP interpreter play an integral role in writing server side php script and today as PHP is used for the majority of website and server side applications there is a need for testing the security of the PHP code, there is a need to check the vulnerabilities present in the interpreter. Once found those vulnerabilities like memory corruption or access violations which can open doors to a pool of security issues such as memory leaks which might lead to remote code execution and other security attacks. In this paper we are proposing a method to check for security issues in the PHP Interpreter using Fuzzing. Fuzzing or fuzz-testing unlike manual static and dynamic analysis is capable of detecting programming errors. For fuzzing the php interpreter, we create random automated unexpected inputs and pass it to the interpreter. The program execution is then monitored closely for any unexpected behaviour which might trigger system vulnerabilities. For this we will be developed

a coverage guided fuzzer. A coverage guided fuzzer is aimed at maximizing the code code coverage which enables it to go to the deepest part of the program logic. New inputs are generated by performing mutations to the code which increases the coverage, thus maximizing the chances of finding vulnerabilities. Security is a property of a

system to resist to external or internal destabilizing factors whose impact may lead to its unwanted condition. The purpose of information system is to provide complete, reliable and timely information. This information is vulnerable to casual and deliberate threats, which requires timely and effective measures to be taken. information security is the protection of information and information systems from unauthorized access, use, disclosure, alteration, reading, recording or even destruction. The information security can be divided in three main categories:

- Confidentiality - accessibility of information only for a certain range of persons;
- Integrity – guarantee of the existence of the information in its source;
- Availability - the ability to obtain information from an authorized user at a convenient time. Secondary categories of information security are:
- Accountability - ensuring identification of the subject's access and registration of his actions;
- Reliability - verifying compliance with predicted behavior or outcome;
- Authenticity - establishing an entity or resource identity after proof of identity.

Computer security is defined by as "the necessary actions to protect a computer and the information it contains". In other words, the security of automated information systems or networks is a group of principles and measure for protection against unauthorized access to classified information, which is created, processed, stored and transferred into the system or network. The vulnerability in computer security is a weakness that allows a hacker or attacker to break through the information protection. Vulnerability depends on three elements – the defect of the system, access of the attacker to the deficiency and attacker's ability to use it. According to MITER , vulnerability is "a set of one or more related weaknesses within a specific software product or protocol that allows an actor to access resources or behaviors that are outside of that actor's control sphere", and weakness is a kind of behavior that has the potential to allow an attacker to break the security policy if it is available to the attacker. One of the most commonly used concepts of computer security is the concepts of attack and incident. The attack on a computer system is an action taken by an abuser, who is trying to search and use vulnerabilities. The different type of attacks can be summarized in seven categories

In order to detect and address threats and vulnerabilities in web applications, the following methods are known:

- Manual analysis - Manual search to detect vulnerabilities. Advantages of this approach is that with manual search you can detect problems that are impossible to detect in an instrumental way. Disadvantage is that it require a lot of time. However, there are web applications that cannot be applied to instrumental search, such as banking applications.
- Instrumental analysis - This method includes the use of security scanners and additional tools, which to automate the process of vulnerability detection. The most popular security scanners are Acunetix Web Security Scanner , HP Web Inspect and Positive Technologies MaxPatrol .
- Code analysis - Unlike manual analysis, source code analysis allows you to check the security of web applications without affecting its work. The test can be run without access to the web server itself unless verification of exploitation of the vulnerabilities is required. This is the safest way to conduct such activities.
- Complex assessment - This approach provides possibility to perform an analysis of the security of the web application from its operating environment. It is suitable to apply during auditing of the information system and also for service- oriented architectures



Fig(2.5) Information security model for PHP Application

About 80 percent of the problems pertaining to database performance can be diminished by pre tuning the SQL query even before its actual deployment.

Data Definition Language and Data Control Language abbreviated for DDL and DCL remain far away from performance engineering, compared to that of Transaction Control Language (TCL) and Data Manipulation Language (DML).

There exist two methods for performance engineering reactive and proactive. “Reactive” methodology indicates performing action when or after a problem occurs itself. “Proactive” approach indicates recognizing pending issues even before they engender problems. Apparently, the second case is the ideal approach to curtail the impact of problems on end users. On the other hand reactive monitoring is also indispensable in several cases.

Proactive performance engineering is delineated in this paper in the form of tactics that the SQL developers should glean at. There are four main areas of performance tuning: SQL Tuning – Programmer responsibility. Database Tuning – Database Administrator responsibility. System Tuning – System Administrator responsibility. Network Tuning – Network / LAN / WAN Administrator Responsibility.

The enhanced queries are tuned as per CBO or RBO statistics.

In ORDB, the OOCM is transformed into Logical Model and is implemented into relations using Object-Relational DBMS (ORDBMS) The design phase for ORDB still follows the conventional relational model, which does not have the capability to model full OOCM. It is understandable since SQL as the design language at that stage did not preserve full OOCM features. To answer the problem, ANSHSO has introduced new SQL standards called SQL3 [7, 151. At present they have been working on the prototype of the SQL4 that has even more extensions . Now the ORDB transformation can be performed efficiently and thoroughly, we have the challenge to make it applicable for new database problems.

The newest SQL version is aimed to facilitate a database model that was developed in the 90s, called Object Relational Model. This model is developed to answer the limitation of Relational Model. Even though relational model can separate the logical and physical components of database model, it does not have the modelling capability to capture the semantics of complex applications such as encapsulation, different types of relationships, complex types, etc. Moreover, it gives little or no support for handling and manipulating the data stored in the tables, since the dynamic aspects of the model

were largely ignored and left to the application programmer. The limitation of Relational Model, OO Model has become an intense topic of interest in computer science, due to the richness of the OO concepts, such as extensibility, information hiding, reusability, and inheritance. They provide an excellent basis for modelling, because the object structures permit analysts and designers to focus on a problem at a high level of abstraction but with a resulting design that can be easily implemented. Since the last decade, more software has been written using the OO paradigm. Many Prototypes as well as commercial OODBMS such as O2, Versant, POET, ONTOS, Objectivity, Gem Stone, and Object store have been developed by both industrial and research laboratories around the world.

Nevertheless, OO Databases (OODB) are still not as widely used as RDB that rest on a firm formal foundation. reports that the OODBMS market is a factor of 100 smaller in comparison to the RDBMS market, and it is expected that this figure will be maintained in the next decade. It is a fact that RDB still largely dominate the database community. RDBMS technology is considered mature, and has been the basis of a large number of applications around the world. It is also shown that in reality about 95% of object-based development systems are still using RDBMS engine as its persistence mechanism. However, the relational approach, when used to model real world problems, is not nearly strong enough to model all the different kinds of relationships, both static and dynamic.

This also includes the fact that the relational model has a lack of semantic features, an inability to represent knowledge other than simple facts, and an inability to represent complex structures and operations. These reasons have stimulated the emergence of a new approach in the development of database systems, namely the Object-Relational approach. In general this approach is a method of combining both OO and relational approaches with the aim of incorporating the advantages and eliminating their drawbacks. It has significant benefits in the areas of semantic data modelling, since it captures more extensive static aspects of the domain and also the dynamic aspect. This rich semantics is lacking in the relational model.

On the other hand, in the implementation of the data model, there are major strengths of the existing RDBMS that OODBMS does not have. These include the wide spread acceptance as well as the simplicity of the query processing ORDB transforms OO model into Object-Relational logical model before it is implemented in ORDBMS.

The logical design and implementation are performed using conventional relational model design supported by SQL. With the existence of new data structures in SQL4, the ORDB transformation is now becoming more complete and therefore it should become more useful for many database applications. In the next section we will start classifying the new SQL4 data types for ORDB.

SQL4 classifies the data types into three main classes: predefined, constructed, and user-defined [15]. It has few extensions from SQL3, but there are a large number of additional data types from SQLZ, which is a pure relational model language. Fig.2 illustrates the complete data types supported by current SQL.

Its aim is to show how the new data structures can be useful in later section. In addition, we also show how ORDBMS products facilitate the additional data types [9, IO, 181]. It is crucial to include products, since the readiness of vendors is a big issue in implementing software standard including SQL. Many features have been deemed immature since the vendors were not able to have agreement on the semantic or syntax. On the other hand, different implementation of data types in ORDBMS products has also increased the importance of new SQL standard. At this stage, we encounter problems to transfer database from one ORDBMS to another because they have their own data type extension. With the same design following SQL, we can resolve this problem.

```
CREATE [OR REPLACE] TYPE <object schema> ]
(attribute attribute type, . . . . , attribute attribute type);
```

REF type is a data type, whose value can be used to address a site holding another value. The site pointed to can be another constructed data type or user-defined type in a typed table. The value of this data type is called REF value and it is a unique strongly typed value. It can only contain value that point to a specified type and it does not have referential constraint attached to it.

The operator used for the data type is REF operator. It takes the REF value and returns the value held by the site it identifies. If for some reasons the site has been destroyed, the REF operator will return null value. The data type can also be used to obtain a value referenced by a REF value using Deref operator. Furthermore, it can remove a value acquired invoking and SQL-invoked method.

The example below shows the use of REF type in tables. Notice that the book publisher is a REF type that holds a value pointing to a user-defined type Publisher. Oracle and

DB2 both implement the data type with the same syntax. Informix on the other hand has not provided REF type among its extended type. Therefore, we need to use a referential key or foreign key (FK). In this case book publisher of Book table is the FK to Publisher table.

Row Type :-Row type is constructed data type that contains a sequence of attribute names and their data types. Since it is defined like a flat table, a row type inside a table resembles a nested table. Furthermore, it is possible in current SQL to have varying levels of nesting. It becomes a powerful means to capture real world problems since they can rarely be represented by a simple flat table

Array Type :-Array is a constructed data type that can hold composite elements of similar type. The number of elements in a collection is called the cardinality. The element data type can be a predefined type, another constructed type, or a user-defined type. A collection constructor is identified by the keyword that determines the type of the collection and the element data type.

Multiset Type :-Multiset is the newest collection type added to SQL. It is an opposite of a list, because it contains elements that can be duplicated and do not need an ordering semantic. In OOCM this collection type is how as bag. Since a multiset does not require ordering, it does not have ordinal position or index. Nevertheless, the cardinality of multiset is still important in case users perform an assignment or a comparison between multiset.

Structured User-Defined Type :-(clor) UDT comprises a number of attributes and routines It enables users to define and to support the storage and manipulation of complex structure. The internal structure is encapsulated, so they are not accessible directly to the users. Access to instances or attribute is done through their routines.

New SQL for Emerging Applications :-

New problem domains in database usage have emerged along with the introduction of any real world problem. Nowadays the real world problems become more complex and to represent them we need sophisticated data model. Many database designers do not see ORDB as a data model that can be used for new problem domains. The main reason is a bad presumption on the capability of Relational Model as its predecessor. In this section we show some emerging database applications. We also give direction on how ORDB with new SQL standard can be used to model these new applications. ORDB will not be able to answer all requirements for all applications, but at least the new

standard has provided more capabilities to answer the requirements that could not be captured before.

With the development of higher education, the college student union is increasingly known to people. So, the work of the student union has also attracted the attention of many college students and leaders. Each college in China sets up student unions and they will have their own functions. In our college (Guangdong Ocean University), the student union's work mainly includes organization and development of extracurricular activities, students' basic information management, students' comprehensive quality measurement, and score statistics, student scholarship evaluation, and school or teachers' notification communication.

Many students would like to join the student union during their university time to develop their management skills. However, because the student union, which was "bureaucratic", appeared in the previous in China, the image of the student union in the minds of students has changed. How to change the image of the student union and restore the status of the student union in the hearts of the students has become a problem that every member of the student union should consider.

The college student union is the link among college students. It is an organization that serves students and unites them. According to the demand, prototype design, and implementation process of the student union, this paper analyzes the starting point from the management level (group worker), the service level (member of student union), and the student level, putting forward some methods of student union management and work through the form of "Internet +" and develops software.

to meet the demand. It solves some problems existing in the student union of colleges and universities, improving the work efficiency of the student union and making its work more transparent and open.

The purpose of this research paper is to present an alternative for the Arduino boards programming through a ladder diagram development environment. Similarly, it seeks to provide a new option for both academic and automation process applications for effective solutions without the use of extensive resources. The product of this objective is a PLC (Programmable Logic Controller) with Ethernet connection prototype based in Arduino called HT-PLC, which is distinguished by being compact, economical and easy to control. It's programmed in ladder language using an IDE, developed by Visual Studio with the C# programming language and has basic and intuitive tools for program development and also has a single and friendly interface to ease its use.

In modern industry, automation is one of the pillars that sustains the production of most of the products we regularly consume and use, from canned juices to the cars in which we move.

The automated processes are systems that facilitate the control of serial productions, because they speed up the transfer and development of activities, as well as the assembly or coating with paints of the products. They can also reduce long-term costs, since human error detections are usually easy to control and calibrate. The control systems are responsible for controlling the automation processes, and the latter are as important for the process as are the engines for the automobiles. With the advance of technology, control systems have evolved, increasing their versatility to adapt to various processes, reducing their size and complexity.

A programmable logic controller (PLC) is a computer that is used to automate electromechanical processes. They are characterized by being practical to program and modify, avoiding additional costs and saving time in the preparation of projects. Ladder language, also known as Ladder language or contact diagram, is the most popular in the industry for programming. Currently PLCs are widely used in the industry due to their versatility, and a very common tool available to these controllers is the Internet connection. In recent years the presence and importance of the internet has grown disproportionately. The ease of access to information and transmission of data have extended the horizons of users, since creating new projects that were previously unthinkable or limited by resources, are now possible, from the control of databases, control and visualization of processes of production until the intercommunication of users and machines in the industry. One of the main objectives of this paper is to show how HT-PLC can be a free and open source computer automation tool, focused mainly on the academic sector, without leaving out the industrial sector in future work. It has an editor to program in ladder language developed in the Visual Studio platform, including basic instructions such as contacts, timers, counters, among others. HT-PLC at the moment is not for industrial use, is currently aimed at the academic sector and DIY culture "maker".

The Ethernet connection on the Arduino board is achieved through a Shield, this is a device that is assembled on the development board.

A. Visual Studio :- Microsoft Visual Studio is a development environment that offers tools and services to create applications and websites for any platform. This IDE can

work with multiple programming languages, such as C ++, C # and java. The applications created in this environment have a wide range of tools that allow, the manipulation, elimination and creation of files and databases, serial communication with different devices and the exchange of information with other programs.

B. Programmable Logic Controller (PLC):- A PLC is a programmable automaton designed for the control of industrial processes following the instructions of a program loaded in the memory of the device. Unlike a commercial computer, these devices control multiple peripherals where equipment, machinery and / or electrical and electronic components can be connected. But like a PC these computers can have large storage and information processing capacities.

C. Ladder diagram:- Ladder diagrams are also known as ladder logic and ladder language. It is a standardized graphic language for the programming of logic controllers and is based on the classic electrical control schemes. One of the advantages of ladder language is its easy understanding for a technician or engineer. For the construction of these diagrams, multiple tools are used, such as open contacts, closed contacts, timers, among others.

D. HT-PLC (IDE). HT-PLC:- is a software, developed in Visual Studio, that allows the creation of ladder diagrams to be loaded and executed on an Arduino board. The program contains tools that allow PLC communication through a serial communication port on the computer.

E. General characteristics. The IDE has the option of creating projects that can be saved in the computer's memory, as well as allowing the modification of files and sending them to the PLC if desired. For the elaboration of these the IDE has tools, work sections, and an intuitive environment.[16]

PHP and MYSQL has been the main web development tool for it is free and open source. The authors have discussed the environmental issues in development process based on PHP and MYSQL and the implementation process of the website.

With the development of Web technology, it is inevitable choice for all kind of corporate growth to combine traditional marketing with network marketing. The effective method of network marketing is to establish the website which is suitable for their company. At present the website development's mainstream platform includes: LAMP (Linux operating system, Apache network server, MySQL database, PHP programming language), J2EE and. Net commercial software. Because PHP and

MYSQL is free, open source and so on, they are noted for IT professionals. From the perspective of website traffic, more than 70% of website traffic is provided with LAMP, which is most popular platform for developing the website.

The project takes PHP as the development language, the reason is as follows:

- Free. the project is small' which is no need to use the payment development platform such as asp.net and jsp.
- Strong supporting. Middle and small scale websites, even some large-scale websites such as baidu, Sina in China take PHP as the development language, which can contribute to solve the problem during the programming.
- Good portability. Although it is designed to use in the environment of Linux and Apache Web server system at first, now PHP is already transplanted any operating system and compatible standard Web server software.
- Simple grammar. PHP has many similarities with the C programming language, so it is easy to program using PHP for the C programmers.
- Rapid development. Because the source code is open, PHP will continue to develop rapidly.

A. Build Development Environment :-

At present there are many development platform based on PHP. Generally most developers like the development environment LAMP. Those who have certain development experience can set up their development platform by choosing the related server, DBMS, and operating system. There are some PHP IDE(integrated development environment) such as AMPServ, WAMP, XMAPP, AppServ, PHPStudy in the market for the developers develop the website by using PHP. At present the main PHP IDE is Zend Studio, which has included developing components for PHP. It reduces the development time and simplifies the complex application plan during edition, debugging, analysis and optimization. The Zend Studio not only has code for high measurement, grammar shrinking automatically and bookmark, but also its embedded debugger which fits for local and remote debugging patterns. It is many high debugging functions such as variable tracking, Single-step operation, breakpoint, function calling, and so on. Moreover, it is also very stable in supporting Chinese for the latest version.

B. Notes in Building the Development Environment :-

Those who are unfamiliar with the development environment do not set it up by himself for it may cause a conflict between various edition, moreover it is very difficult to solve the complex configuration problem.

- PHP language version. Before development, you must ensure consistence of the edition between PHP language and the server. Now PHP mainly has two editions (PHP4 and PHP5). The different versions have the difference with SESSION, exception handling, the variable range, the data type and so on.
- Server problem. The program which is edited with PHP in the windows platform will be arranged on the apache server. If it is arranged on IIS it leads to some incompatible problems and some update by manual such as writable rights is set up before uploading the document. There are not these problems if it is arranged on the apache server.
- Database problem. DBMS using with PHP has MySQL, ORACLE and so on. MySQL is welcomed by most of the developers for it is open source, free, and efficient. MySQL is perfect database server software for medium and small application system. Besides standard ANSI SQL, it also supports many platforms. On the Unix/Linux system, MySQL also supports the multi-thread. MySQL becomes the first choice of middle and small level PHP website for it is open source and it provides a series of supports such as read write access.

Demand analysis :-There are various demands for a website project. Those demands often stem from or company oneself needs, most of which is the actual needs of customers. What extent the project leaders understand the user's needs has decided whether is success or failure in developing the website. Therefor user's needs in the form of document can clearly be transformed into all project development members, which is the main problem during the project development. Besides basic user's needs, there are some problems as follows are needed to notice:

- The demand analysis will be come from the receiving party of the project or approved it by them.
- The demand should be confirmed by way of the document.
- The feasibility and price of their demands are informed to the demand side after effective analysis and discussion.

A. Functional module design The demand report will be organized as some modules according to the principles of high cohesion and low coupling and related experience by the website developers.

B. Database design and implementation It contains the demand analysis, the concept design, the logical design, the physical design, the system implementation, the operation and the maintenance. The following problems should be paid attention to during the database design and implementation:

Database security: The database is the core of website, in which the data security is very important. The damage and lose or illegal duplication of data can cause a lot of trouble, moreover the mistake is very difficult to restore.

MYSQL security measures are as follows

: • Account security: Each account of MySQL is composed of user name, password as well as the position, which includes reasonable rights and security check. The reasonable rights demand that there are different rights for the different account and as identical user there are different rights for different database or data sheet. There are three different security checks in the MySQL: register confirmation, authorization, access control.

• Stored data encryption: for the massive information in application program, you only want to encrypt a very small part of it, such as user password. These passwords should not store in the form of plaintext but encryption in the database. In general, the sensitive data is encrypted by Hash algorithm in most DBMS including MySQL.

e database character set and coding: The default code used in web server software installed, like Apache, is not UTF-8. The webpage is normally browsed when we input data into table coded in UTF-8, but Chinese in phpMyAdmin turns into messy code. The solution is that the default code in MySQL turned into UTF-8 or the data code (UTF-8) is assigned when the database is connected.

Using PHP with a database system :- PHP, as a scripting language, is popular among web developers because of its ability to interact with database systems including Oracle and MySQL

This article discusses the use of PHP scripting language with the MySQL database. Any website can require a variety of data or information to display and to retrieve them from the database. This can include display of a simple list to the running of the website based on data stored in the database.

Common uses of PHP:-

- PHP performs system functions, i.e. from files on a system it can create, open, read, write, and close them.
- PHP can handle forms, i.e. gather data from files, save data to a file, through email you can send data, return data to the user.
- You add, delete, modify elements within your database through PHP.
- Access cookies variables and set cookies.
- Using PHP, you can restrict users to access some pages of your website.
- It can encrypt data.

Characteristics of PHP

Five important characteristics make PHP's practical nature possible –

- Simplicity
- Efficiency
- Security
- Flexibility
- Familiarity

PHP programming can be used to create most things that a software developer needs. However, there are three main areas in which it thrives.

1. Server-sides

Server-side Script is PHP's main strength. If you are just learning to code and want to explore server-side scripting, PHP is a great language to learn. To get cracking with PHP server-side scripting you'll need to have a PHP parser, web server and web browser.

2. Command-line

Command-line scripting is ideal for scripts made using cron (Linux) or Task Scheduler (Windows). It is also great for simple text processing.

MySQL is a powerful open-source database management system that is widely used for storing and organizing data. It is known for its fast performance, reliability, and ease of use, making it a popular choice for web applications, business data, and other types of data storage. MySQL is based on the Structured Query Language (SQL), a

standard language for interacting with databases. With MySQL, you can create and modify databases, tables,

MySQL is based on the Structured Query Language (SQL), a standard language for interacting with databases. With MySQL, you can create and modify databases, tables, and other database objects, as well as insert, query, and update data. You can also use MySQL to manage users and privileges, ensuring that only authorized users have access to your data.

MySQL is a popular and widely-used database management system that is used by a wide range of individuals and organizations. Some of the main groups of people who use MySQL include:

1. **Web developers:** MySQL is a common choice for storing and organizing data in web applications, and it is often used in conjunction with programming languages like PHP and Java.
2. **Data analysts:** MySQL is used by data analysts to store, organize, and analyze large amounts of data. It is often used in conjunction with tools like Excel and Tableau to visualize and interpret data.
3. **Businesses:** MySQL is used by businesses of all sizes to store and organize business data, such as customer information, sales data, and financial records.
4. **Government organizations:** MySQL is used by government organizations to store and manage data, such as population data, census data, and other types of public information.
5. **Educational institutions:** MySQL is used by educational institutions to store and manage data, such as student records, course information, and other types of educational data.

Overall, MySQL is a popular and widely-used database management system used by many individuals and organizations for storing and organizing data

A database is simply a collection of structured data. Think of taking a selfie: you push a button and capture an image of yourself. Your photo is data, and your phone's gallery is the database. A database is a place in which data is stored and organized. The word "relational" means that the data stored in the dataset is

organized as tables. Every table relates in some ways. If the software doesn't support the relational data model, just call it DBMS.

Open source :- means that you're free to use and modify it. Anybody can install the software. You can also learn and customize the source code to better accommodate your needs. However, The GPL (**GNU Public License**) determines what you can do depending on conditions. The commercially licensed version is available if you need more flexible ownership and advanced support.

Client server model:-Computers that install and run RDBMS software are called clients. Whenever they need to access data, they connect to the RDBMS server. That's the "client-server" part.

MySQL is one of many RDBMS software options. RDBMS and MySQL are often thought to be the same because of MySQL's popularity. A few **big web applications** like Facebook, Twitter, YouTube, Google, and Yahoo! all use MySQL for data storage purposes. Even though it was initially created for limited usage, it is now compatible with many important computing platforms like Linux, macOS, Microsoft Windows, and Ubuntu.

MySQL and SQL are not the same :-Be aware that MySQL is one of the most popular RDBMS software's brand names, which implements a client-server model. So, how do the client and server communicate in an RDBMS environment? They use a domain-specific language – Structured Query Language (SQL). If you ever encounter other names that have SQL in them, like **PostgreSQL** and Microsoft SQL server, they are most likely brands which also use Structured Query Language syntax. RDBMS software is often written in other programming languages, but always use SQL as their primary language to interact with the database. MySQL itself is written in C and C++.

3.ANALYSIS

3.1DETAIL PROBLEM STATEMENT:

A student information system (SIS), student management system, school administration software or student administration system is a management information system for education sector establishments used to manage student data. It integrates students, parents, teachers and the administration. Student information systems provide capabilities for registering students in courses; documenting grading, transcripts of academic achievement and co-curricular activities, and the results of student assessment scores; forming student schedules; tracking student attendance; generating reports and managing other student-related data needs in an educational institution.

The existing student information system stores all the academic data as well as personal data this includes personal student information, grades, records of tests, attendance, appraisal performance, etc. which is usually taken by many colleges. So in this student information system, there is no system to store technical academic data like internships done in a particular time period, technical courses done by students that are assigned by college faculty as well as done by themselves to gain technical knowledge and to get proficient, certificates earn by completing courses, workshops and by participating in hackathons, national level competition, etc. throughout the academics and non-academic data of students like sports participation, outdoor activities and social media blogs, etc.

3.2REQUIREMENT SPECIFICATIONS:

Hardware Requirement:

Windows

64-bit Microsoft® Windows® 8/10

X86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor

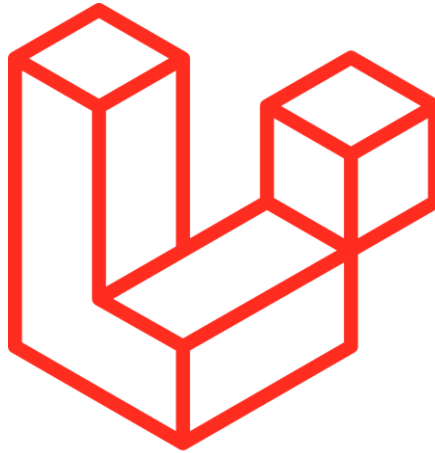
8 GB RAM or more

8 GB of available disk space minimum ()

1280 x 800 minimum screen resolutions.

Software Requirements:

- 1) Laravel-



Fig(3.2.1) Laravel Logo

Laravel is a free and open-source PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model–view–controller (MVC) architectural pattern and based on Symfony. Some of the features of Laravel are a modular packaging system with a dedicated dependency manager, different ways for accessing relational databases, utilities that aid in application deployment and maintenance, and its orientation toward syntactic sugar.

Laravel is an open-source PHP framework, which is robust and easy to understand. It follows a model-view-controller design pattern. Laravel reuses the existing components of different frameworks which helps in creating a web application. The web application thus designed is more structured and pragmatic.

Laravel offers a rich set of functionalities that incorporates the basic features of PHP frameworks like CodeIgniter, Yii and other programming languages like Ruby on Rails. Laravel has a very rich set of features that will boost the speed of web development.

If you are familiar with Core PHP and Advanced PHP, Laravel will make your task easier. It saves a lot of time if you are planning to develop a website from scratch. Moreover, a website built in Laravel is secure and prevents several web attacks.

Some essential features provided by Laravel are:

- Routing controllers.
- Configuration management.
- Testability.
- Authentication and authorization of users.
- Modularity.
- ORM (Object Relational Mapper) features.
- Provides a template engine.
- Building schemas.
- E-mailing facilities.

Laravel was initially released in June 2011 as an alternative to the CodeIgniter framework. It was created as an attempt to provide a more advanced alternative to CodeIgniter, which was a popular framework at the time. It quickly gained popularity due to its clean syntax and tools for tasks such as routing and authentication.

Laravel 1, also known as "Laravel Spark," was released in August 2011. It was a lightweight version of the framework designed for rapid application development.

Laravel 2 was released in September 2011, introducing support for controllers and a new syntax for routes.

Laravel 3 was released in February 2012 and introduced a number of new features, including the Eloquent ORM (Object-Relational Mapping) and Blade templating engine.

Laravel 4, also known as "Laravel Illuminate," was released in May 2013. It was a major update to the framework that introduced a new syntax and a number of additional features, including support for tasks and events, a built-in API for testing, and support for multiple file systems.

Laravel 5 was released in February 2015 and introduced a number of new features, including support for middleware, a new routing system, and support for package development.

Laravel 6 was released in September 2019 and introduced a number of new features, including support for semantic versioning, a new job scheduler, and support for Laravel Vapor, a serverless deployment platform for Laravel applications.

Laravel 7 was released in March 2020 and introduced a number of new features, including a new HTTP client, improved routing speed, and support for custom Eloquent casts.

Laravel 8 was released in September 2020 and introduced a number of new features, including Laravel Jetstream, a new application scaffolding tool, improved authorization responses, and a new migration snapshot feature.

2) MySQL –



Fig(3.2.2) MySQL Logo

MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. MySQL is open-source and free software under the GNU license. It is supported by Oracle Company.

MySQL is currently the most popular database management system software used for managing the relational database. It is open-source database software, which is supported by Oracle Company. It is fast, scalable, and easy to use database management system in comparison with Microsoft SQL Server and Oracle Database. It is commonly used in conjunction with PHP scripts for creating powerful and dynamic server-side or web-based enterprise applications.

It is developed, marketed, and supported by MySQL AB, a Swedish company, and written in C programming language and C++ programming language. The official pronunciation of MySQL is not the My Sequel; it is My Ess Que Ell. *However, you*

can pronounce it in your way. Many small and big companies use MySQL. MySQL supports many Operating Systems like Windows, Linux, MacOS, etc. with C, C++, and Java languages.

Cloud applications: MySQL is very popular in the cloud. MySQL [HeatWave](#) is a fully managed database service, powered by the integrated HeatWave in-memory query accelerator. It's the only cloud database service that combines transactions, analytics, and machine learning (ML) services into one MySQL Database, delivering real-time, secure analytics without the complexity, latency, and cost of ETL duplication. MySQL HeatWave is 6.5X faster than Amazon Redshift at half the cost, 7X faster than Snowflake at one-fifth the cost, and 1,400X faster than Amazon Aurora at half the cost. With MySQL HeatWave ML, developers and data analysts can build, train, and explain machine learning models in a fully automated way—25X faster than Amazon Redshift ML at 1% of the cost.

MySQL is extremely popular for

Ecommerce: Many of the world's largest ecommerce applications (for example, Shopify, Uber, and Booking.com) run their transactional systems on MySQL. It's a popular choice for managing user profiles, credentials, user content, financial data including payments, and fraud detection.

Social platforms: Facebook, Twitter, and LinkedIn are among the world's largest social networks that rely on MySQL.

Content management: Unlike single-purpose document databases, MySQL enables both SQL and NoSQL with a single database. The MySQL Document Store enables CRUD operations and the power of SQL to query data from JSON documents for reporting and analytics.

SaaS and ISVs: More than 2,000 ISVs, OEMs, and VARs, including Ericsson, F5, and IBM, rely on MySQL as their embedded database to make their applications, hardware, and appliances more competitive, bring them to market faster, and lower their cost of goods sold. MySQL is also the database behind popular SaaS applications, including Zendesk and HubSpot.

Other popular applications using MySQL include ones for online gaming, digital marketing, retail point-of-sale systems, and Internet of Things monitoring systems.

On-premises applications with MySQL Enterprise Edition: MySQL Enterprise Edition includes the most comprehensive set of advanced features, management tools, and technical support to achieve the highest levels of MySQL scalability, security, reliability, and uptime. It reduces the risk, cost, and complexity in developing, deploying, and managing business-critical MySQL applications. It provides security features, including MySQL Enterprise Backup, Monitor, Firewall, Audit, Transparent Data Encryption, and Authentication, to help customers protect data and achieve regulatory and industry compliance.

3.3 Functional Requirements:

An SIS basically requires a user. In this user can login account using student ID and password and user will be able to create and manage their personal schedules by adding their classes, study times, extracurricular activities, and other commitments. The system will allow user to set reminders for upcoming events and deadlines. The system will allow user to track their progress on academic assignments, such as essays, projects, and exams. User will be able to input their grades and receive feedback from their instructors. The system will also provide user with insights into their overall academic performance, such as their GPA and class rank.

The system will allow user to collaborate with their peers on group projects and assignments. User will be able to share documents, communicate with each other, and track their progress on shared tasks.

- User can register and create their account.
- User can login using Student Id and Password
- User will be able to create and manage their personal schedules.
- User can fill information academic and non-academic
- Similarly can add certificate and social link
- User can see all year information in particular place of timeline.

Functional requirements for a student timeline feature in a Student Information System (SIS) specify the specific capabilities and functionalities that the system should provide to effectively manage and present a student's academic timeline. Here are some common functional requirements for a student timeline in a Student Information System:

- 1) **Course Registration:** The SIS should allow students to view and register for courses according to their academic program and requirements. The timeline feature should display upcoming registration periods and provide a user-friendly interface for students to select and add courses to their schedule.
- 2) **Course Schedule Display:** The student timeline should present a visual representation of the student's course schedule. It should display the course name, course code, meeting times, locations, and instructors for each enrolled course. The schedule should be organized by days of the week and time slots, enabling students to quickly understand their daily and weekly commitments.
- 3) **Add/Drop Courses:** The SIS should enable students to make changes to their course schedule by adding or dropping courses within the designated add/drop period. The student timeline should reflect these changes in real-time, updating the schedule accordingly.
- 4) **Prerequisite Checking:** The student timeline should incorporate prerequisite checking functionality to ensure that students meet the necessary requirements before registering for specific courses. It should provide alerts or notifications if a student attempts to register for a course without completing the required prerequisites.
- 5) **Course Progress Tracking:** The timeline should visually represent the student's progress through their academic program. It should highlight completed courses, in-progress courses, and planned future courses. This feature allows students to monitor their progress towards graduation requirements and helps them plan their future course selections.
- 6) **Academic Deadlines:** The timeline should display important academic deadlines, such as registration deadlines, add/drop periods, and withdrawal deadlines. It should notify students in advance of approaching deadlines to ensure they can take necessary actions within the specified time frames.
- 7) **Milestone Tracking:** The student timeline should include significant academic milestones, such as comprehensive exams, internships, capstone projects, or thesis deadlines. It should allow students to track and manage these milestones, providing reminders and notifications to ensure timely completion.
- 8) **Academic Advising Integration:** The timeline should integrate with the academic advising system to provide advisors with a holistic view of the student's academic

timeline. Advisors should be able to access the student's timeline, review their course selections, and provide guidance and support.

9) **Academic View:** The timeline should allow students to view their academic history, including past courses completed, grades earned, and any academic honors or awards received. This feature provides students with a comprehensive overview of their academic journey.

10) **Mobile Accessibility:** The student timeline should be accessible on mobile devices, allowing students to view and manage their academic timeline on-the-go. It should have a responsive design and optimize the user experience for different screen sizes.

These functional requirements ensure that the student timeline feature in a Student Information System provides a comprehensive, user-friendly, and dynamic representation of a student's academic journey. It supports course registration, schedule display, add/drop functionality, prerequisite checking, progress tracking, academic deadlines, milestone tracking, integration with academic advising, academic history view, and mobile accessibility.

3.4 Non-Functional Requirement:

Non-functional requirements for a Student Information System (SIS) define the qualities and characteristics of the system that are not directly related to its primary functionality but are crucial for its successful operation. These requirements focus on factors such as performance, security, usability, scalability, and reliability. Here are some common non-functional requirements for a Student Information System:

1) **Performance:** The system should be capable of handling a large number of concurrent users and perform efficiently under heavy load. Response times for user interactions, such as retrieving student records or generating reports, should be fast to ensure a smooth user experience.

2) **Security:** The SIS should have robust security measures to protect student data and prevent unauthorized access. It should include features such as user authentication, role-based access control, encryption of sensitive information, and audit trails to track system activities.

3) **Usability:** The system should be user-friendly and intuitive, ensuring that users, including administrators, faculty, and students, can easily navigate and interact with

the system. It should have a well-designed user interface, clear instructions, and provide adequate feedback to users during their interactions.

4) Scalability: The SIS should be scalable to accommodate future growth and increasing user demands. It should be able to handle additional users, data, and system requirements without significant performance degradation. This can be achieved through scalable infrastructure, database design, and efficient system architecture.

5) Reliability: The SIS should be highly reliable, ensuring that it operates continuously without unexpected interruptions or failures. It should have mechanisms in place to handle system errors gracefully, recover from failures, and provide backup and disaster recovery capabilities to minimize data loss and downtime.

6) Interoperability: The SIS should support integration with other systems and platforms used within the educational institution, such as learning management systems, library management systems, or financial systems. It should provide standardized interfaces or APIs to facilitate seamless data exchange and interoperability between systems.

7) Compliance: The SIS should comply with relevant legal and regulatory requirements, such as data protection and privacy laws. It should adhere to industry standards and best practices to ensure the security and integrity of student data.

8) Accessibility: The SIS should be designed to be accessible to users with disabilities, ensuring compliance with accessibility standards and guidelines. It should support assistive technologies and provide alternative means of accessing system features and information.

9) Maintenance and Support: The SIS should be easy to maintain and support. It should have documentation and resources available to assist administrators and technical staff in managing and troubleshooting the system. Additionally, the vendor or development team should provide timely support and updates to address issues and ensure system stability.

10) Performance Monitoring and Reporting: The system should include mechanisms for monitoring system performance and generating reports on key metrics. This allows administrators to identify potential bottlenecks, track system usage, and make informed decisions for system optimization and resource allocation.

These non-functional requirements are crucial for the effective operation of a Student Information System, ensuring that it meets the performance, security,

usability, scalability, reliability, and compliance needs of the educational institution and its users.

3.5 Feasibility Study:

A feasibility study is an analysis that considers all of a project's relevant factors including economic, technical, legal, and scheduling considerations to ascertain the likelihood of completing the project successfully. The constant rise of internet and social media use across the world, there is no doubt in the online business ideas with huge future potential. However, whether a business idea will make its mark in the market or not depends on how it is executed. Even the idea is small the success of it depend on how the execution of the idea is done. How it affects the daily life of users and how it serves to them. When done analysis it is found that the success not depends totally on how an idea is funded and invested but on how the product serves to its users. There are pretty good chances that you will underestimate the cumulative business setup cost, as in most cases what business owners consider are only development and operational costs. While designing a system we don't consider a lot of expenditure that follow up during the process. The developer needs to consider them later. Hence making the system or product beneficial while going through all of the requirements decides the success of the product and company.

A feasibility study is an analysis conducted to determine the practicality and viability of a proposed project, product, or system. It is a comprehensive evaluation that considers various factors including technical, financial, operational, legal, and social aspects of the proposed project. The primary objective of a feasibility study is to determine whether the project is feasible or not and to identify the potential risks and challenges that may arise during its implementation. Here are some key components of a feasibility study:

1. **Project Description:** Describe the proposed project, its objectives, and its scope. Identify the stakeholders and their roles in the project.
2. **Technical Feasibility:** Evaluate the technical aspects of the project, including technology requirements, availability, and compatibility. Assess whether the proposed technology is feasible and whether it can be integrated with existing systems or processes.

3. Financial Feasibility: Assess the financial viability of the project, including the cost of development, implementation, and ongoing maintenance. Determine if the project is financially feasible and if the potential returns justify the investment.

4. Operational Feasibility: Evaluate the operational feasibility of the project, including its impact on existing systems, processes, and resources. Determine if the project can be effectively integrated into the existing operations and if the benefits outweigh the operational costs.

5. Legal and Regulatory Feasibility: Identify the legal and regulatory requirements that must be met for the project to proceed. Determine if the project is in compliance with applicable laws, regulations, and standards.

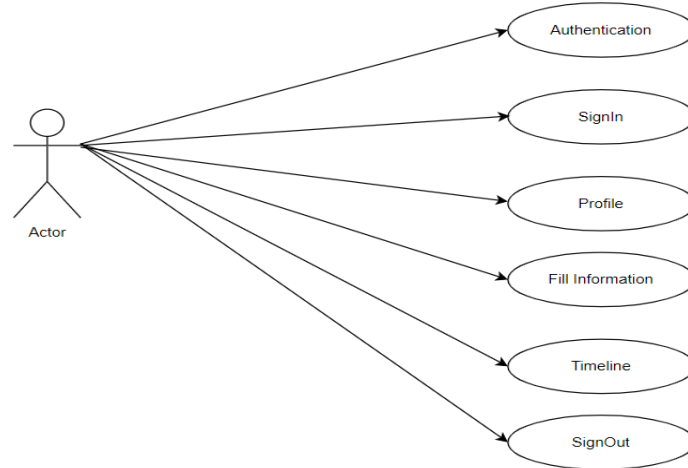
6. Social and Environmental Feasibility: Assess the social and environmental impact of the project, including its impact on the community, the environment, and other stakeholders. Determine if the project is socially responsible and environmentally sustainable.

7. Risk Assessment: Identify potential risks and challenges that may arise during the implementation of the project. Develop strategies to mitigate these risks and challenges and ensure the success of the project.

Based on the evaluation of the above factors, conclude whether the project is feasible or not. Provide recommendations and an action plan for moving forward with the project.

Overall, a feasibility study is a critical step in the project development process as it helps to identify potential challenges and risks and provides a comprehensive evaluation of the proposed project's viability and potential benefits.

3.6 Use Case Diagram



Fig(3.6.1)Use case Diagram

A use case diagram is a type of UML (Unified Modeling Language) diagram that represents the interactions between users and a system or application. It provides a high-level overview of the functionality of a system and helps to identify the actors (users, external systems, etc.) and their roles, as well as the various use cases (functional requirements or tasks) that the system must perform to achieve its objectives.

Use case diagrams consist of the following components:

1. **Actors:** Represent the roles of the various users or entities that interact with the system. Actors are represented as stick figures.
2. **Use Cases:** Represent the tasks or functions that the system must perform to achieve its goals. Each use case is represented as an oval shape.
3. **Relationships:** Represent the connections between actors and use cases. The two main relationships are association and inclusion.
 - a. **Association:** Represents a relationship between an actor and a use case, indicating that the actor is involved in the use case.
 - b. **Inclusion:** Represents a relationship between two use cases, indicating that one use case is included in another use case.

Use case diagrams can be used throughout the software development life cycle, from requirements gathering and analysis to design, testing, and implementation. They help to ensure that the system meets the needs of its users and stakeholders, and can be a useful communication tool for both technical and non-technical stakeholders.

There are several reasons why use case diagrams are useful in software development:

1. **Requirements gathering:** Use case diagrams help to identify the functional requirements of a system and capture the goals and objectives of its users. This can help to ensure that the system meets the needs of its users.
2. **Design:** Use case diagrams can be used to design the system's architecture and define the interactions between different components. This can help to ensure that the system is well-structured and easy to maintain.
3. **Communication:** Use case diagrams provide a high-level overview of the system's functionality, making it easier to communicate with stakeholders who may not have a technical background. This can help to ensure that everyone involved in the project has a shared understanding of the system.
4. **Testing:** Use case diagrams can be used to create test cases that cover all the functional requirements of the system. This can help to ensure that the system is thoroughly tested and meets the needs of its users.

Overall, use case diagrams help to ensure that the system meets the needs of its users, is well-designed and structured, and is thoroughly tested. They are an important tool in software development and can help to improve the quality and effectiveness of the final product.

4. DESIGN

Once the features are decided the designing part starts. Designing any system needs the identification, specification and definition of the product in detail. After identifying and specifying the problem, analysis of the problem is done. Then according to the requirements basic architecture of the system is chosen or defined. However, before design, design goals should be defined and prioritized.

4.1 Design Goals :

The certain design goals are identified and prioritize that may help or drive in designing the system. Design architecture of the system should achieve maximum design goals. Design goals identifies and prioritize to design this system has been listed below:-

- Most important design goals are to achieve all the functional requirements of the system.
- Flexibility to add or extend the design.
- System should be modifiable or loosely coupled.
- System must be secure.

4.2 Design Strategy:

The designing of own application module aims creating simple and useful flow of things for the user.

At every step of interaction, users need to understand clearly plenty of simple things, like:

- Usability has to make the user journey clear and easy without unnecessary clicks.
- time lost on loading overloaded pages or inconvenient menu, the frustration of not getting feedback from the system, etc.
- Accessibility has to bring up design that can be used by different categories of users.

Intuitive Navigation

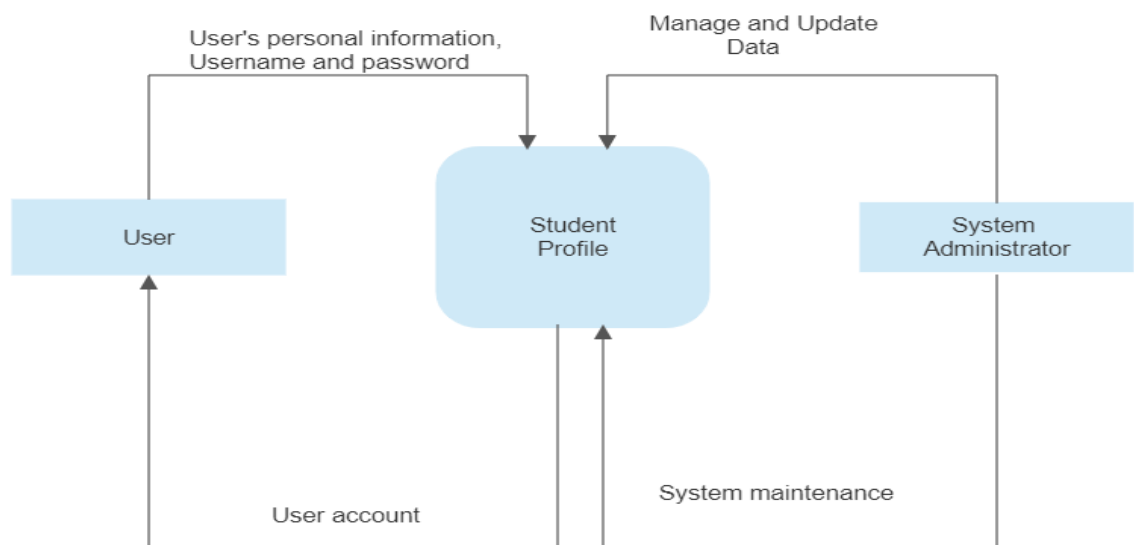
- What page they are at?
- Where the menu is?
- How they can get back to the home page?
- How long the page-loading process is going to take?

- Every button, link, and card can play a crucial role and change the conversions strategies.

4.3 Module Diagram:

UML provides a variety of constructs to represent different kinds of modules. Figure 4.3.1 shows some examples. UML has a class construct, which is the object-oriented specialization of a module. Packages can be used in cases where grouping of functionality is important, such as to represent layers and classes. The purpose of a component diagram is to show the relationship between different components in a system.

For the purpose of UML 2.0, the term “component” refers to a module of classes that represent independent systems or subsystems with the ability to interface with the rest of the system.



Fig(4.3.1) Module Diagram

Above module diagram is of our project application diagram we have prepared the diagram using our application architecture.

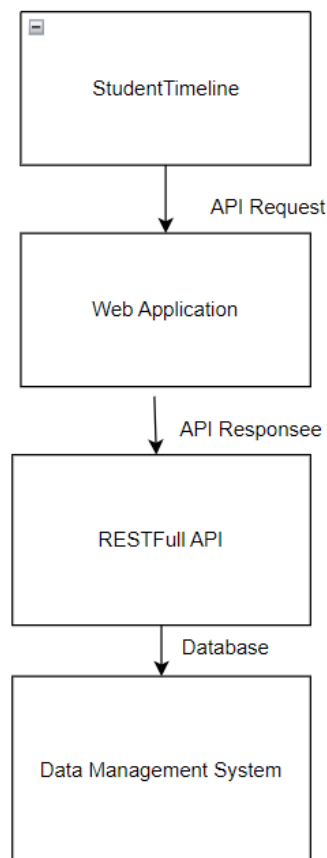
4.4 Architecture Diagram:

An architectural diagram is a visual representation that maps out the physical implementation for components of a software system. It shows the general structure of the software system and the associations, limitations, and boundaries between each element. Benefits of using software architecture diagrams In addition to the general fact that visual help people to retain and recall information longer, software system architecture diagrams offer the following benefits: Increase understanding: understanding: The diagrams understands how the different components work together when determining what kind of impact updates and new features will have on the system. Improve communication:

Software architecture diagrams visualize the game plan for everyone aligning project goals across all teams, departments, and stakeholders. They also keep stakeholders informed of the project's overall progress. Encourage collaboration and identify areas for improvement: Visualizing the application system structure makes it easier informed of the project's overall progress.

Encourage collaboration and identify areas for improvement: Visualizing the application system structure makes it easier for your team members to discuss the design, find patterns that work well, look for weak spots, and find areas to improve in a collaborative effort. What a well-crafted software architecture diagram should include A well-crafted diagram is not necessarily a detailed diagram. The diagram should include A well-crafted diagram is not necessarily a detailed diagram. The purpose of the software architecture diagram is to give team members and stakeholder context. A well-crafted diagram should: Show system interactions: Use simple shapes and lines to indicate process flows and the ways different elements interact with each other. Highlighting these relationships makes it easier to assess how changes can impact the entire system. Include useful annotations: Add helpful explanations to critical pieces of your diagram giving teammates and stakeholders important context and information. It should provide more nuanced details not easily conveyed in the diagram. Be visible and accessible : Your diagrams aren't useful if nobody sees them. Attach your diagram to Confluence and wiki pages, so they are accessible across your organization. Even share important diagrams across your chat platforms and reference them during standup meetings. An architectural diagram is a diagram of a system that

is used to abstract the overall outline of the software system and the relationships, constraints, and boundaries between components. It is an important tool as it provides an overall view of the physical deployment of the software system and its evolution roadmap.



Fig(4.4.1) Architecture Diagram

4.5 Class Diagram:

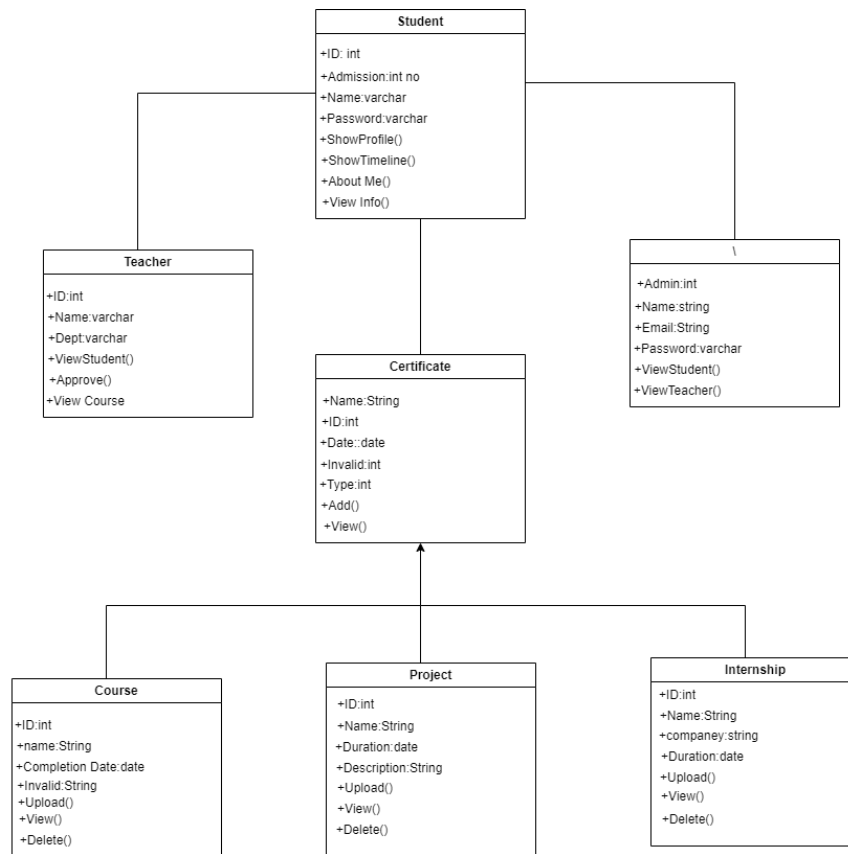
A class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, and the relationships between the classes. The class diagram is the main building block in object oriented modeling. They are being used both for general conceptual modeling of the systematic of the application, and for detailed modeling translating the models into programming code. The classes in a class diagram represent both the main objects and or interactions in the application and the objects to be programmed. File.The class diagram is the main building block of object-oriented modeling. It is used for general conceptual modeling of the structure of the application, and for detailed modeling, translating the models into programming code. Class diagrams can also be used for data modeling.The classes in a class diagram represent both the main elements, interactions in the application, and the classes to be programmed.

The purpose of a class diagram is to provide a graphical representation of the classes, interfaces, and their relationships in a system or application. Class diagrams are a type of UML (Unified Modeling Language) diagram and are widely used in software development to visualize the structure of object-oriented systems.

Some of the main purposes of class diagrams are:

1. Modeling the system structure: Class diagrams help to model the structure of a system by showing the classes and interfaces that make up the system and their relationships to one another. This can help to ensure that the system is well-designed and structured.
2. Defining the system behavior: Class diagrams can also be used to define the behavior of the system by showing the methods and attributes of each class. This can help to ensure that the system behaves as expected and meets the needs of its users.
3. Code generation: Class diagrams can be used to generate code automatically, saving time and reducing the likelihood of errors. This can be especially useful when building complex systems.
4. Documentation: Class diagrams can serve as a useful form of documentation, providing a clear and concise representation of the system's structure and behavior. This can be helpful for developers who are unfamiliar with the system and need to quickly understand its workings.

Overall, class diagrams are an important tool in software development and can help to ensure that the system is well-designed, well-structured, and meets the needs of its users. They can also be used to generate code automatically and serve as a useful form of documentation.



Fig(4.5.1) Class Diagram

4.6 Sequence Diagram :

The sequence diagram represents the flow of messages in the system and is also termed as an event diagram. It helps in envisioning several dynamic scenarios. It portrays the communication between any two lifelines as a time-ordered sequence of events, such that these lifelines took part at the run time. In UML, the lifeline is represented by a vertical bar, whereas the message flow is represented by a vertical dotted line that extends across the bottom of the page. It incorporates the iterations as well as branching. An interaction diagram shows an interaction, consisting of a set of objects and their relationships, including the messages that may be dispatched among them. A sequence diagram is an interaction diagram that emphasizes the time ordering of messages. Graphically, a sequence diagram is a table that shows objects arranged along x-axis and messages, ordered in increasing time, along the y-axis.

Purpose of a Sequence Diagram

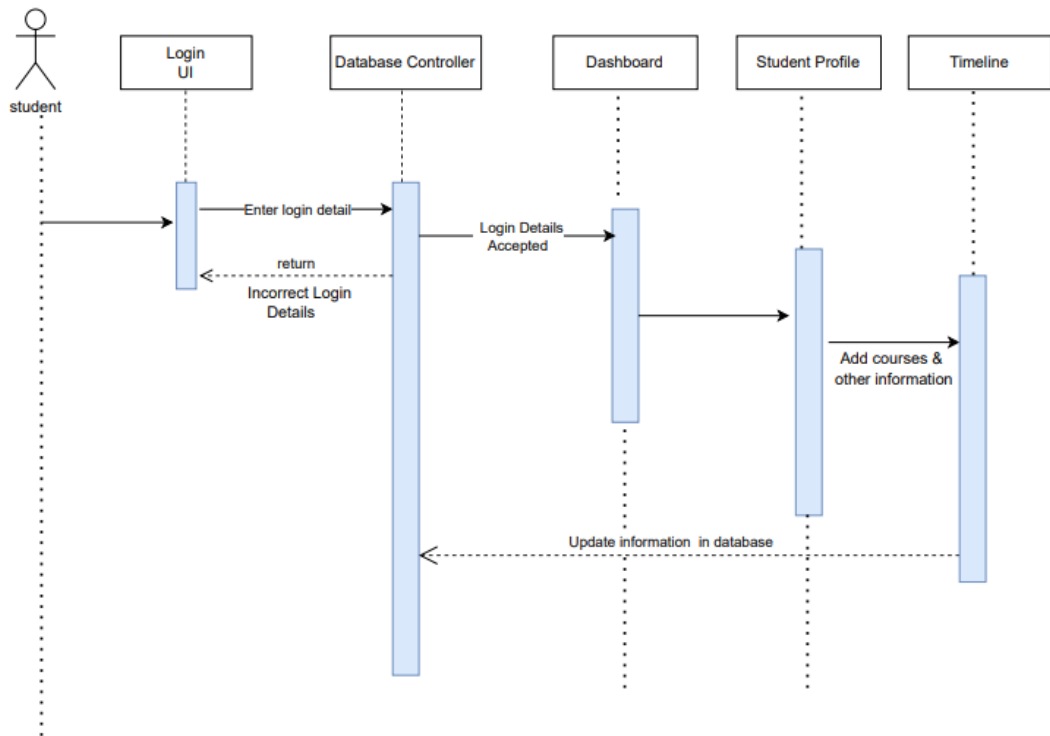
1. To model high-level interaction among active objects within a system.
2. To model interaction among objects inside a collaboration realizing a use case.
3. It either models generic interactions or some certain instances of interaction.

Benefits of sequence diagrams

Sequence diagrams can be useful references for businesses and other organizations.

Try drawing a sequence diagram to:

- Represent the details of a UML use case.
- Model the logic of a sophisticated procedure, function, or operation.
- See how objects and components interact with each other to complete a process.
- Plan and understand the detailed functionality of an existing or future scenario.



Fig(4.6.1) Sequence Diagram

This interaction diagram shows an interaction, consisting of a set of objects and their relationships, of our applications. A sequence diagram is an interaction diagram that emphasizes the time ordering of messages. Graphically, a sequence diagram is a table that shows objects arranged along x-axis and messages, ordered in increasing time, along the y-axis.

4.7 COLLABORATION DIAGRAMS:

Collaboration diagrams (known as Communication Diagram in UML 2.x) are used to show how objects interact to perform the behavior of a particular use case, or a part of a use case. Along with sequence diagrams, collaboration are used by designers to define and clarify the roles of the objects that perform a particular flow of events of a use case. They are the primary source of information used to determining class responsibilities and interfaces.

The collaboration diagram is used to show the relationship between the objects in a system. Both the sequence and the collaboration diagrams represent the same information but differently. Instead of showing the flow of messages, it depicts the architecture of the object residing in the system as it is based on object-oriented programming. Each consists of several features. Multiple objects present in the system are connected to each other. The collaboration diagram, which is also known as a communication diagram, is used to portray the object's architecture in the system.

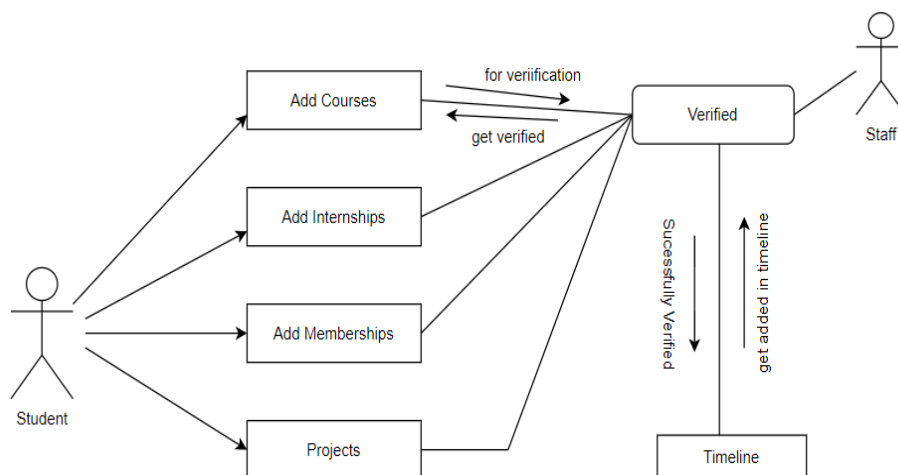
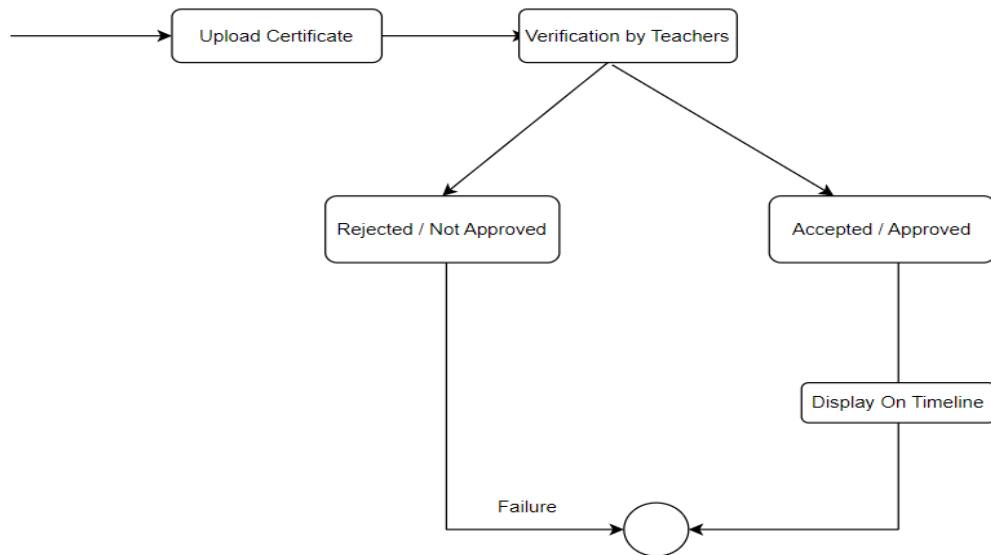


Fig (4.7.1) Collaboration Diagram

In this collaboration diagram we have represented the flow of the data and also working of modules.

4.8 STATE CHART DIAGRAMS:

A state diagram is a type of diagram used in computer science and related fields to describe the behavior of systems. State diagrams require that the system described is composed of a finite number of states; sometimes, this is indeed the case, while at other times this is a reasonable abstraction.



Fig(4.8.1) State Chart Diagram

The name of the diagram itself clarifies the purpose of the diagram and other details. It describes different states of a component in a system. The states are specific to a component/object of a system. A State chart diagram describes a state machine. State machine can be defined as a machine which defines different states of an object and these states are controlled by external or internal events. Activity diagram explained in the next chapter, is a special kind of a State chart diagram. As State chart diagram defines the states, it is used to model the lifetime of an object.

Purpose of Statechart Diagrams

Statechart diagram is one of the five UML diagrams used to model the dynamic nature of a system. They define different states of an object during its lifetime and these states are changed by events. State chart diagrams are useful to model the reactive systems. Reactive systems can be defined as a system that responds to external or internal events. Statechart diagram describes the flow of control from one state to another state. States are defined as a condition in which an object exists and it changes when some event is triggered. The most important purpose of Statechart diagram is to model lifetime of an object from creation to termination. Statechart diagrams are also used for forward and reverse engineering of a system. However, the main purpose is to model the reactive system. Statechart diagram is used to describe the states of different objects in its life cycle. Emphasis is placed on the state changes upon some internal or external events. These states of objects are important to analyze and implement them accurately. Statechart diagrams are very important for describing the states. States can be identified as the condition of objects when a particular event occurs.

Before drawing a Statechart diagram we should clarify the following points –

- Identify the important objects to be analyzed.
- Identify the states.
- Identify the events.

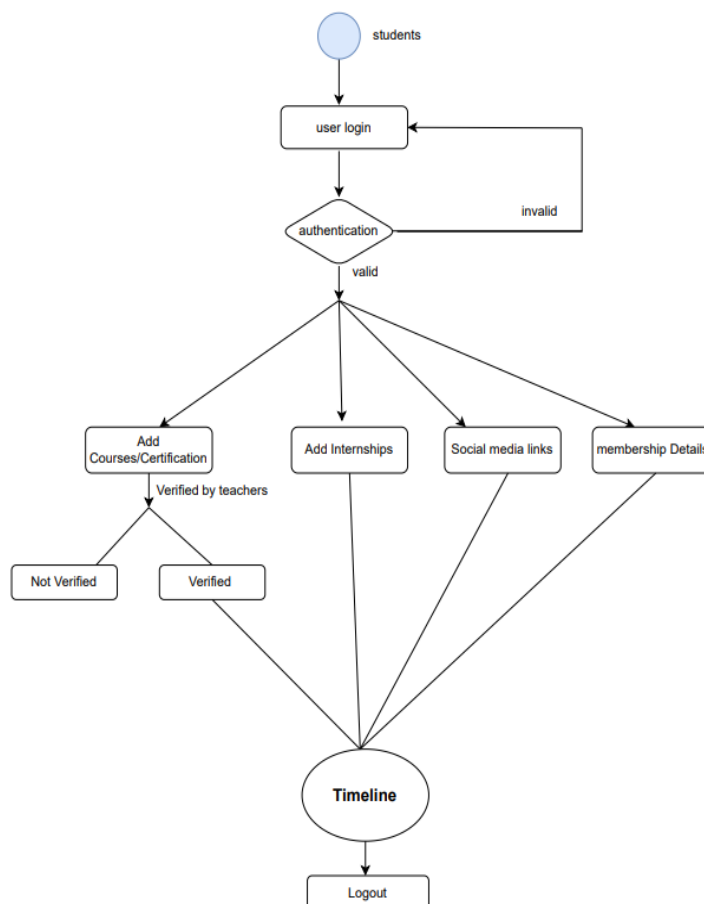
Following is an example of a Statechart diagram where the state of Order object is analyzed. The first state is an idle state from where the process starts. The next states are arrived for events like send request, confirm request, and dispatch order. These events are responsible for the state changes of order object.

During the life cycle of an object (here order object) it goes through the following states and there may be some abnormal exits. This abnormal exit may occur due to some problem in the system. When the entire life cycle is complete, it is considered as a complete transaction as shown in the following figure. The initial and final state of an object is also shown in the following figure.

4.9 ACTIVITY DIAGRAMS:

An activity diagram shows the flow from activity to activity. An activity is a ongoing non- atomic execution within a state machine. Activities ultimately result in some action, which is made up of executable atomic computations that result in a change in state of the system or the return of a value. Contents Activity diagrams commonly contain-

- Activity states and action states.
- Transitions.
- Objects Like all other diagrams, activity diagrams may contain notes and constrains.



Fig(4.9.1) Activity Diagram

Activity diagram shows the activity flow of our Application it shows that how the application modules are working.

The basic usage of activity diagram is similar to other four UML diagrams. The specific usage is to model the control flow from one activity to another. This control flow does not include messages.

Activity diagram is suitable for modeling the activity flow of the system. An application can have multiple systems. Activity diagram also captures these systems and describes the flow from one system to another. This specific usage is not available in other diagrams. These systems can be database, external queues, or any other system. We will now look into the practical applications of the activity diagram. From the above discussion, it is clear that an activity diagram is drawn from a very high level. So it gives high level view of a system. This high level view is mainly for business users or any other person who is not a technical person.

This diagram is used to model the activities which are nothing but business requirements. The diagram has more impact on business understanding rather than on implementation details.

Activity diagram can be used for –

- Modeling work flow by using activities.
- Modeling business requirements.
- High level understanding of the system's functionalities.
- Investigating business requirements at a later stage.

5. IMPLEMENTATION

5.1 Implementation Strategy

The implementation is the final and important phase. It involves User training, system testing and successful running of the developed system. The users test the developed system when changes are made according to the needs. The testing phase involves the testing of the developed system using various kinds of data. An elaborate testing of data is prepared and system is tested using the tests data.

The Implementation process begins with preparing plan for implementation of the system. According to this plan, the activities are to be carried out, discussions made regarding the equipment and resource and the additional equipment has to be acquired to implement the new system. In the network backup system no additional resource are needed. Implementation is the stage where theoretical design turned into a working system.

5.2 Software Platform Used

- Operating System: Windows
- Visual Studio Code:

Visual Studio Code is a streamlined code editor with support for development operations like debugging, task running, and version control. It aims to provide just the tools a developer needs for a quick code-build-debug cycle and leaves more complex workflows to fuller featured IDEs, such as Visual Studio IDE.

Visual Studio Code has some very unique features.

They are listed as below :

Support for multiple programming languages: Supports multiple programming languages. So earlier, programmers needed Web-Support: a different editor for different languages, but it has built-in multi-language support. This also means it easily detects if there's any fault or cross-language reference, it'll be able to detect it easily.

Visual Studio Code (VS Code) is a free, open-source code editor developed by Microsoft. It is available for Windows, macOS, and Linux operating systems. VS Code is designed for web and cloud application development, and it has gained popularity among developers due to its fast performance, extensibility, and wide range of features.

Here are some key features of VS Code:

1. **User Interface:** VS Code has a clean and intuitive user interface that is easy to use and customizable. It has a sidebar that provides access to different panels such as the Explorer, Search, and Debug.
2. **Language Support:** VS Code supports many programming languages, including JavaScript, Python, PHP, C++, and more. It provides features such as syntax highlighting, code completion, and debugging for these languages.
3. **Extensions:** VS Code has a rich ecosystem of extensions that provide additional features and functionality. There are thousands of extensions available in the Visual Studio Marketplace, including linters, code formatters, and integrations with other tools
4. **Integrated Terminal:** VS Code has an integrated terminal that allows developers to execute commands, run scripts, and interact with the system directly from the editor.
5. **Git Integration:** VS Code has built-in Git support that enables developers to manage their code repositories directly from the editor. This includes features such as commit, push, pull, and merge.
6. **Debugging:** VS Code has a powerful debugging system that allows developers to debug their applications directly from the editor. It supports debugging for various languages and platforms, including Node.js, Python, and .NET.
7. **Task Runner:** VS Code has a built-in task runner that allows developers to run tasks such as building, testing, and deploying their applications directly from the editor.
8. **Live Share:** VS Code has a Live Share feature that allows developers to collaborate on code in real-time. This feature enables developers to share their code and collaborate with others without leaving the editor.

Overall, VS Code is a powerful and flexible code editor that is designed for web and cloud application development. Its wide range of features, extensibility, and ease of use make it a popular choice among developers.

Improving Code: Some code snippets can be declared a bit differently, which might help the user in the code. This function prompts the user, wherever necessary, to change it to the suggested option.

Intelli-Sense: It can detect if any snippet of code is left incomplete. Also,

common variable syntaxes and variable declarations are made automatically. Ex: If a certain variable is being used in the program and the user has forgotten to declare, intelli-sense will declare it for the user.

Terminal Support: Many of the times, the user needs to start from the root of the directory to start with a particular action, in-built terminal or console provides user support to not to switch in-between two screens for the same.

Commenting: A common feature, but some of the languages do not support it. Commenting on the code helps the user to recall or track according to the sequence he wants.

- **Sublime-Text:**

Sublime text is a versatile, fun, and fast text editor for code and prose that automates repetitive tasks so you can focus on the important stuff. It is supported on macOS, Windows and Linux. Its versatility comes from a wide range of community-developed third-party packages that provide syntax highlighting, snippets, or other automation backed by plugins. The default distribution of Sublime Text aims to provide a basic but very functional set of features, but it can easily be turned into a full-fledged IDE, if so desired other complex projects. These files can be deleted as per convenience

5.3 Hardware Platform Used

1. Desktop/Laptop Computer

Everyone has one these days and it is crucial for any business who wants to grow and thrive to have a designated computer system. Make sure to invest in the equipment that will last and that is reputable for businesses. Finding a computer or laptop won't be hard due to the fact that they are sold everywhere, along with much technical equipment.

2. Network Server:

Network servers are highly important for fast and easy speeds and databases. You will have access to more storage capacity and higher security. For your business, you want to stay away from using your computers network server and get one that is specifically dedicated to your business only. There are many options out there for you

to choose from. Use the amount of space you need, security, and options you want for backups as criteria for your decision. Make sure to research thoroughly and work with specialists to help you choose one that fits for you.

3. Mobile device:

A mobile device is almost always necessary when running a business. There will be moments when you need to make professional calls and you don't want to use your personal phone. Having a device that is specifically for your business helps with organization and professionally. From tablets to cellphones, it's good to have a mobile device that you can take anywhere and handle business situations easily and conveniently.

5.4 Deployment Diagram

Deployment diagrams are used to visualize the topology of the physical components of a system where the software components are deployed. So deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consist of nodes and their relationships. The name Deployment itself describes the purpose of the software components are deployed. Component diagrams and deployment diagrams are closely related. These two diagrams are special diagrams used to focus on software components and hardware components. Deployment diagrams are used by the system engineers. A Diagram that shows the configuration of run time processing nodes and the components that live on them; a deployment diagram addresses the static deployment view of the system.

Deployment diagrams are a type of UML (Unified Modeling Language) diagram that show the physical configuration of a system or application and how it is deployed on hardware or software infrastructure. They are useful in software development for a number of reasons:

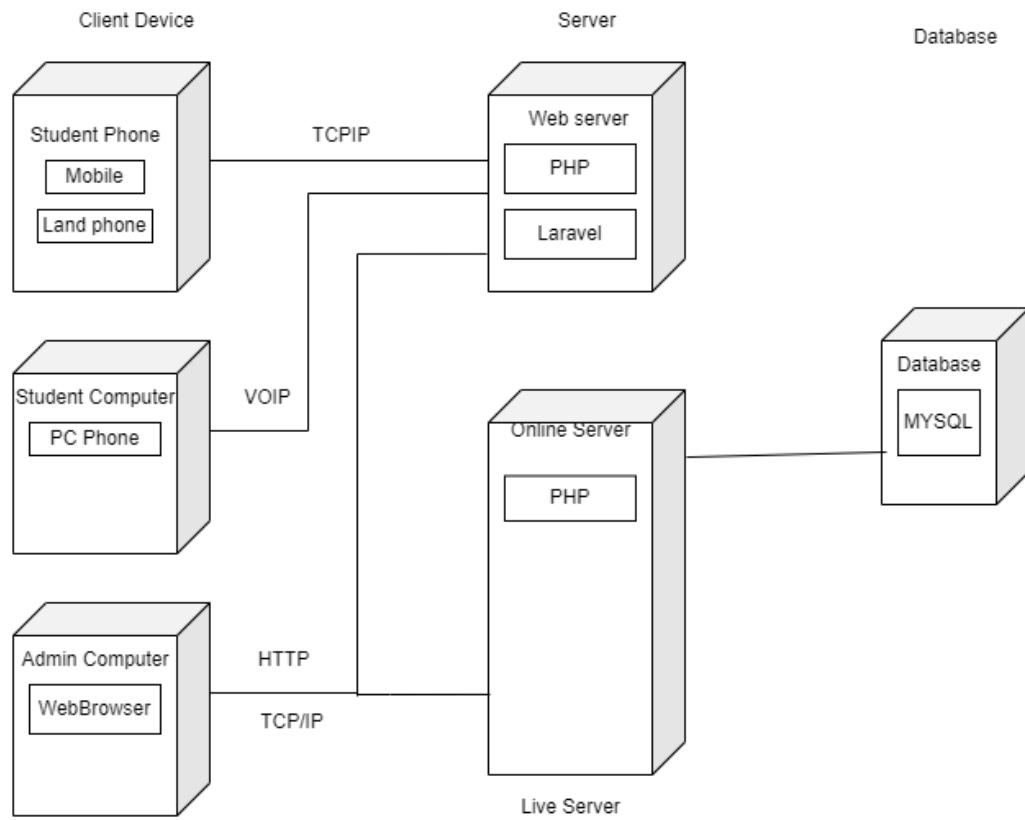
1. Visualization of system deployment: Deployment diagrams provide a visual representation of how a system is deployed on hardware or software infrastructure. This can help developers to understand how different components of the system are connected and how they interact with one another.
2. Detection of potential issues: By visualizing the deployment of a system, deployment diagrams can help identify potential issues such as network bottlenecks, overloaded servers, and potential security vulnerabilities.

3. Communication and collaboration: Deployment diagrams can serve as a communication and collaboration tool for stakeholders who may not have a technical background. They provide an easy-to-understand visual representation of the system that can help stakeholders to understand the system's architecture and its deployment.

4. Planning for scalability: Deployment diagrams can be used to plan for scalability by identifying areas where additional resources may be needed as the system grows and evolves.

5. Documentation: Deployment diagrams can serve as a useful form of documentation, providing a clear and concise representation of the system's deployment.

Overall, deployment diagrams are an important tool in software development, helping to visualize the deployment of a system, detect potential issues, facilitate communication and collaboration, plan for scalability, and serve as a useful form of documentation.

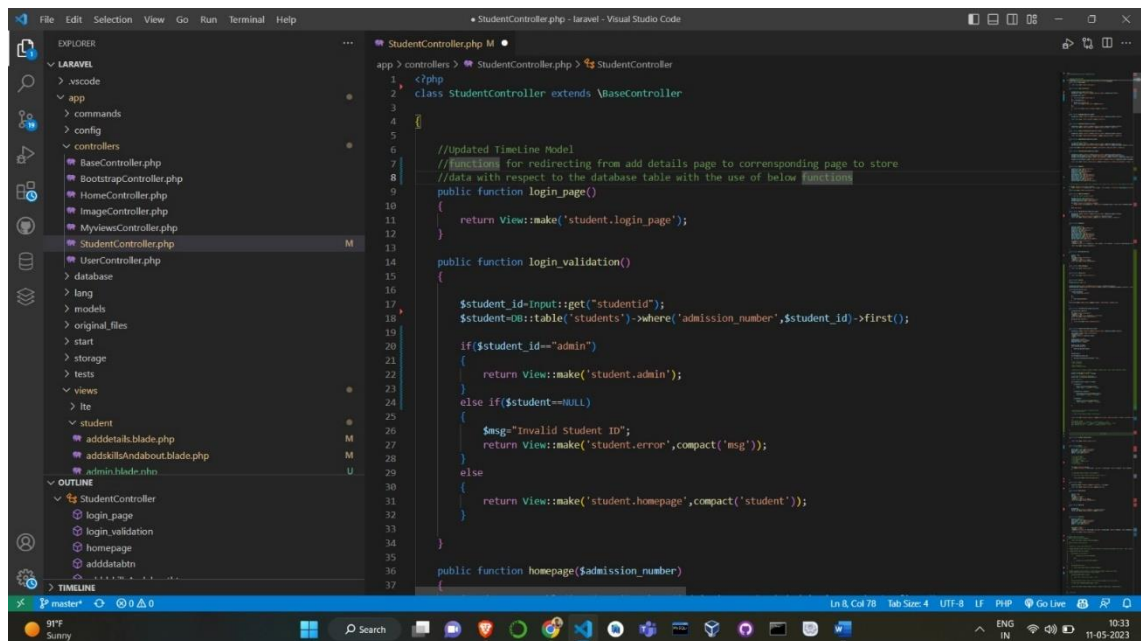


Fig(5.4.1) Deployment Diagram

5.5 Implementation level details -

Laravel version 4.8 has been used to develop —Student Timeline . through visual studio.

5.6 Database Implementation Details:



```

1 <?php
2 class StudentController extends \BaseController
3
4
5
6 //Updated Timeline Model
7 //functions for redirecting from add details page to corresponding page to store
8 //data with respect to the database table with the use of below functions
9 public function login_page()
10 {
11     return View::make('student.login_page');
12 }
13
14 public function login_validation()
15 {
16
17     $student_id=Input::get("studentid");
18     $student=DB::table('students')->where('admission_number',$student_id)->first();
19
20     if($student_id=="admin")
21     {
22         return View::make('student.admin');
23     }
24     else if($student==NULL)
25     {
26         $msg="Invalid Student ID";
27         return View::make('student.error',compact('msg'));
28     }
29     else
30     {
31         return View::make('student.homepage',compact('student'));
32     }
33 }
34
35 public function homepage($admission_number)
36
37

```

Fig(5.6.1)- Controller File

Description-

The controller is the backbone of the laravel framework. All the backend login is imbedded in the controller file. Controller is responsible for all the background process that carried out by Laravel framework. It interact with the database and fetch data from database that is linked with the controller module and transfer control over frontend files.

```
19 Route::get("my_info", "UserController@my_info");
20
21
22 //Updated Timeline Model
23
24 Route::get("/loginpage", "StudentController@login_page");
25 Route::post("/submitbtnurl", "StudentController@login_validation");
26 Route::get("/adddatabtn/{admission_number}", "StudentController@adddatabtn");
27
28 Route::get("/homepage/{admission_number}", "StudentController@homepage");
29
30 Route::get("/verify_url", "StudentController@verify_url");
31 Route::get("/admin", "StudentController@admin_homepage");
32
33 Route::get("/verifydata/{id}/{student_id}/{valid}", "StudentController@verifydata");
34
35 Route::post("/verify", "StudentController@verify");
36
37 Route::get("/showtimelinebtn/{admission_number}", "StudentController@showtimelinebtn");
38
39 Route::get("/showskillsbtn/{admission_number}", "StudentController@showskillsbtn");
40
41 Route::get("/addskillsAndaboutbtn/{admission_number}", "StudentController@addskillsAndaboutbtn");
42
43
44 Route::get("/updatedatabtn/{admission_number}", "StudentController@updatedatabtn");
45
46 Route::get("/editdatabtn/{id}/{admission_number}", "StudentController@editdatabtn");
47
48 Route::get("/deletedatabtn/{id}", "StudentController@deletedatabtn");
49
50 Route::post("/editdata", "StudentController@editdata");
51 Route::post("/addskillsAndabout", "StudentController@addskillsAndabout");
52 Route::post("/adddata", "StudentController@adddata");
53
54
55 //CRUD MODEL START
```

Fig(5.6.2)-Route File

Description –

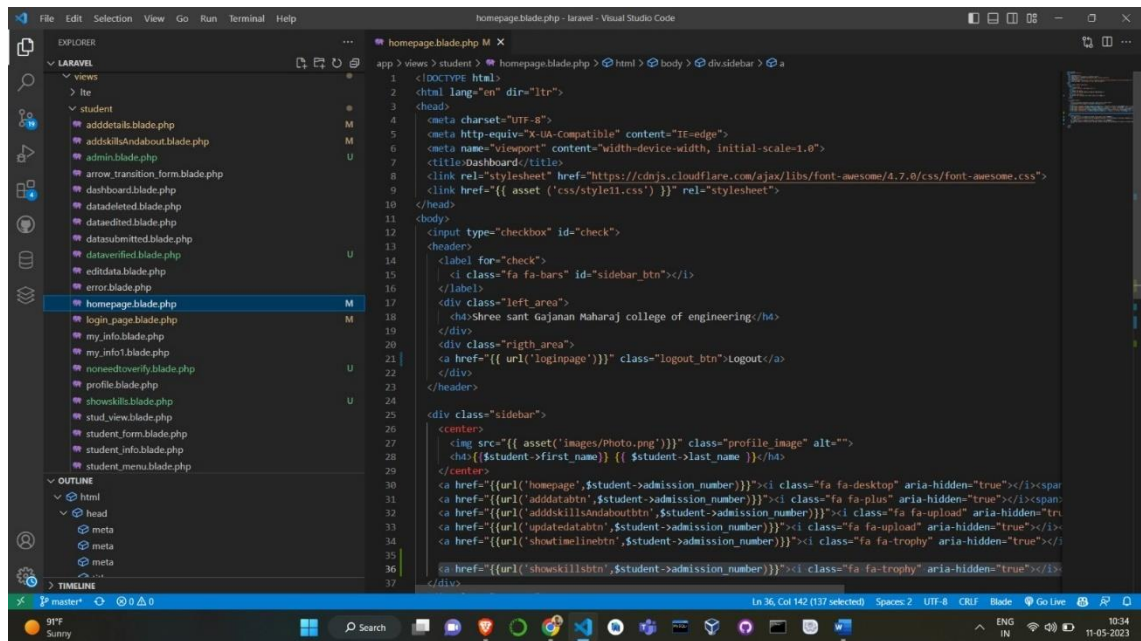
The route file is responsible for transfer of action from one activity to another. Basically give route to the various url, it redirect it towards mentioned functions in controller file and vice versa. It first transfer control from view file to controller and again from controller to view file. You can also integrate variable values with it for database operations and many more.

```
29 'default' => 'mysql',
30
31
32 /*
33 -----
34 Database Connections
35 -----
36
37 Here are each of the database connections setup for your application.
38 Of course, examples of configuring each database platform that is
39 supported by Laravel is shown below to make development simple.
40
41 All database work in Laravel is done through the PHP PDO facilities
42 so make sure you have the driver for your particular database of
43 choice installed on your machine before you begin development.
44
45 */
46
47 'connections' => array(
48
49     'sqlite' => array(
50         'driver' => 'sqlite',
51         'database' => _DIR_.'/../database/production.sqlite',
52         'prefix' => '',
53     ),
54
55     'mysql' => array(
56         'driver' => 'mysql',
57         'host' => 'localhost',
58         'database' => 'timeline',
59         'port' => 3306,
60         'username' => 'root',
61         'password' => 'Prananjay@12',
62         'charset' => 'utf8mb4',
63         'collation' => 'utf8mb4_unicode_ci',
64         'prefix' => '',
65     ),
66 ),
```

Fig(5.6.3)- Model File

Description-

Database Model file is defined for the database connectivity between the project and various databases like mySql, plsql, oracle, etc. It has the connectivity setting like various dependancies required for connectivity, database password version and other specifications. without a proper connectivity your project will not work accurately. You first need to establish the database connection to perform create, retrieve, update, and delete operation.



```

1 <!DOCTYPE html>
2 <html lang="en" dir="ltr">
3 <head>
4 <meta charset="UTF-8">
5 <meta http-equiv="X-UA-Compatible" content="IE=edge">
6 <meta name="viewport" content="width=device-width, initial-scale=1.0">
7 <title>Dashboard</title>
8 <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.css">
9 <link href="{{ asset('css/style11.css') }}" rel="stylesheet">
10 </head>
11 <body>
12 <input type="checkbox" id="check">
13 <div class="checkbox">
14 <label for="check">
15 <i class="fa fa-bars" id="sidebar_btn"></i>
16 </label>
17 <div class="left_area">
18 <h3>Shree sant Gajanan Maharaj college of engineering</h3>
19 </div>
20 <div class="right_area">
21 <a href="{{ url('loginpage') }}" class="logout_btn">Logout</a>
22 </div>
23 </div>
24 <div class="sidebar">
25 <div class="center">
26 
27 <h4>{{ $student->first_name }} {{ $student->last_name }}</h4>
28 </div>
29 <div class="list">
30 <a href="{{ url('homepage', $student->admission_number) }}"><i class="fa fa-desktop" aria-hidden="true"></i><span>
31 <a href="{{ url('adddatabtn', $student->admission_number) }}"><i class="fa fa-plus" aria-hidden="true"></i><span>
32 <a href="{{ url('addskillsandaboutbtn', $student->admission_number) }}"><i class="fa fa-upload" aria-hidden="true"></i>
33 <a href="{{ url('updatedatabtn', $student->admission_number) }}"><i class="fa fa-upload" aria-hidden="true"></i>
34 <a href="{{ url('showtimeinebtn', $student->admission_number) }}"><i class="fa fa-trophy" aria-hidden="true"></i>
35 </div>
36 </div>
37 </div>

```

Fig(5.6.3) - View File

Description-

The view file is the frontend file responsible for the user interface that shows to the user. It is coded in html/css and bootstrap components so that user can experience a friendly environment while interacting with the web-application. It is save as filename .blade. php. The data is fetch and showed in this file and the variable data values are transfer to controller function with the help of routes file.

```

MySQL 8.0 Command Line Client
-----+-----
9 rows in set (0.20 sec)

mysql> use timeline;
Database changed
mysql> show tables;
+-----+-----+
Tables_in_timeline
+-----+-----+
batches
branches
courses
institutes
organizations
sections
sessions
student_certificates
students
students_batches
students_skillsandabout
terms
+-----+-----+
12 rows in set (0.04 sec)

mysql>
    
```

Fig(5.6.4) – Total Tables in Databases

```

Select MySQL 8.0 Command Line Client
mysql> describe students;
+-----+-----+-----+-----+-----+-----+
Field | Type | Null | Key | Default | Extra
+-----+-----+-----+-----+-----+-----+
id | int unsigned | NO | PRI | NULL | auto_increment
admission_number | varchar(32) | NO | UNI | NULL |
admission_date | date | YES | | NULL |
admission_year | varchar(4) | YES | | NULL |
enrollment_no | int | NO | | NULL |
first_name | varchar(30) | NO | | NULL |
middle_name | varchar(30) | NO | | NULL |
last_name | varchar(30) | NO | | NULL |
gender | varchar(1) | NO | | NULL |
date_of_birth | date | NO | | NULL |
mothers_name | varchar(30) | NO | | NULL |
mothers_age | int | NO | | NULL |
fathers_name | varchar(30) | YES | | NULL |
fathers_age | int | YES | | NULL |
parents_income | decimal(12,2) unsigned zerofill | YES | | NULL |
birth_place | varchar(30) | NO | | NULL |
handicap | tinyint(1) | NO | | NULL |
email | varchar(255) | NO | | NULL |
photo | mediumblob | YES | | NULL |
is_mobile_update | char(1) | YES | | NULL |
sms_enabled | tinyint(1) | NO | | NULL |
status | varchar(1) | NO | | NULL |
is_active | tinyint(1) | YES | | 1 |
hostel | tinyint(1) | NO | | NULL |
scholarship | tinyint(1) | NO | | NULL |
caste | varchar(20) | YES | | NULL |
caste_category | varchar(20) | YES | | NULL |
user_id | int unsigned | NO | MUL | NULL |
bloodgroup_id | int unsigned | YES | MUL | NULL |
nationality_id | int unsigned | NO | MUL | NULL |
language_id | int unsigned | NO | MUL | NULL |
religion_id | int unsigned | NO | MUL | NULL |
category_id | int unsigned | NO | MUL | NULL |
admission_category_id | int unsigned | NO | | NULL |
student_category_id | int unsigned | NO | | NULL |
address_id | int unsigned | NO | MUL | NULL |
parent_id | int unsigned | NO | MUL | NULL |
created_at | timestamp | NO | | 0000-00-00 00:00:00 |
updated_at | timestamp | NO | | 0000-00-00 00:00:00 |
image_path | varchar(255) | YES | | NULL |
sign_image_path | varchar(255) | YES | | NULL |
aadhar_number | varchar(20) | YES | | NULL |
bank_name | varchar(255) | YES | | NULL |
bank_acc_number | int | YES | | NULL |
ifsc_code | int | YES | | NULL |
bank_passbook_image | varchar(255) | YES | | NULL |
aadhar_card_image | varchar(255) | YES | | NULL |
language_code | char(2) | YES | | NULL |
nationality | varchar(10) | YES | | NULL |
category | varchar(10) | YES | | NULL |
height | int | YES | | NULL |
weight | int | YES | | NULL |
pan_number | varchar(10) | YES | | NULL |
passport_number | int | YES | | NULL |
election_number | int | YES | | NULL |
drillc_number | int | YES | | NULL |
organization_id | int unsigned | YES | | NULL |
institute_id | int unsigned | YES | | NULL |
is_deleted | tinyint(1) | YES | | 0 |
created_by | varchar(32) | NO | | NULL |
+-----+-----+-----+-----+-----+-----+
60 rows in set (0.03 sec)
    
```

Fig(5.6.5) – Parent Table Student Description

```
mysql> describe batches;
```

Field	Type	Null	Key	Default	Extra
id	int unsigned	NO	PRI	NULL	auto_increment
org_id	int unsigned	YES		NULL	
institute_id	int unsigned	YES		NULL	
batch_name	varchar(30)	NO		NULL	
academic_year	varchar(30)	NO		NULL	
session	varchar(7)	NO		NULL	
start_date	date	YES		NULL	
end_date	date	YES		NULL	
start_date_2	date	NO		NULL	
end_date_2	date	NO		NULL	
course_id	int unsigned	NO	MUL	NULL	
section_id	int unsigned	YES		NULL	
section_id	int unsigned	NO		NULL	
is_active	tinyint(1)	YES		0	
deleted_at	timestamp	YES		NULL	
created_at	timestamp	NO		0000-00-00 00:00:00	
updated_at	timestamp	NO		0000-00-00 00:00:00	
reason	varchar(30)	YES		NULL	
description	varchar(255)	YES		NULL	
organization_id	int unsigned	YES		NULL	
is_deleted	int unsigned	NO		0	

11 rows in set (0.00 sec)

Fig(5.6.6) – Batches Table Description

```
MySQL 8.0 Command Line Client
mysql> describe branches;
```

Field	Type	Null	Key	Default	Extra
id	int unsigned	NO	PRI	NULL	auto_increment
branch	varchar(20)	YES		NULL	
org_id	int unsigned	YES		NULL	
institute_id	int unsigned	YES		NULL	
description	varchar(255)	YES		NULL	
code	varchar(5)	NO		NULL	
course_id	int unsigned	YES	MUL	NULL	
start_date	date	YES		NULL	
deleted_at	timestamp	YES		NULL	
created_at	timestamp	NO		0000-00-00 00:00:00	
updated_at	timestamp	NO		0000-00-00 00:00:00	
is_active	tinyint(1)	YES		1	
default_branch	tinyint(1)	YES		0	
end_date	date	YES		NULL	
reason	varchar(255)	YES		NULL	
organization_id	int unsigned	YES		NULL	
is_deleted	tinyint(1)	YES		NULL	

17 rows in set (0.09 sec)

Fig(5.6.7) – Branches Table Description

```

MySQL 8.0 Command Line Client
mysql> describe student_certificates;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id     | int  | NO   | PRI | NULL    | auto_increment |
| student_id | int  | NO   |     | NULL    |                 |
| type   | varchar(50) | NO   |     | NULL    |                 |
| title  | varchar(50) | NO   |     | NULL    |                 |
| provided_by | varchar(50) | YES  |     | NULL    |                 |
| description | varchar(255) | YES  |     | NULL    |                 |
| skills | varchar(255) | YES  |     | NULL    |                 |
| start_date | date | YES  |     | NULL    |                 |
| end_date | date | YES  |     | NULL    |                 |
| valid   | tinyint(1) | YES  |     | 0       |                 |
| year   | int   | YES  |     | 0       |                 |
| semester | tinyint(1) | YES  |     | NULL    |                 |
| serial_number | varchar(50) | YES  | UNI | NULL    |                 |
| link_name | varchar(255) | YES  |     | NULL    |                 |
| link    | varchar(255) | YES  |     | NULL    |                 |
| is_deleted | tinyint(1) | YES  |     | 0       |                 |
+-----+-----+-----+-----+-----+-----+
16 rows in set (0.05 sec)

mysql>
    
```

Fig(5.6.8) – Student_certificates Table Description

```

MySQL 8.0 Command Line Client
mysql> describe students_skillsandabout;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id     | int  | NO   | PRI | NULL    | auto_increment |
| student_id | int  | YES  |     | NULL    |                 |
| student_skills | varchar(255) | YES  |     | NULL    |                 |
| student_about | varchar(255) | YES  |     | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.03 sec)

mysql>
    
```

Fig(5.6.9) – students skills and about Table Description


```

mysql> describe terms;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default         | Extra          |
+-----+-----+-----+-----+-----+-----+
| id             | int unsigned | NO   | PRI | NULL            | auto_increment |
| term          | int unsigned | YES  |     | NULL            |                |
| batch_id      | int unsigned | NO   |     | NULL            |                |
| description    | varchar(255) | NO   |     | NULL            |                |
| start_date    | date         | NO   |     | NULL            |                |
| end_date      | date         | NO   |     | NULL            |                |
| organization_id | int unsigned | NO   |     | NULL            |                |
| institute_id  | int unsigned | NO   |     | NULL            |                |
| is_active     | tinyint(1)   | NO   |     | 1               |                |
| is_deleted    | tinyint(1)   | NO   |     | 0               |                |
| created_at    | timestamp    | NO   |     | 0000-00-00 00:00:00 |                |
| updated_at    | timestamp    | NO   |     | 0000-00-00 00:00:00 |                |
| deleted_at    | timestamp    | NO   |     | 0000-00-00 00:00:00 |                |
+-----+-----+-----+-----+-----+-----+
13 rows in set (0.00 sec)

mysql>
    
```

Fig(5.6.12) – Terms Table Description

```

mysql> describe sessions;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default         | Extra          |
+-----+-----+-----+-----+-----+-----+
| id             | int unsigned | NO   | PRI | NULL            | auto_increment |
| session       | varchar(7)   | YES  |     | NULL            |                |
| start_month   | date         | YES  |     | NULL            |                |
| end_month     | date         | YES  |     | NULL            |                |
| description    | varchar(255) | YES  |     | NULL            |                |
| organization_id | int unsigned | YES  |     | NULL            |                |
| institute_id  | int unsigned | YES  |     | NULL            |                |
| is_active     | tinyint(1)   | YES  |     | 0               |                |
| created_at    | timestamp    | NO   |     | CURRENT_TIMESTAMP | DEFAULT_GENERATED on update CURRENT_TIMESTAMP |
| updated_at    | timestamp    | NO   |     | 0000-00-00 00:00:00 |                |
| deleted_at    | timestamp    | NO   |     | 0000-00-00 00:00:00 |                |
| is_deleted    | tinyint(1)   | YES  |     | 0               |                |
+-----+-----+-----+-----+-----+-----+
12 rows in set (0.00 sec)

mysql>
    
```

Fig(5.6.13) – Session Table Description

Technology Stack:

Model-View-Controller(MVC):MVC (Model-View-Controller) is use in project to a pattern in software design commonly used to implement user interfaces, data, and controlling logic. It emphasizes a separation between the software's business logic and display. This "separation of concerns" provides for a better division of labor and improved maintenance. The MVC works in the project controller receives the request for the application and passes it to the model to send and receive data. The view then uses the data from the controller to generate presentable information to the end-user.

The three parts of the MVC software-design pattern can be described as follows:

1. Model: Manages data and business logic.
2. View: Hand layout and display.
3. Controller: Routes commands to the model and view part

Let's understand this MVC concept in detail:

Model:-

- The Model object knows all about all the data that need to be displayed.
- The Model represents the application data and business rules that govern to an update of data.
- Model is not aware about the presentation of data and How the data will be display to the browser.

View:-

- The View represents the presentation of the application.
- View object refers to the model remains same if there are any modifications in the Business logic.
- In other words, we can say that it is the responsibility of view to maintain consistency in its presentation and the model changes.

Controller:-

- Whenever the user sends a request for something, it always goes through Controller.
- A controller is responsible for intercepting the request from view and passes to the model for appropriate action.
- After the action has been taken on the data, the controller is responsible for directly passes the appropriate view to the user.

- In graphical user interfaces, controller and view work very closely together.

Laravel: Laravel is an open-source PHP framework, which is robust and easy to understand. It follows a model-view-controller design pattern. Laravel reuses the existing components of different frameworks which helps in creating a web application. The web application thus designed is more structured and pragmatic. The Laravel framework uses an ORM (Object Relational Mapping) called Eloquent, which is, in fact, a huge advantage to keep in mind when deciding what PHP framework to opt for. It is a built-in implementation that is also the best ORM among all other PHP frameworks. We develop project 74 aravel provides an interface to an existing database. This tutorial series shows you how to automatically generate code that enables users to display, edit, create, and delete data that resides in a database table. The Laravel Schema © provides database agnostic support for creating and manipulating tables across all of Laravel's supported database systems. Typically, migrations will use this © to create and modify database tables and columns.

PHP Laravel Features:

One of the key reasons why Laravel is the most popular framework for PHP is because of the many features it has. Let's look at some of the core features built-in this framework.

Modularity: Laravel has over 20 built-in libraries and modules that help in boosting the functionality of your web application. Each of the modules is integrated with the Composer dependency manager making the process of making updates much easier.

Routing: Laravel makes it much easier for the user to define the routes of their web application. With much faster routing, scaling up the application to boost the performance is also made easier.

Configuration Management: Web applications built using Laravel will be running on different environments, which means there will be a constant change in its configuration. Laravel provides a reliable and efficient approach to handling these configurations.

Email: If you want to add emailing functionality in your application, Laravel includes the mail class that helps send a mail with rich content and attachments from your web app. All this can be integrated without writing all this code from scratch.

Authentication: Every web application requires users to log in order to get a personalized experience while using the app. This requires the application to have authentication capabilities in order to give access to the rightful owners of the account. Laravel makes designing authentication easier with its features, including register, forgot password, and send password reminders.

PHP: PHP is use in project to create dynamic content and interact with databases. PHP is known for its simplicity, speed, and flexibility. PHP(short for Hypertext PreProcessor) is the most widely used open source and general purpose server side scripting language used mainly in web development to create dynamic websites and applications. It is not only used to build the web apps of many tech giants like Facebook but is also used to build many CMS (Content Management System) like WordPress, Drupal etc. PHP can actually do anything related to server-side scripting or more popularly known as the backend of a website. For example, PHP can receive data from forms, generate dynamic page content, can work with databases, create sessions, send and receive cookies, send emails etc. There are also many hash functions available in PHP to encrypt user's data that makes PHP secure and reliable to be used as a server-side scripting language. So these are some of the abilities of PHP that makes it suitable to be used as server-side scripting language. You will get to know more of these abilities in further tutorials. Even if you are not convinced by the above abilities of PHP, there are some more features of PHP. PHP can run on all major operating systems like Windows, Linux, Unix, Mac OS X etc. Almost all of the major servers available today like Apache supports PHP. PHP allows using wide range of databases. PHP programming can be used to create most things that a project needs. However, there are three main use in project Server-side scripting : Server-side Script is PHP's main strength. If you are just learning to code and want to explore server-side scripting, PHP is a great language to learn. To get cracking with PHP server-side scripting you'll need to have a PHP parser, web server and web browser.

Command-line scripting: Command-line scripting is ideal for scripts made using (Linux) or Task Scheduler (Windows). It is also great for simple text processing.

Writing desktop applications: PHP is probably not the best language to use to create desktop applications but for the advanced web developer, it provides you with more options than its competitors.

HTML & CSS: HTML use to create and structure sections, headings, links, paragraphs, and more, on a website using various tags and elements. HTML provides the structure of the page, CSS the (visual and aural) layout. Along with graphics and scripting, HTML and CSS are the basis of building Web pages and Web Applications. Is the language for describing the presentation of Web pages, including colors, layout, and fonts. It allows one to adapt the presentation such as large screens, small screens, or printers. CSS is independent of HTML and can be used with any XML-based markup language. The separation of HTML from CSS makes it easier to maintain sites, share style sheets across pages, and tailor pages to different environments. This is referred to as the separation of structure from presentation. If you're thinking of building a website, then you'll almost certainly have come across the acronyms HTML and CSS. These two essential tools form some of the foundations of any webpage. However, although they're often used in conjunction with each other, they both serve very different purposes when it comes to web coding. The key differences lie in their implementation, ease of use, their various features, and how they are structured, but at the end of the day, both HTML and CSS are the keys to unlocking how the World Wide Web works. Let's dive into the details of both HTML and CSS, what they're used for, The three main ones are elements, tags, and attributes.

MYSQL: is a database management system that is used to maintain relational databases. It is an open source software backed by Oracle Corporation. This was originally founded by a Swedish company called MYSQL AB which was later acquired by sun micro systems and finally is with Oracle Corporation. It is an open-source database system, the source code can be modified according to our needs. MySQL is a scalable, fast, and reliable database management system which can run on any platform like Windows, Unix, Linux, etc., and can be installed on the desktop or any server machine. Under a client-server networked environment, MySQL server is available as a separate program. Also, it is available as a library that can be linked to separate applications. There are several utility programs supporting the administration of the MySQL database. Mysql clients are installed on computers in the network. Instructions are sent from mysql client to mysql server, and then the mysql server acts on it accordingly. In spite of mysql is installed on one machine, it is capable of sending databases to multiple locations, and users are able to access the

same using different MySQL client interfaces. The results are displayed as these interfaces transmit the SQL statements to servers. MySQL is a popular open-source relational database management system (RDBMS) used to store, manage, and retrieve data. It is developed by Oracle Corporation and is written in C and C++. MySQL supports various platforms, including Windows, Linux, and macOS, and can be used with several programming languages such as PHP, Java, Python, and Ruby. MySQL uses a client-server architecture, where the server manages the data storage, data retrieval, and processing, and the client provides the interface to access the server. The client can be a command-line interface or a graphical user interface (GUI) tool, such as MySQL Workbench or PHPMyAdmin. MySQL supports SQL (Structured Query Language), which is a standard language used to interact with relational databases. SQL is used to create, modify, and delete tables, as well as to insert, update, and retrieve data from those tables. MySQL also provides additional functionality, such as stored procedures, triggers, and views, to support complex data management and manipulation. MySQL is widely used in web applications, content management systems, and other software applications that require efficient data storage and retrieval. Its popularity is due to its ease of use, reliability, scalability, and cost-effectiveness. Additionally, MySQL has a large and active community of developers and users, which provides extensive support and resources for users.

Advantages of MySQL:

- Open source: MySQL is open source, which means it is free to use and distribute.
- Scalability: MySQL can handle large amounts of data and can be scaled up or down depending on the requirements of the application.
- High performance: MySQL is optimized for high performance, making it suitable for applications that require fast data access and processing.
- Reliability: MySQL is known for its reliability and is widely used in mission-critical applications.
- Security: MySQL provides robust security features such as encryption, authentication, and access control.

- Ease of use: MySQL is easy to install and use, and it supports various programming languages

Uses of MySQL:

- Web applications: MySQL is widely used in web applications to store and retrieve data.
- Content management systems: MySQL is used in popular content management systems such as WordPress, Joomla, and Drupal.
- E-commerce: MySQL is used in e-commerce applications to store product information, customer data, and transaction details.
- Analytics: MySQL is used in data analytics applications to store and analyze large amounts of data.
- Mobile applications: MySQL can be used in mobile applications to store user data, preferences, and other information.

Disadvantages of MySQL:

- Limited features: Some advanced features are not available in the free version of MySQL, and users have to purchase the enterprise version to access these features.
- Performance issues: MySQL may have performance issues when dealing with complex queries and large data sets.
- Security vulnerabilities: Like any software, MySQL can be vulnerable to security threats if not configured properly or updated regularly

Applications of MySQL:

- Facebook: MySQL is used by Facebook to store and manage user data, activity logs, and other information.
- Twitter: MySQL is used by Twitter to store user data, tweets, and other information.

- YouTube: MySQL is used by YouTube to store and manage user data, video metadata, and other information.
- Airbnb: MySQL is used by Airbnb to manage and store user data, property information, and other details.
- Netflix: MySQL is used by Netflix to store and manage user data, viewing history, and other information.

5.7 TESTING:

Unit Testing

The primary goal of unit testing is to take the smallest piece of testable software in the application, isolate it from the remainder of the code, and determine whether it behaves exactly as you expect. Each unit is tested separately before integrating them into modules to test the interfaces between modules. Unit testing has proven its value in that a large percentage of defects are identified during its use. Unit testing is a software verification and validation method where the programmer gains confidence that individual units of source code are fit for use. A unit is the smallest testable part of an application. In procedural programming a unit may be an individual program, function, procedure, etc., while in object- oriented programming, the smallest unit is a class, which may belong to a base/super class, abstract class or derived/child class. Ideally, each test case is independent from the others: substitutes like method stubs, mock objects, fakes and test harnesses can be used to assist testing a module in isolation. Unit tests are typically written and run by software developers to ensure that code meets its design and behaves as intended. Its implementation can vary from being very manual (pencil and paper) to being formalized as part of build automation.

Integration Testing:

The main function or goal of this testing is to test the interfaces between the units/modules. This testing makes sure that the integrated modules/components work properly.

Integration testing can be started once the modules to be tested are available. It does not require the other module to be completed for testing to be done, as Stubs and Drivers can be used for the same.

It detects the errors related to the interface.

It's a combination of performing the established metrics in the process of interaction with a particular visual product. Such test cases are completely different from typical unit tests which test the parts of utility which are independent of each other.

Usually, integration tests allow your application to process particular information blocks (for example, the logic of visiting a particular web page after certain manipulations) and check the functionality of the utility to be responsible for established commands.

In its nature, every integration test interacts with Laravel application in the same way as with a simple black box.

They don't "care" what is inside the utility, the obtained result is above all.

To conclude, we can say that we have thoroughly analyzed the process of testing in Laravel environment which supports a program structure of PHP Unit in its environment. The bases, analyzed the principles of building unit and functional tests and also understood some peculiarities of testing in the particular functional context of Laravel.

Validation testing:

At the validation level, testing focuses on user visible actions and user recognizable output from the system. Validations testing is said to be successful when software functions in a manner that can be reasonably expected by the customer. Two types of validation testing Alpha testing is simulated or actual operational testing by potential users/customers or an independent test team at the developers' site. Alpha testing is often employed for off-the-shelf software as a form of internal acceptance testing, before the software goes to beta testing. Beta testing comes after alpha testing. Versions of the software, known as beta version, are released to a limited audience outside of the programming team. The software is released to groups of people so that further testing can ensure the product has few faults or bugs. Sometimes, beta versions are made available to the open public to increase the feedback field to a maximal number of future users.

Validation testing is a complex process that involves finding and testing every user need or requirement to ensure they function well. Here are the basic phases of validation testing:

1. Design qualification

The process of design qualification, or DQ, includes creating a list of end-user business requirements and designing a validation testing plan to address them before launching the product. This plan can also be a useful written record of the design specifications that the developer and consumer desire. After writing the testing plan, development

teams can seek approval from managers or shareholders before they begin the testing process.

2. Installation qualification

Installation qualification, or IQ, involves installing the software according to the validation testing plan. Product development teams may ensure that both system hardware and the installation process itself match the design specifications. This phase also involves ensuring that the test environment is suitable for product operation and matches the environment in which the product is likely to perform once the company releases it to the public.

3. Operational qualification

Operational qualification, or OQ, involves testing the product with a variety of testing operations to ensure the product meets the specified user requirements. Important validation testing techniques include unit testing, integration testing and system testing. These are all different types of functionality testing, which can determine if various elements of the software function according to the user requirements.

Software development teams can follow the plan from the design qualification phase to ensure they test every product specification in the appropriate environment. It's useful for product development team members to record these tests carefully to create a written record of the software performance. They can also record the creation of deliverables and ensure those deliverables are satisfactory through a deliverable approval process.

4. Performance qualification

Performance qualification, or PQ, testing verifies that a product can perform according to business needs in the real world. Developers on the internal team can perform alpha testing to assess the functionality of the software under simulated real-world conditions. After performing their own testing, a product development team can offer clients the chance to test the product through a process called beta testing.

In beta testing, an external client can use the product and identify bugs or technical challenges. They can then report this information back to the development team, allowing them the opportunity to make changes before releasing the product to the public. After receiving approval from the beta testers, the product may be ready for production and deployment.

5. Production

After completing all levels of validation testing, a software product may go into production. This means that the product is ready to be marketed and sold to consumers. The software development team might help facilitate the deployment and installation process. The company can also offer technical assistance to individuals experiencing minor technical challenges in the product. If they discover a major technical bug, the development team can address it by devising a solution and release a software update.

CONCLUSION

The main goal of the project is to create an system where students can show their extracurricular activities like courses, internships, vlogs, social media links throughout their academics. It highlights the importance of time management for students and its impact on academic success. Effective time management skills allow students to prioritize their academic tasks and allocate sufficient time to each task. The study also suggests that several factors affect students' ability to manage their time effectively, and these factors need to be addressed to improve students' time management skills. The findings of this study can be used to develop programs and interventions to help students improve their time management skills and enhance their academic performance.

USER MANUAL

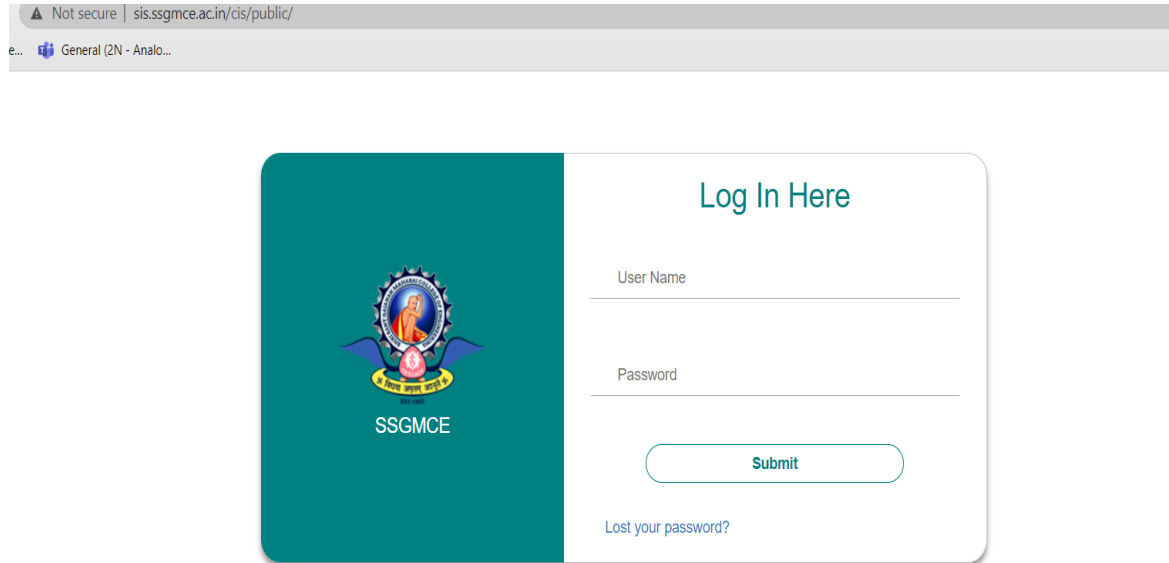


Fig (a) – Login Page

Description – Figure shows login page you need to login with your credentials. This is the Login activity page where the user have to give there student Id number and password. If his input credentials are correct the user will be able to get into the application and will have the access to the application. If in case, the user forgets or did not remember his password then there is the option of Forget Password just below the password input block. By clicking on the Forget Password, the user will get the option to reset his password. For reset password, it will just ask the user for his student id. By user id, the user will get his password reset. Also if the user wants goggle to remember his password then he can simply check on the remember me box. If the user enters any of his credential incorrect then then he/she will not be able to logged in into the application. So, to login into the application, the user must enter the correct student id and password.

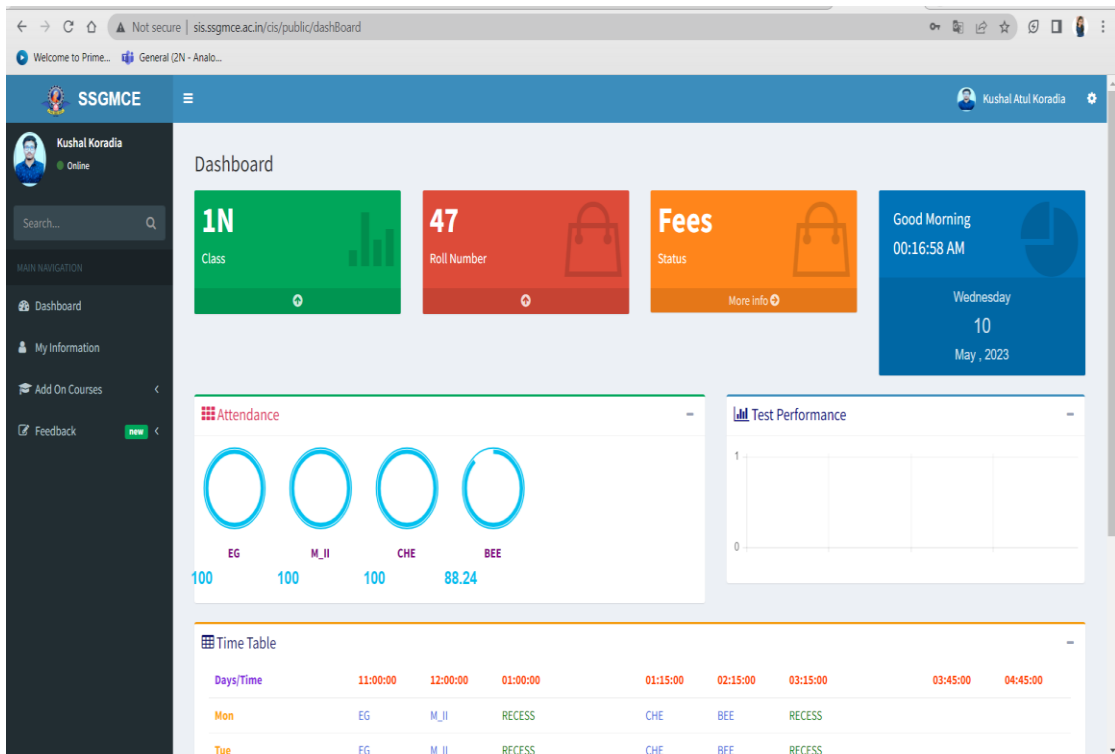


Fig (b) – Student Dashboard

Description –

A student dashboard is an essential component of a Student Information System (SIS) that provides students with a centralized platform to access and manage their academic information and resources. It serves as a personalized portal where students can easily navigate through various features and functionalities tailored to their individual needs. The student dashboard acts as a one-stop solution, empowering students to stay informed, engaged, and organized throughout their educational journey. This dashboard shows us the attendance of students, class test performance, fee structure, class, roll number, timetable and many more features.

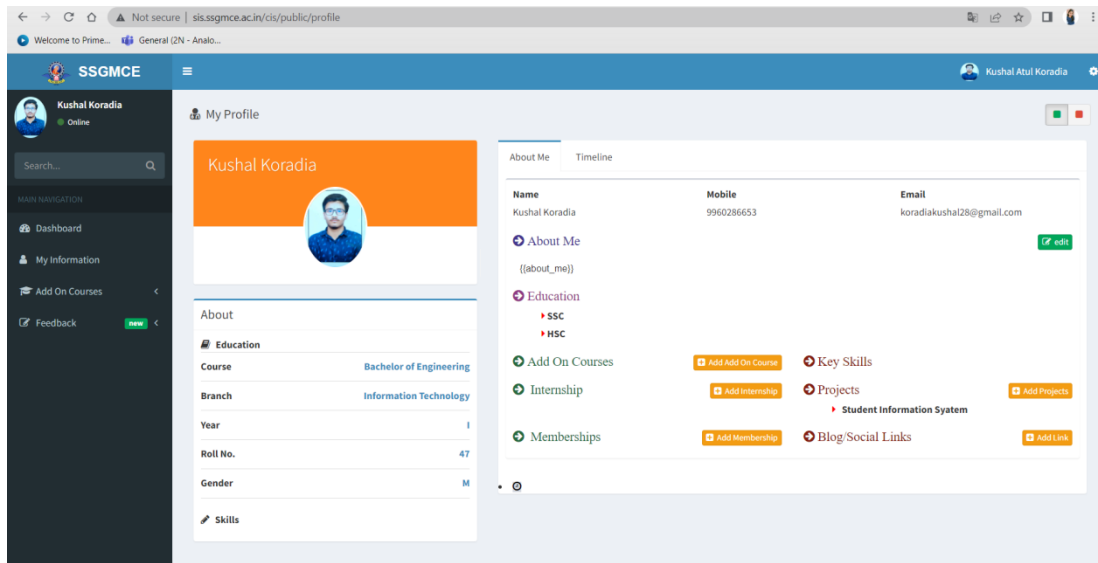
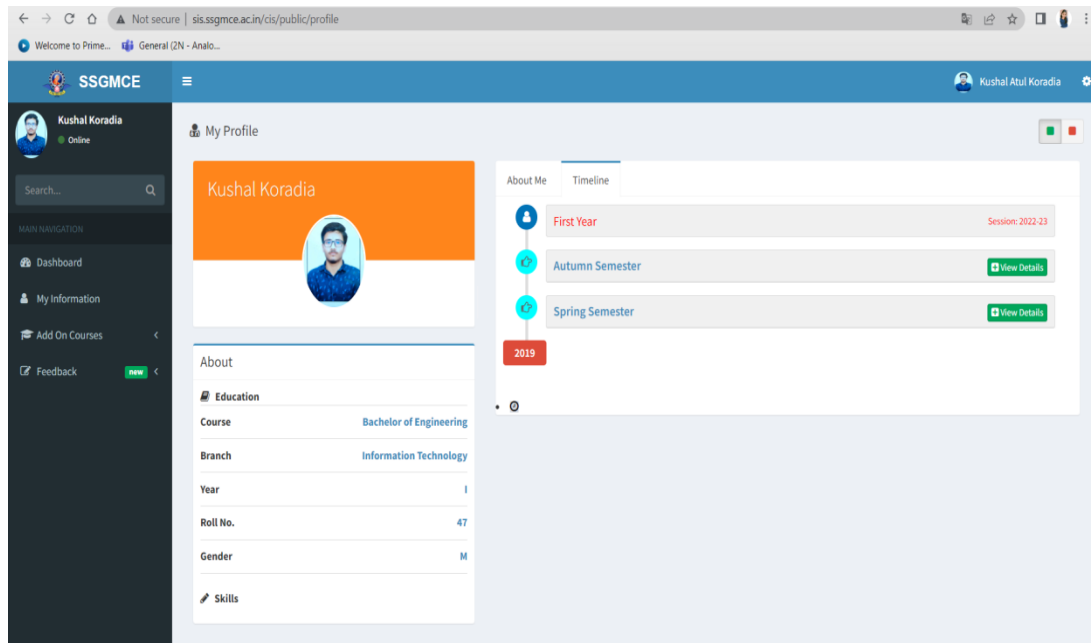


Fig (c) – Student Profile

Description –

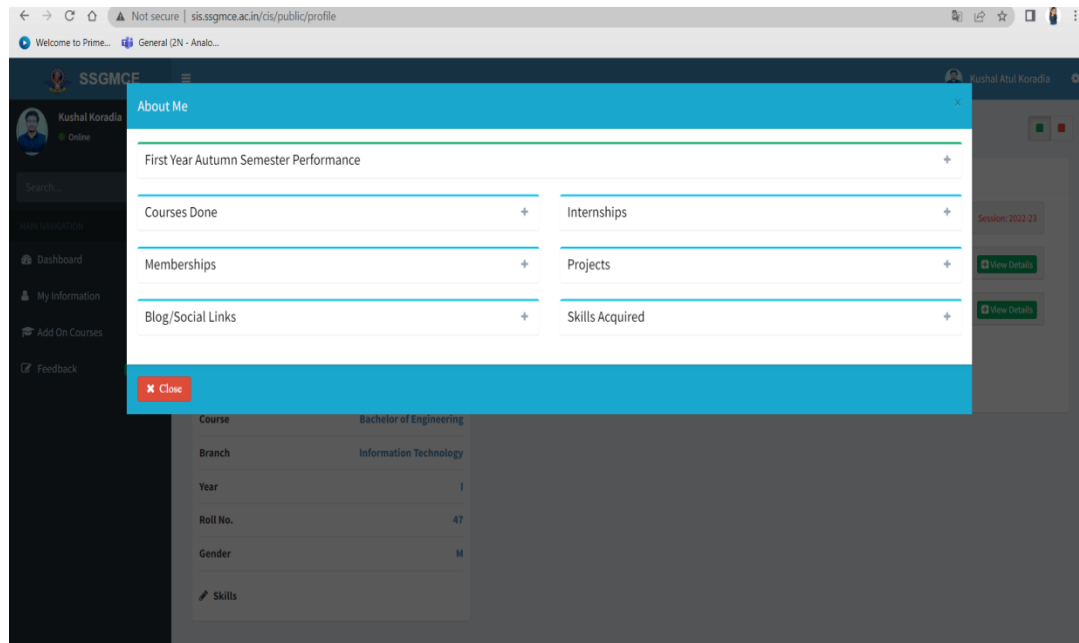
The student profile captures a range of essential details that are vital for maintaining accurate records and ensuring efficient administration. The personal information section includes the student's full name, date of birth, gender, contact information, and emergency contact details. This information helps identify and communicate with the student effectively. Additionally, it may include demographic details such as nationality, ethnicity, and primary language, which can be used for reporting and analysis purposes. Student profile in a Student Information System (SIS) is a comprehensive record that contains personal, academic, and administrative information about an individual student. It serves as a centralized repository of data, allowing educational institutions to effectively manage student records and support administrative processes. The student profile captures crucial information such as personal details, academic history, enrollment information, course schedules, advising and support information, and financial details. It facilitates efficient communication, supports informed decision-making, and promotes student success throughout their educational journey.



Fig(d) – Student Timeline

Description –

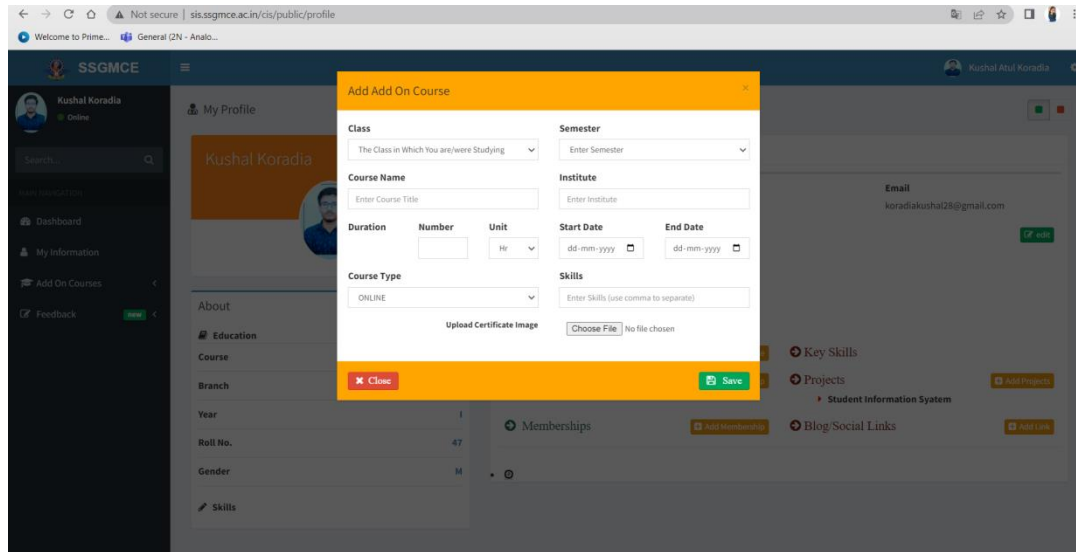
Student timeline shows the data from first year to final year in a timeline manner from bottom to upwards directions. Each year consists of two semester followed by new year. If a student is in first year then the timeline only display upto first year. In this way the timeline will only be visible from the students first year till student current academic year. Each year has a session return on right side of the bar and each semester has view details button to display dialog box like structure to showcase the courses, internship, membership, etc. details of each semester. Whole details are organize in the terms of semester.



Fig(e) – View Details Box

Description-

This view details box will appear after clicking on view details button. This include their academic as well as non-academic activities technical academic data like internships done in a particular time period, technical courses done by students that are assigned by college faculty as well as done by themselves to gain technical knowledge and to get proficient, certificates earn by completing courses, workshops and by participating in hackathons, national level competition, etc. throughout the academics and non-academic data of students like sports participation, outdoor activities and social media blogs, etc.



Fig(f) Add Details

Description –

The “Add Details” box may also contain fields for non-technical academic data, including extracurricular activities, community service, and honors and awards. This information provides a holistic view of the student’s academic experience and achievements, which can be used to support various administrative processes. For example, this information can be used to evaluate a student’s eligibility for scholarships, awards, and leadership positions.

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DISSEMINATION OF WORK

Journal Publications

[1] Prananjay Kandekar, Vrushali Pawar, Anjali Rathod, Omkar Mante, Prof. Pallavi Bute, “Student Timeline System For Students” International Journal of Advance Research in Science Communication and Technology (IJARSCT 2023), Volume 3, Issue 3, May-2023. ISSN (Online) 2581-9429.





Student Time Line System for Students

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Abstract: Student management is of the most important term in institutional organization; Organizations will have to keep a track of people within the organization such as employees and students to maximize their performance. Managing or we can say keeping track on there records is not a simple task. Getting those are easy but keeping them manual is major issue and hard to handle. For this, an efficient Web-based application for student Information system is designed to track student's activity in the overall academics. This Web application keep hold of records of all students and showcase there achievements in TimeLine. This system design using the Model, View, and Controller (MVC) Framework, and implemented using the power of Laravel Framework, for front end we used Plain HTML, CSS along with some Bootstrap. We are using MYSQL for saving those records. This System make sure every Student in organization gets his/hers information from Student Information System and not only for academics but also you can get your information after your Graduation this is main Purpose of System. This where our System get Separated from all other Existing System.

Keywords: Laravel framework, MVC, HTML, CSS, MYSQL, Bootstrap, model, view, controller

I. INTRODUCTION

Time management is an essential skill for students to succeed academically. A well-managed timeline allows students to allocate time to various academic tasks, including assignments, readings, and exams. Students who fail to manage their time effectively often struggle with academic performance and can fall behind in their coursework. This research paper examines the importance of time management for students and its impact on academic success. The study aims to investigate the factors affecting students' ability to manage their time effectively and create a timeline for their academic tasks.

A Student Timeline System is a tool designed to help students manage their time effectively and efficiently. It provides a visual representation of tasks and deadlines, allowing students to prioritize their workload and meet their academic goals. The system typically includes a calendar or planner, task manager, and reminders to help students stay on track and avoid procrastination.

In a research paper, the introduction would typically provide an overview of the topic and context of the study. If you are introducing a Student Timeline System, you may want to briefly discuss the importance of time management for academic success and the challenges that students face in managing their workload. You could also discuss the benefits of using a Student Timeline System, such as improved productivity, reduced stress, and better time management skills. It may also be helpful to provide a brief overview of the features and functionality of the system you are researching, including any unique or innovative aspects. You could also discuss the existing research on similar systems and any gaps in the literature that your study aims to address.

Finally, you should clearly state the research question or hypothesis that your study aims to answer, and provide an overview of the methodology and data analysis techniques you will use to address this question. This will help the reader understand the scope and purpose of your study, and provide context for the results and conclusions you will present later in the paper.

II. CONCEPTS OF MVC

MVC stands for Model-View-Controller, and it is a software design pattern that separates an application's data, user interface, and control logic into three interconnected components.

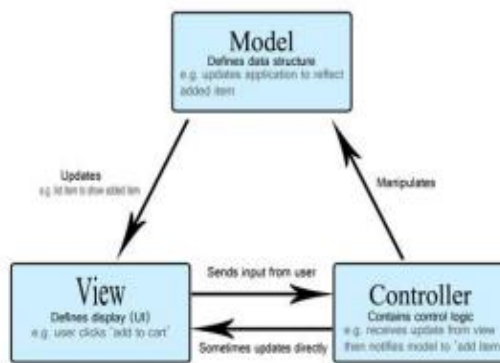


The Model component represents the data and the rules for manipulating that data. It is responsible for managing the application's data and providing the interface through which other components can access and manipulate it.

The View component represents the user interface and is responsible for displaying the data to the user. It is typically a graphical representation of the data provided by the Model component.

The Controller component acts as an intermediary between the Model and View components. It receives input from the user via the View component, processes that input, and updates the Model and View components accordingly. It is responsible for implementing the application's logic and coordinating the interaction between the Model and View components.

By separating an application's data, user interface, and control logic into distinct components, the MVC pattern promotes modular design and makes it easier to maintain and modify the application over time. It is widely used in web development, desktop applications, and mobile app development.



III. CONCEPTS OF LARAVEL MVC

Laravel is a well-known PHP web application framework that adopts the Model-View-Controller (MVC) architectural pattern.

In Laravel, the Model part represents the application's data and business logic, which normally interacts with the database using an Object-Relational Mapping (ORM) system like Eloquent.

The View component is responsible for displaying the application's data to the user. It is created using HTML, CSS, and JavaScript code that generates the user interface. Blade is the default templating engine in Laravel for creating views.

The Controller element handles user input and synchronizes the Model and View components. It contains the application's business logic and responds to HTTP requests, retrieves data from the Model, and sends it to the View for user presentation.

Laravel's routing system maps HTTP requests to Controller actions. The routes file specifies the URLs and HTTP verbs that trigger each Controller action.

Overall, Laravel's MVC pattern provides developers with an organized and modular approach to creating web applications. The segregation of responsibilities between the Model, View, and Controller components makes it simpler to maintain and expand applications over time.

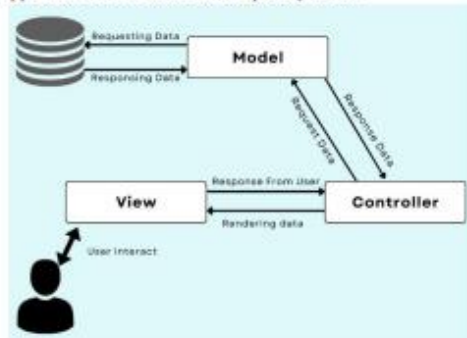
Laravel's implementation of the MVC pattern provides developers with a structured and modular approach to building web applications. The separation of concerns between the Model, View, and Controller components makes it easier to maintain and scale applications over time.

Some of the applications of Laravel in the MVC architecture include:

- Developing dynamic web applications and websites with complex business logic.
- Creating RESTful APIs to provide data to third-party applications or to build single-page applications.
- Developing enterprise-level web applications that require scalability, security, and maintainability.

- Building e-commerce platforms that require payment gateway integrations, customer management systems, and product catalogs.

Overall, Laravel's implementation of the MVC architecture provides developers with a powerful and flexible framework for building web applications of all sizes and complexity levels.



IV. PROPOSED SOLUTION

The proposed Student TimeLine System will be a digital platform that students can access through their computers, tablets, or smartphones. The system will have the following features:

Personal Scheduling: Students will be able to create and manage their personal schedules by adding their classes, study times, extracurricular activities, and other commitments. The system will allow students to set reminders for upcoming events and deadlines.

Academic Progress Tracking: The system will allow students to track their progress on academic assignments, such as essays, projects, and exams. Students will be able to input their grades and receive feedback from their instructors. The system will also provide students with insights into their overall academic performance, such as their GPA and class rank.

Collaboration: The system will allow students to collaborate with their peers on group projects and assignments. Students will be able to share documents, communicate with each other, and track their progress on shared tasks.

Support: The system will provide students with access to academic support resources, such as tutoring services, writing centers, and academic advisors. Students will be able to schedule appointments with these resources through the system.

V. METHODOLOGY

The research methodology involved collecting data through surveys and interviews with college students. The surveys were distributed online, and the interviews were conducted in person. The participants were asked to provide information on their time management strategies and the factors that influenced their ability to manage their time effectively. The study used both quantitative and qualitative analysis to analyze the data.

VI. RESULTS

The results of the study showed that effective time management skills are crucial for academic success. Students who prioritize their time wisely and create a timeline for their academic tasks perform better academically. The study also revealed that several factors influence students' ability to manage their time effectively. These factors include the student's level of motivation, self-discipline, and the availability of resources such as study materials and support from peers and faculty.



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VII. CONCLUSION

In conclusion, the study highlights the importance of time management for students and its impact on academic success. Effective time management skills allow students to prioritize their academic tasks and allocate sufficient time to each task. The study also suggests that several factors affect students' ability to manage their time effectively, and these factors need to be addressed to improve students' time management skills. The findings of this study can be used to develop programs and interventions to help students improve their time management skills and enhance their academic performance.

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