

**SPORTS-STRIDE(SPORTS LEARNING & EVENT  
SYSTEM )**



*The Project submitted to  
Sant Gadgebaba Amravati University, Amravati  
Towards partial fulfilment of the Degree of  
Bachelor of Engineering  
In  
Information Technology*

**Guided by**

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2022- 2023**

**SHRI SANT GAJANAN MAHARAJ COLLEGE OF  
ENGINEERING, SHEGAON**



**2022-2023**

**CERTIFICATE**

This is to certify that **Narendra Mahalle, Ujjwal Devre, Yash Bora** students of final year B.E. (Information Technology) in the year 2022-2023 of the Information Technology Department of this institute have completed the project work entitled **“Sport-Strides (Sports Learning and Event System)”** based on syllabus and has submitted a satisfactory account of his/her work in this report which is recommended for the partial fulfilment of the degree of Bachelor of Engineering in Information Technology.

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**2022-2023**

**CERTIFICATE**

This is to certify that the project work entitled “**Sport-Strides(Sports Learning and Event System)**” submitted by **Mr. Narendra Mahalle, Ujjwal Devre, Yash Bora** students of final year B.E. (Information Technology) in the year 2022-2023 of the Information Technology Department of this institute, is a satisfactory account of his work based on the syllabus which is approved for the award of the degree of Bachelor of Engineering in Information Technology.

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## **ABSTRACT**

Sport-Strides is a pioneering initiative that aims to tackle the challenge of insufficient information and resources pertaining to various sports. The project strives to create a unified platform that brings together institutions, academies, and equipment vendors to provide a business-to-customer service experience. Through this platform, users can explore diverse sports and areas of interest, identify nearby training institutes and academies, and access resources related to upcoming events. One of the key highlights of this platform is its provision of external links related to upcoming events for different sports, thereby enabling users to stay up-to-date with the latest happenings. The platform offers a win-win situation for vendors, as they can attract new consumers referred from the platform. Additionally, the project aims to help training institutes get discovered by more users looking for a professional training space.

**Keywords:** Android app, React native, Javascript, Academy, Shops, Organizers

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# 1. INTRODUCTION

## 1.1 Preface

Sport-Strides is a sports learning and event management system designed to streamline and enhance the experience of athletes and organizers. The system leverages the power of technology to provide athletes with interactive and personalized learning modules, track their progress, and connect with coaches and fellow athletes. Organizers can use the platform to create and manage sporting events, from scheduling to participant communication, all in one convenient location.

Sport-Strides aims to revolutionize the world of sports education and event management by offering a comprehensive and user-friendly solution that addresses the unique needs of both athletes and organizers. With its advanced features and focus on user experience, Sport-Strides represent a major step forward in the world of sports technology. Whether you're an athlete looking to improve your skills or an organizer seeking to streamline your event management process, Sport-Strides is the solution you've been looking for.

Since ancient times, sports have played a major role in human civilization, fostering social interaction and encouraging physical health and wellness. Finding trustworthy information about a sport's regulations, how to play it, and where to get expert training can be difficult for many individuals, especially the ones who are usually new to it. Additionally, it might be difficult to keep up with activities at the local, national, and worldwide levels, which results in a lack of interest and participation in the sport. The goal of this study paper is to examine the difficulties novices encounter while trying to learn about sports and to suggest a remedy in the shape of an extensive sports information platform. The suggested platform will serve as a primary information hub for information about different sports, such as how to play, rules and regulations, possibilities for training, and access to facilities and equipment. Additionally, the portal will include



details about local, national, and international sporting events, giving users the chance to engage with and take part in their preferred sports. This study will conduct a literature analysis to examine the current research on the difficulties experienced by novices in learning about sports in order to construct this platform. It will also examine the current condition of sports information platforms and how well they can help beginners with their problems. The complete sports information platform's model, including its features, functionality, and potential impact, will then be suggested in the paper. An extensive sports information resource is the intended result of this research paper. platform that will encourage and enable beginners to join in sports. The platform will give trainers and sports organizations a tool to reach new audiences, opening up chances for the sports business to expand and thrive. In general, the goal of this study article is to promote sports as a way to promote physical fitness, wellness, and social cohesion. By uniting institutions, academies, and instrument vendors onto one platform, we will implement a business model on this issue in order to make money off of it. Users will learn about sports and fields that they could be interested in. The user can locate nearby Academies or Training facilities that are relevant to their field. The user will utilize tools like external links that we supply in relation to the impending events in the fields. Vendors will receive new clients through our platform. A greater number of people searching for a place to receive professional training will find institutes. Our platform, which offers business to customer (B2C) service, brings together Institutes/Academies/Instrument Vendors (Businesses) and Users/Seekers (Consumers). As the site gains more users, revenue will also come from adverts.

Sport-Strides is a comprehensive system designed to revolutionize the world of sports education and event management. This system offers a range of features including interactive learning modules, athlete profiling, and event management tools, all accessible through a user-friendly web interface. Athletes can use the platform to learn new skills, track their progress, and connect with coaches and other athletes.

## **1.2 Statement of Problem**

“As a Newbie, currently there is no resource available to gather information about a particular sport of how the sport is played, what are the rules, where to get professional training for the sport and where can one find the equipment for the sport. Lack of information about events at District/Nation/International-Level of the particular sport”.

For someone who is new to a particular sport, the lack of resources to gather information is a major problem. The information that newbie’s need includes how the sport is played, what the rules are, where to get professional training, and where to find equipment for the sport. This lack of information can make it difficult for newbie’s to get started in the sport and can prevent them from fully participating or enjoying the sport.

Moreover, newbie’s also facing a lack of information about events at the district, national, and international levels for the particular sport. Without this information, they may not know where to go to watch a game, where to compete or how to register for an event.

The current situation can lead to frustration and confusion for newbie’s, making it difficult for them to engage in the sport and develop a passion for it. This lack of resources and information can also lead to missed opportunities for athletes who have the potential to excel in the sport but are unable to find the necessary resources to develop their skills.

Sport-Strides addresses this problem by providing a comprehensive platform that offers interactive learning modules, athlete profiling, and event management tools, all accessible through a user-friendly web interface. With Sport-Strides, newbie’s can learn how to play the sport, get information about the rules, find professional training and equipment, and stay up-to-date with the latest events at the district, national, and

international levels. The platform makes it easier for newbie's to get involved in the sport and enjoy it to the fullest.

### **1.3 Objectives of the project**

Keeping this problem in mind, we will implement a business model on this by bringing Institutions/Academies/Equipments-Vendors on one platform so we can generate revenue from it. To achieve the objective of addressing the problem of a lack of resources and information for newbie's in a particular sport, the Sport-Strides project aims to implement a business model that brings together institutions, academies, and equipment vendors on a single platform. By doing so, the platform can provide a range of services that will benefit both athletes and service providers.

Through this business model, the Sport-Strides platform aims to generate revenue by charging institutions, academies, and equipment vendors a fee for their services. The platform will also offer premium services to athletes at an additional cost. The revenue generated from these services will be reinvested in the platform to improve its features and expand its services to new sports and regions.

- Users will discover sports/fields they could be interested in. Users will find nearby Academies or Training institutes related to their field.
- Users will make use of resources such as external links provided by us related to the upcoming events related to the fields.
- Vendors will get new consumers referred from our platform.
- Institutes will be discovered by more trying to find a place to train professionally.

## **1.4 Scope and Limitation of The Project**

Sport-Strides project includes the development of a comprehensive platform that provides information about a particular sport, interactive learning modules, athlete profiling, event management tools, and an online marketplace for institutions, academies, and equipment vendors.

### **1.4.1 Scope :**

- Interactive learning modules that teach athletes about the sport, rules, and techniques.
- Athlete profiling that allows athletes to create a profile and showcase their skills and achievements.
- Event management tools that provide information about events at the district, national, and international levels and allow athletes to register for events.
- An online marketplace that connects athletes with institutions, academies, and equipment vendors and provides a platform for them to showcase their services and products.

### **1.4.2 Limitations :**

- The availability of accurate and up-to-date information about events and services provided by institutions, academies, and equipment vendors.
- The platform will be limited to a particular sport and may not be able to provide information about other sports.
- The effectiveness of the interactive learning modules may vary depending on the individual athlete's learning style and ability.
- The platform will require internet access, which may limit its accessibility to some athletes and users in remote areas with poor connectivity.

## **1.5 Organization of The Project**

The project is organized as follows:

1. Chapter 1 gives Introduction about the project.
2. Chapter 2 gives Literature survey of the project.
3. Chapter 3 provides analysis of the project.
4. Chapter 4 provides the design phase of the project.
5. Chapter 5 provides how the project is implemented.
6. Chapter 6 gives conclusion with future scope of the project

## **2. LITERATURE SURVEY**

The platform aims to address this problem by providing users with information about different categories of sports, rules of each sport, major tournament, how to get into the sport, where to start learning, physical accessories required, and where to buy them. The literature survey found that there is a gap in the market for a comprehensive platform that provides all information about sports. Although there are some apps like Sport stones that provide information about sports, they are limited in terms of the number of sports covered and do not provide information about events, tournaments, or professional training. The proposed platform aims to cater to potential users by providing a user wide range of sports, including the most popular and lesser organizers, institutes/academies, and shops to promote their events, subscription plans, and products related to sports. One of the key features of the proposed platform is its ability to connect users with coaches and trainers for professional training. Many newcomers to sports may feel overwhelmed or unsure of where to begin when it comes to training and developing their skills. The platform can provide sports, along with information on their qualifications and experience. Users can also leave reviews and ratings of coaches and trainers, helping others make informed decisions when the platform can also offer a community aspect where users can connect with other sports enthusiasts, share information, and participate in discussions. Users can create profiles, join groups, and follow their favorite's teams. The platform can also provide a section for users that can create a sense of community and encourage users to share their experiences and knowledge with others, helping to build a comprehensive and vibrant platform for sports enthusiasts of all levels. The technology stack used for the platform includes JavaScript for the frontend, React for the backend. The database used is MongoDB.

**Paper 1:** Aruvansh Nigam, Saksham Garg, Archit Agrawal “Sport Field Reservation Based on Mobile Application”, International Conference on ICT for Smart Society (ISISS), 2020.

**Description:** In this 21st century era, the usage of mobile applications reached millions each year. The apps are available in different platform stores to Smartphone users, such as Google play store, Apple app store, etc. Each day new applications are launched to the mobile market, making it extremely attractive both for companies and developers to invest their money and time. For example, in 2018 Google play store has more than 4 million apps available and the number of downloaded apps reached 84.3 billion times. As we had seen today, mobile applications could be a business provider, video games, ecommerce, social media, etc. As we know, the mobile application has a huge impact on the development of technology and society. One of the reasons is because it is running on a small handheld mobile device that is moveable, easy to use, and accessible from anywhere and any place. It also attracts people because nowadays we prefer to use an easier step to do things rather than doing it manually which could take more time. Besides giving a huge impact on the development of technology, it also plays an important role in business. Many business companies nowadays are earning huge revenue by just using a mobile application. For example, people could buy something they need from an online store rather than buying it from a physical store which could take more time. In the end, the application guidelines must be adapted according to available resources and customer requirements to meet current developments. It also requires continuous improvements and adaptations to meet new technology needs and changes.

**Paper 2:** Yu-hua Qiu Kai-Hu, Xin-jian Luo “Application of Computer Virtual Reality Technology in Modern Sports”, Third International Conference on Intelligent System Design and Engineering Applications, 2013.

**Description:** Virtual reality technology is of high immersion, interaction and dynamic multidimensional digital information, which are necessary for combining the development of modern sports with the advance of science and technology. Application of virtual reality technology in the sports field will not only benefit sport scientific training and digital research on technical theory, but also make for the rapid development of modern sports. Actually, with the attention and investment in the development of sports in the world, virtual reality technology has begun to frequent in the application of such fields like event broadcast, theory, digital sports training and sports teaching.

Virtual advertising refers to the utilization of virtual reality technology insert to computer-generating billboards on the field or off the course when sports- broadcasting, or stands for the use of virtual billboards to replace those original advertisements on the field, which cannot be noticed by viewers. Actually, the use of virtual advertising synchronization makes television broadcasting more wonderful and more abundant. This kind of technology can greatly improve the flexibility of advertising, expand the mutual effect and raise the revenue of TV broadcasting. As for the specific application of virtual reality technology in kinds of sport- broadcastings on TV, we see those virtual can advertisements clearly, such as the virtual advertising on either side of football goal in the Italy Series A, Germany Bundesliga and on the track of F1 formula racing game. The virtual advertising system can avail any kind of sport match in the course of TV broadcasting. No matter how the parameters of cameras' quantity lens variety, how the positions of objects or persons alter, and how the weather conditions change, it can be able to show a perfect effect with its strong utility.



**Paper 3:** Shanying, Wanggang, Wang yaojun “The Application of Information Technology in Sports Training ”, International Conference on Future Computer Science and Education, 2011.

**Description :** The development of information technology has promoted the development of other related industries. The efficiency of the training could be greatly improved, if the sports training system, developed by the information technology integrated with other automatic technology, could be applied in the traditional sports training. Based on the research of current information technology and training methods of sports programs, this article is aimed to put forward some points concerning the integration of information technology and sports training, so as to shed new light on the research of computer-aided systems and development of sports training. There is no denying that in sports training, when the training information has the right feedback, the sports skill will be improved obviously. Training of information feedback is a main way for improving sports skill. With the fast development of computers, the application of information technology in sports training has come true. Development of modern science technology has such a significant impact on the development of other related industries that the coach and player begin to realize the importance of information technology. In sports science, feedback is used for improving the skills of the system, and to improve sports performance. With the rapid development of information technology, a coach should be committed himself to provide the best training environment for improving the efficiency of the training through the maximization of the feedback information. Training information feedback can help players improve their movement, so that sports performance could be improved. In this article, we cite several cases about how to use the advanced information technologies to maximize the feedback.

**Paper 4:** Nir kshetri, Diana Rojas-Torres “The 2018 Winter Olympics: A Showcase of Technological Advancement”, IT Professional, 2018.

**Description:** The 2018 Olympic Winter Games in Pyeongchang was a showcase of South Korea’s technological advancements and sophistication. Sponsors such as Intel, KT, and Samsung demonstrated some record-breaking achievements during the games, and viewers and athletes alike experienced some of the most advanced and sophisticated uses of a wide range of technologies. One of the most high-profile technologies deployed for the first time during the 2018 Winter Olympics was the 5G network. As an illustrative use case of 5G, consider cross-country skiing, in which athletes ski through mountains and hills at a high speed. With lower-generation cellular technologies, spectators are not able to track their favorite athletes or see the entire surroundings. With 5G, viewers could see athletes’ exact locations and track their moves in real time, creating a more interactive way of watching sports. Other technological highlights of the events included artificial intelligence, autonomous driving, drones, virtual reality, and Internet of Things (IoT) devices and sensors. High-tech clothing was also presented—Ralph Lauren-designed uniforms worn in the opening ceremony had special inks that could be charged, keeping the wearer warm for up to 11 hours. Samsung’s smart uniforms were used by short-track speed skaters—the sensors in the uniforms sent data to the coach’s tablet, allowing the coach to send feedback to the skaters in real time. Improving international image is a main motivation for hosting mega-events such as the Olympics and the World Cup. The host country has a chance to strengthen its soft power, pursue broader economic and geopolitical interests, and showcase new technological advancements. The 1964 Olympics in Japan featured live color footage of some of the events such as opening and closing ceremonies, wrestling, volleyball, judo, and gymnastics. The 2014 World Cup in Brazil saw first-time uses of several advanced IT applications in making official decisions, broadcasting live events, and facilitating fans’ and viewers’ interactions in the game.<sup>2</sup> South Korea showed off its robotics capabilities and became the first country to use 5G.

**Paper 5:** Chaochun Lang “The development and application of valuation system on competitive sports events”, Fourth International Conference on Computational and Information Sciences, 2012.

**Description:** We will conduct the program and arrange related research on this task at the point of hosting the 16th collage games in our school. The university game in Hebei which is held every two years is the pageant for college students in Hebei. This is the 16th of it. It’s not only an examination of reform in colleges and popularization of sport events but also a chance for those colleges to show their athletic level. There are 76 colleges, 322 teams and more than 4900 people in individual sport of track and field, basketball, volleyball, Orienteering, aerobics and table tennis in this game. 30 teams got cups; 492 gold, silver and bronze medals were created; 25 groups and 53 teams got the moral awards; 7 people and 3 teams broke 8 records of college games, 12 people met the standard of first grade national sportsmen; 171 people met the second grade. This game was hosted by the provincial education ministry in Hebei, collaborated by the college sport association in Hebei, organized by Hebei University of Technology. There are 3 levels in the games, students in team one are from regular universities. Students in team two are from regular junior colleges. The team three includes special-enrolled senior athletes and students in PE major. The period is from May 5th to 10th, 2010. With some related researching materials and fixed the index factors of the valuation system on sport events, after comparing, analyzing and synthesizing,. I calculated the weight of each factor in the valuation system and used AHP method to construct a judgment matrix according to the scored data. All the factors have been examined on conformance by calculating. The sport events have become an important part of people’s daily life with the coming of information society and popularity of sports. The development and application of the valuation system on sport events will contribute a lot to construct a comprehensive feedback system on sport events, promote sports development and improve the quality of people’s life.

**Paper 6:** Richard Kulpa, Nicolas Vignais, Franck Multon, Cathy Craig “Using Virtual Reality to Analyze Sports Performance”, IEEE Computer Society, 2010.

**Description:** Scientists have developed many systems and methods to evaluate the most important parameters in sports performance—particularly in areas such as biomechanics, physiology, and behavioral neuroscience. Biomechanical analyses give trainers kinematic and dynamic data to help optimize particular movements or adopt new techniques through strength-and-conditioning training programs. Physiological analyses describe the energetic cost of human movement and how metabolism adapts to training. Behavioral neuroscience can explain the strategic choices that players make during competition, such as anticipating an opponent’s actions or optimally moving to intercept a ball. Biomechanical, physiological, and psychological phenomenon occur concurrently during competition, making it difficult to study complex situations such as interaction between players. The ability to discern the most relevant perceptual information from an opponent’s movement is an essential component of anticipation skills in sports.<sup>1</sup> The information a player uses must come from the kinematics or other dynamic variables (such as the body’s acceleration or the limbs’ orientation during the movement sequence) that are perceptible from the opponent’s movement. Because of technological limitations in both hardware and software, video playback has been the traditional method for exploring anticipatory behavior in different sporting scenarios. However, video playback is limited because the viewpoint is fixed to the camera position during recording. This prevents interactivity—something extremely important if the player wishes to move so as to better pick up key information. Moreover, video playback depends on which actions took place at a given time. Owing to improvements in technology and processing power, VR can overcome these limitations by providing numerical simulations and immersive, interactive environments.

**Paper 7:** Norrarat Wattanamongkhol, Pinit Kumhom, and Kosin Chamnongthai “A Method of Glove Tracking for Amateur Boxing Refereeing”, IEEE International Symposium on Communication and Information Technology(ISCIT), 2005.

**Description:** Amateur boxing is one of the most exciting and interesting sports in the world. It has been an Olympic sport since 1896. Many amateur boxing matches are organized at national, regional, and world levels. The difference between professional and amateur boxing is that the referee of amateur boxing traces white region on the glove, and counts the number of gloves that touches a part of the opponent body as the scores. To correctly count the scores for amateur boxing matches is difficult, since the referee needs to always track the four white regions of the gloves and determine whether any gloves touch a part of the opponent's bodies in a dynamic environment. In amateur boxing matches of intimation level such as Olympic, Asian Games, and SEA Games, majority votes of three referees are counted as scores. Using majority votes of the referees means less stability because it depends on many factors such as light, fatigues, and biasing. Therefore, an automatic refereeing system that can accurately track gloves and count the scores can help limit such factors so that a boxing match is fairly judged. To construct such a system, tracking white region of the glove is an important basic process, since it leads to accurate punch judgment. However, the boxer moves fast in a dynamic background so that it requires an algorithm with fast and accurate image processing. There were research works that tried to solve this problem. For instance, Javier Ruiz-del-Solar, Alon Shats, Rodrigo Verschae proposed real-time tracking of multiple persons. The system integrates methodology for the analysis of movement and color, as well as for the detection of faces. The work has to be done to improve the speed of the system, mainly in the face detector and in the blob identification block (color and movement) which are the slowest parts of the system.

**Paper 8:** Rong Fang Cao “Case Study of Beijing Olympic Games Network Technology Application and System Control in Sports Events in China”, International Conference on Electronics, Communication and Control (ICECC), 2011.

**Description:** With the increasing development of the sports in China, the application of network technology, which is a crucial link in sports events, is required more. This article will introduce the success and features of some typical technologies such as WAPI, TelePresence, Optical Network, etc. The implementation of network system control will also be discussed. It has been found out that sports events may be the experiment for the high-tech network application, every of which will not only bring about breakthroughs for the future management of mobile internet in Chinese telecommunication industry, but also successfully strengthen the practices of systematically combining production, learning, research and implementation (An innovative strategy). Generally, sports events such as Olympics and World Championship are combined games on a large scale involving a great variety of sub items and various people. And all the sub items are closely related covering 40 fields including sports competition, international communication, stadium management, ticket businesses, technology system, Internet, security, opening & closing ceremony, media operation, human resources, finance, purchase & logistics, logistic guarantee, etc. The complex features mentioned above are integrated in the sports events and the purposes of the services and control in the whole project network are multidimensional. So the events require more than that of just the sports, which leads to some technological deployments and constructions that applying widely some network technologies such as WAPI, TelePresence, Network Video Monitor, RFID, Network Security and United Telecommunication, etc.

**Paper 9:** Yi Peng “Design and Implementation of Sport Training Management Information System for High Education Sports Team”, International Conference on Educational and Information Technology (ICEIT), 2010.

**Description:** Computer-aided exercise training through sports training and information science research, improve training efficiency and training. In this paper, diving and track and field sports teams university has developed a training information management system, diving through the human motion detection and analysis of information on the technical movement to design and simulation, track and field research projects through the accumulation of training data and analysis, as well as athletes in sports and sports training load control theory understanding of the concept, establish exercise load evaluation system and evaluation index. This paper studies the college sports team training information management system for high-level sports team training, research and ancillary support, and sports disciplines and scientific research has important practical significance. Scientific training programs and arrangements are based on scientific detection and analysis of sports training information , Such as detection and analysis of sports techniques, processing and management of a large number of sports training information, as well as summary of scientific training methods on this basis, this is an important part to achieve full control on sports training process. This process can be summarized as: Use modern test instruments and equipment to acquisition all aspects of information in the process of athletes' training and competition, apply relevant scientific theories and methods for processing and analysis of obtaining data, establish the evaluation standard for exercise training effects, then control the training process on the basis of analysis results, predict and analog design for exercise training [6-10]. Its realization will change the subjective, single and one-sidedness in the traditional sports training, it can be objective, multi-faceted and comprehensive and reveal the nature and laws of sports training, as well as improve the training efficiency.

**Paper 10:** Guan Li, Xinxin Huang “Research and Technology Development of University Campus Sports Data Platform”, IEEE International Conference on Artificial Intelligence and Computer Applications (ICAICA), 2020.

**Description:** In the Internet era, the publicity of college campus sports activities is still using traditional publicity methods, so that it is difficult to attract wide attention from students. In this era when everyone in colleges and universities have mobile phones, students hope that they can learn about campus sports activities through mobile phones, and that they can participate in sports activities through mobile phone terminals. Of course, there are a lot of smart APPs for sports, and the APPs downloaded by students are not uniform, so that the uniformity of sports activity information cannot be determined. The smart APP for college campus sports activities is based on the fundamental needs for students. It publishes campus sports information on the sports activities smart APP, and does a good job of propaganda and management of campus sports activities. More importantly, on the campus sports smart APP, students can not only understand the time and type of campus sports activities in a timely manner, but also can query sports information and exercise skills on the smart APP. Of course, the smart application of campus sports activities in colleges and universities is an effective link for the undergraduate physical education curriculum, adhering to the concept of lifelong physical education, innovating physical education classroom assessment standards, strengthening the supervision of students' physical exercise, and promoting the intelligent dissemination of physical education knowledge. Therefore, it is very necessary for college campus Constructicommunication and activities to apply intelligent APP, which is of great significance to the intelligent construction of college campus sports.



**Paper 11:** Liu Xing-liang, Wang Dong-shan “The Practice and Exploration of “Human Factors Engineering” Course Design about the Sports Equipment Project ”, International Conference on Future Computer Science and Education, 2011.

**Description:** Human factors engineering is a goalkeeper of psychology, physiology, anthropometry, and a variety of engineering knowledge and methods combined to explore man, machine and environment, new areas of mutual relations, and its main function is to study how to design the most suitable person living and working environment. Most of Europe and the United States attributed human factors to engineering aspects of industrial engineering studies, after several years of development; the subject has been in the industrialization and the improvement of quality of life in the public to play an important role. Sports equipment engineering works is a comprehensive sports discipline, it is to be systematic, professional and scientific approach to the integrated use of many disciplines, athletes, sports equipment and sports information to carry out an integrated system composed of planning, design, evaluation, innovation research, to become a more effective and rational optimization system. Range of applications in the field than the original sports equipment, sports materials, engineering and other fields, the sport has been expanded to service industries, sports and public welfare undertakings and other fields. Sports equipment works in the rapid development of our country. The state sports equipment project management emphasis is also constantly upgrading, increasingly by people concerned about fields of study. “Human Factors engineering” of sports equipment, one of the important basic course subjects, their disciplines, comprehensively, according to the traditional engineering curriculum design model cannot meet their requirements. Thus, according to sports equipment, engineering requirements, combining the actual situation of the profession, the curriculum design model practice and exploration of improving teaching quality, training the pupils is one important aspect of innovation capability.

**Paper 12:** Liu Yang Dongsheng, Ye Xiaohang, Kang Daofeng “The Present Situation and Development Trend of E-sports Games in China”, International Conference on Future Computer Science and Education, 2011.

**Description:** Currently, there is various definitions about the E-sports. 1, Esports is an intelligent movement between people which use high-tech software, hardware, information equipment as sports equipments; 2, Esports is an opposed movement involved in both physical and intelligent between peoples which equipped with digital electronic products as the sports equipment in a particular virtual environment; 3, Esports is an interpersonal sports competition which use digital electronic products as sports devices, through the digital platform, in a relatively open, fair environment ; 4, Esports is an oppositional, competitive movement which take the information technology as core , sports rules as orientation, use software and hardware devices as equipment. It can exercise and improve the participant’s thinking ability, response capacity, physical coordination ability and willpower; 5, E-sports is an interpersonal competition which is conducted by sports rules and aims at raising the quality level of physical and mental performance of athletes. The commonly used E-sports concept is given by the State Sport General Administration: Esports is an intelligent, competitive movement which uses high technology hardware and software devices as sports equipment. Through this type of sports, participants can exercise and enhance their thinking ability, reaction, and eye-limb coordination ability and also the team work spirit could be well cultured.

**Paper 13:** Bo Li “- Design of Smart Sports Guiding System Based on Agent Model and Video Tracking”, Fifth International Conference on Computing Methodologies and Communication (ICCMC), 2021.

**Description:** Stadium crowd evacuation is affected by many factors, such as individual psychology, stadium structure and so on, and these factors interact with each other, which makes stadium crowd evacuation very complex. Aiming at the problem of crowd evacuation in stadiums, experts at home and abroad have been making extensive exploration. At present, there are three kinds of crowd evacuation methods in stadiums: rule method, social force method and cellular automata method. Rule method has good crowd evacuation simulation effect under the condition of a small number of people. When the number of people is large, it can not simulate the crowd evacuation in stadiums. Based on the study of the attraction, repulsion and friction between people, the social force method establishes the crowd evacuation model of sports venues. But when the number of people is large, the implementation efficiency is low, which can not meet the real-time requirements of crowd evacuation in stadiums. The method of cellular automata regards the pedestrian in the stadium as a cell. The direction and speed of pedestrians are determined according to the state of cells at different times, and the simulation effect is close to the real stadium crowd evacuation. In the process of crowd evacuation in stadiums and gymnasiums, the environmental information of stadiums and gymnasiums is very important. The spatial environment information of buildings is collected in real time through GIS, and the dynamic crowd evacuation model is established. However, GIS is rarely used in the study of crowd evacuation in stadiums, which makes the established crowd evacuation model unreliable. In the crowd evacuation modeling of stadiums and gymnasiums, there are obvious differences between individuals. Multi agent (MA) can describe the individual behavior of the crowd, which has the characteristics of interaction, collaboration and autonomy, and can be applied to the crowd evacuation modeling of stadiums and gymnasiums.

**Paper 14:** Fedwa Laamarti, Faisal Arafsha, Basim Hafidh, Abdulmotaleb El Saddik “Automated Athlete Haptic Training System for Soccer Sprinting”, IEEE Conference on Multimedia Information Processing and Retrieval (MIPR), 2019.

**Description:** Sprinting is an established training technique used in many sports as an efficient method to improve athlete performance. It is used by athletes to build strength and power as well as speed. Unlike aerobic exercises like running, walking or swimming, sprinting is an anaerobic exercise which is a high-intensity, very short duration physical activity with a high demand for oxygen, and using energy from contracting muscles [1]. Indeed, the oxygen delivered by the inhaled air cannot keep up with the high oxygen demand given the intense nature of the anaerobic exercise. This means that in this case, the oxygen demand exceeds the oxygen supply. Hence, fuel from muscles is used to provide a rapid energy source, by breaking glycogen down into glucose and converting it into energy. This process results in a build-up of lactic acid in the muscles as a by-product and explains the quick exhaustion. Regular anaerobic exercise training like sprinting or push[1]ups, increases the body’s ability to tolerate lactic acid which increases the athlete’s performance. Types of anaerobic exercises include sprinting and weight training. Both types of exercises will build muscle and strength, but weight training works on one body part at a time while sprinting has the advantage of working on building many muscles simultaneously, which makes it one of the most efficient anaerobic exercises. Furthermore, sprinting also increases speed bursts, which are crucial for sports games such as soccer or hockey where speed can be a determining factor to winning. Sprinting is thus a vital part of soccer training, because if a player uses only aerobic exercises as his training, he will experience an early onset of fatigue during the game which will inhibit performance, as players are required to sprint often during matches.

### **3. ANALYSIS**

#### **3.1 Detailed Statement of the Problem**

The lack of easily accessible and comprehensive information about various sports is a problem that is faced by many newcomers to the sports scene. With so many different sports out there, it can be difficult for individuals to know where to start, which sports they might be interested in, and how to get involved. This lack of information can be demotivating for those who are looking to explore new sports and can ultimately lead to a lack of participation in sports altogether.

Furthermore, even if a newcomer is interested in a particular sport, it can be challenging to find the right resources to learn more about it. Information about how a sport is played, its rules, where to get professional training for the sport, and where to find the necessary equipment can be scattered across various websites and sources, making it overwhelming to gather all the information in one place. This can lead to frustration and can deter individuals from pursuing their interest in a particular sport.

Additionally, the lack of information about events at the district, national, and international levels for a particular sport can make it challenging for individuals to stay up-to-date with the latest happenings and opportunities in their preferred sport. Without knowledge about upcoming events and tournaments, individuals may miss out on opportunities to participate and engage with the sport they are interested in.

To address this problem, a comprehensive platform that provides all-in-one-place information about various sports is needed. This platform should offer users a user-friendly interface that offers information on a wide range of sports, including both popular and lesser-known sports. The platform should provide information on the rules and regulations of each sport, as well as information on major tournaments and events. It should also provide information on how to get into the sport, where to start learning, what physical accessories are required, and where to purchase them.

Moreover, to generate revenue from this platform, institutions, academies, and equipment vendors should be brought together on the platform. This will not only provide a one-stop-shop for all sports enthusiasts but will also promote these vendors, academies, and institutions, generating more revenue for them. This will also create a platform for these vendors to attract new customers, as individuals looking for sports-related resources will be referred to them.

In conclusion, the lack of easily accessible and comprehensive information about various sports is a significant problem that needs to be addressed. The proposed platform that provides all-in-one-place information about different sports, including their rules and regulations, events, tournaments, and physical accessories required, will be a valuable tool for sports enthusiasts and newcomers looking to explore and learn about various sports. By bringing institutions, academies, and equipment vendors together on the platform, the platform will also generate revenue and promote these businesses.

## **3.2 Requirement Specification**

In this section we will look towards the Software and Hardware required for the implementation of the project. We have divided the requirements in two parts. Software requirement and Hardware requirement.

### **3.2.1 Software Requirement**

- HTML
- CSS
- JavaScript
- ReactJS
- React-Native
- React-Navigation
- Node.js
- Express.js

- MongoDB
- Mongoose
- JWT
- VsCode Code Editor
- Android Studio Emulator
- ThunderBind API Client
- Maps API

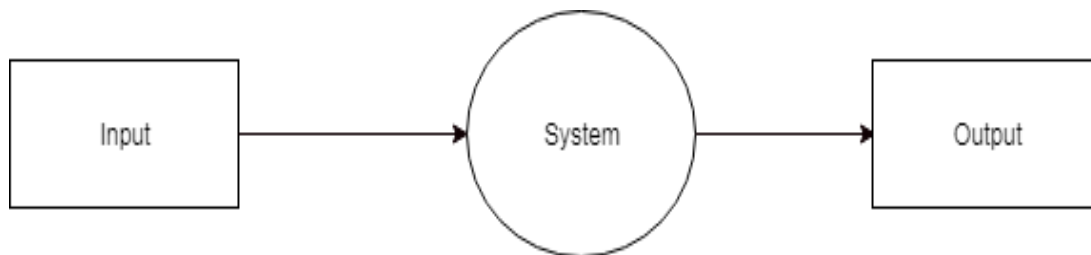
### 3.2.2 Hardware Requirement

In this project, an android phone or a PC with minimal processing power is needed.

- Laptop/PC/Android 8+ device
- RAM
- Hard Disk: 1GB

### 3.3 Functional Requirement

Functional requirements are the features or functions of software system to accomplish the tasks. It basically explains how the system must work. They are the statements that describe what a system needs to do in order to provide a capability. A description of each major software function, along with data flow (structured analysis) or class hierarchy (Analysis Class diagram with class description for object-oriented system) is presented.



**Figure 3.1 : Level 1**

### 3.3.1 Data Flow Diagram

#### DFD level – 1

Here, Figure 3.1 shows DFD level – 1 indicates the basic flow of data in the system. In this System Input is given equal importance as that for Output.

- Input: Here input to the system is giving values sensor data.
- System: In system it shows all the details are processed.
- Output: Output of this system is it shows the result.

#### DFD level- 2

DFD Level – 2 gives more in and out information of the system. Where system gives detailed information of the procedure taking place. It will get to know what kind of information as shown in Figure 3.2.

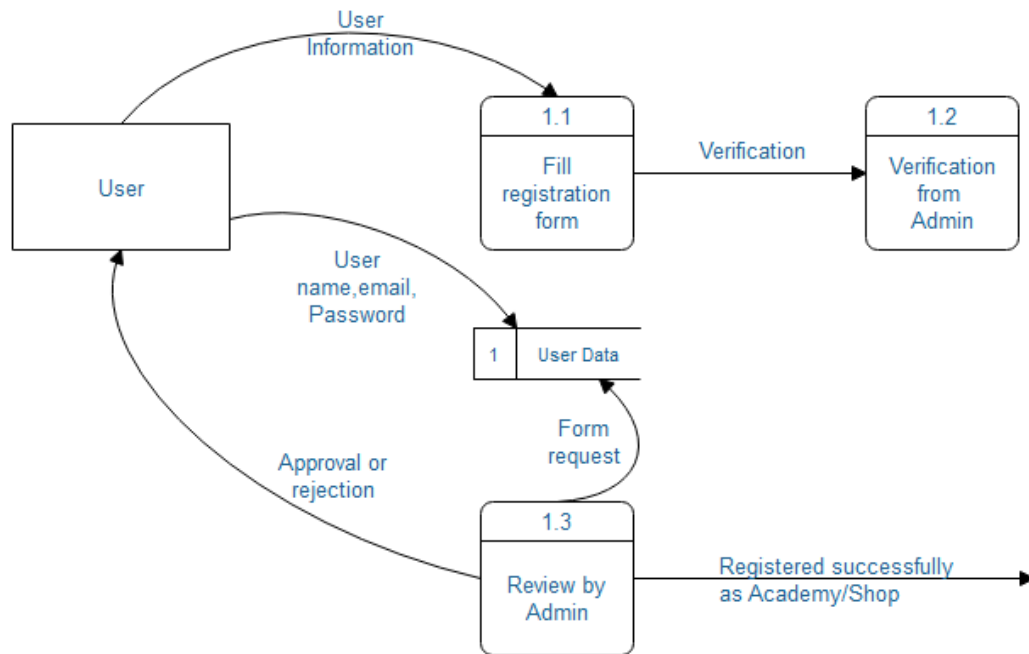


Figure 3.2: DFD level – 2



### **3.4 Non-Functional Requirements**

Non-functional requirements are the software specifications that describe the qualitative aspects of a software. It lists the desired qualitative features of a software or application, which don't fall under the category of any function/use-case. Non-functional features do not perform any action, instead they help in enhancing the software performance (efficiency).

**Performance:** The system must be able to process large amounts of data quickly and provide recommendations in a timely manner, without causing delays or interruptions.

**Accuracy:** The system's predictions and recommendations must be highly accurate and reliable, based on relevant data and proven models. It should be able to adapt to changing conditions and provide accurate results in different environments.

**Scalability:** The system should be able to scale up or down based on the amount of data it processes and the number of users it serves, without affecting performance or accuracy.

**Security:** The system must ensure the privacy and confidentiality of user data, protect against unauthorized access or hacking attempts, and comply with relevant data protection laws and regulations.

**Usability:** The system should be user-friendly and easy to navigate, with clear and intuitive interfaces that allow users to input data, view results, and customize recommendations.

**Reliability:** The system must be highly reliable, with minimal downtime or errors, and be able to recover quickly from any failures or disruptions.

**Maintainability:** The system should be easy to maintain and update, with clear documentation and support for troubleshooting and bug fixing.

**Compatibility:** The system must be compatible with different devices and platforms, including mobile devices and different web browsers.

Overall, the non-functional requirements of a crop prediction and fertilizer recommendation system should ensure that it is reliable, accurate, and efficient, while providing a positive user experience and complying with relevant security and privacy standards.

### **3.5 Feasibility Study**

The aim of the feasibility study activity is to determine whether it would be financially and technically feasible to develop the system or not. A feasibility studies is carried out from following different aspects:

#### **1) Operational Feasibility**

This assessment involves undertaking a study to analyse and determine whether and how well the organization's needs can be met by completing the project. Operational feasibility studies also examine how a project plan satisfies the requirements identified in the requirements analysis phase of system development. The system has been developed for all the users who are interested in this product, irrespective of technical background. We have given a demo of our project to technical as well as non-technical users and all the users found the system user friendly.

## **2) Technical Feasibility**

This assessment focuses on the technical resources available to the organization. It helps organizations determine whether the technical resources meet capacity and whether the technical team is capable of converting the ideas into working systems. Technical feasibility also involves the evaluation of the hardware, software, and other technical requirements of the proposed system.

## **3) Implementation Feasibility**

This project can easily be made available online without much consideration of the hardware and software. The only required thing at the applicant's side is the Internet connection, which is not a difficult issue these days. After setting up the project, all the users can access and configure the system from any smartphone connected with the same network. Also, these particular modules can be controlled remotely through other devices.

## **4) Scheduling Feasibility**

This assessment is the most important for project success; after all, a project will fail if not completed on time. In scheduling feasibility, an organization estimate how much time the project will take to complete. When these areas have all been examined, the feasibility analysis help identify any constraints the proposed project may face, including:

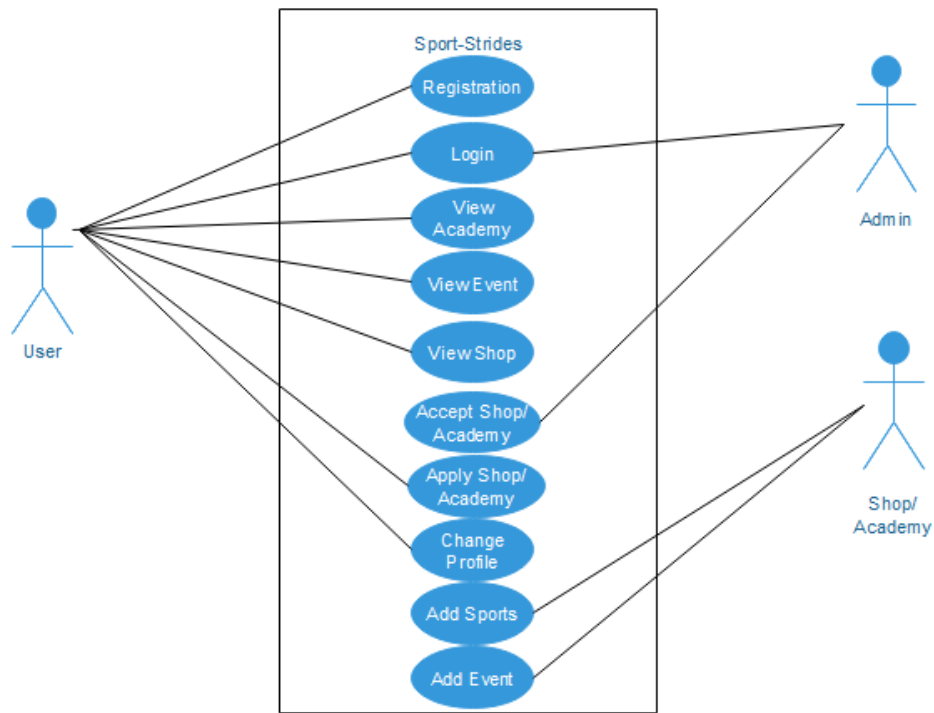
- Internal Project Constraints: Technical, Technology, Budget, Resource, etc.
- External Constraints: Logistics, Environment, Laws, and Regulations, etc.

## **3.6 Use Case Diagram**

The purpose of a use case diagram is to capture the dynamic aspect of a system. Use case diagrams are used to gather the requirements of a system including internal and external influences. These requirements are mostly design requirements. Hence, when a system is analyzed to gather its functionalities, use cases are prepared and actors are identified as shown in fig 3.3.

In the Unified Modelling Language (UML), a use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system. To build one, you'll use a set of specialized symbols and connectors. An effective use case diagram can help your team discuss and represent:

- Scenarios in which your system or application interacts with people, organizations, or external systems.
- Goals that your system or application helps those entities (known as actors) achieve.
- The scope of your system.



**Figure 3.3: Use case diagram**

### **3.7 Use Case Specification**

- 1) Registration: Users can create an account on the Sports-Strides platform to access its features.
- 2) Login: Users need to log in to their account to access the platform's features.
- 3) View Academy: Users can browse and view nearby sports academies and training institutes.
- 4) View Event: Users can find and view schedules for upcoming sports events, both local and international.
- 5) View Shop: Users can browse through a list of sports equipment vendors and purchase sports equipment.
- 6) Accept Shop/Academy: Admin can accept or reject user requests to join create shops or academies.
- 7) Apply Shop/Academy: Users can apply to become a shop or academy.
- 8) Change Profile: Users can edit their profile information, including personal details, interests, and sports preferences.
- 9) Add Sports: The platform allows shops/academies to add new sports categories that they will sell services related to.
- 10) Add Event: Organizers can create sports events, including schedule, venue, and fees. The platform provides features to promote events, including external links.

## **4. DESIGN**

### **4.1 Design Goal**

The design goal of the Sports Strides platform is to provide a comprehensive resource for individuals who want to learn more about a particular sport. The platform should offer the following features and components:

- Collect and curate information about various sports, including how they are played, the rules, professional training opportunities, and where to find equipment.
- Provide an intuitive and user-friendly interface that allows users to easily access and navigate the platform's resources.
- Incorporate external links to upcoming events related to the sports in question, providing users with an easy way to stay up-to-date on the latest developments in their chosen sport.
- Bring together institutions, academies, and equipment vendors on one platform, enabling users to discover nearby training opportunities and access new resources.
- Generate revenue by offering vendors and institutions the opportunity to reach new consumers through the platform.
- Promote professional training and development by helping users find and connect with the right institutions and academies for their chosen sport.
- Offer a centralized platform for users to discover new sports and explore new hobbies.
- Provide district, national, and international-level event information for the respective sports, keeping the users informed and up-to-date with their sport of interest.
- Implement a scalable and sustainable business model for the platform that ensures long-term viability and growth.

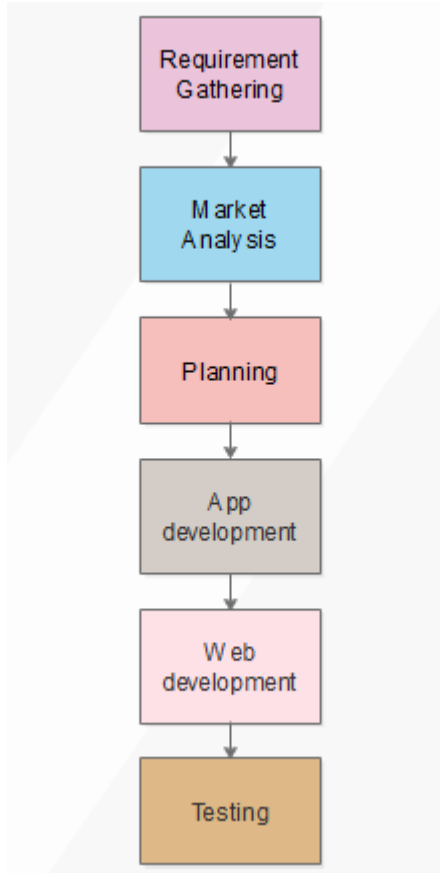
Agile technique of modelling is used for the designing process of the complete application. Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release. Agile methods are being widely accepted in the software world recently. However, this method may not always be suitable for all products. Here are some pros and cons of the agile mode.

The advantages of the Agile Model are as follows -

- A very realistic approach to Software Development.
- Promotes teamwork and cross training.
- Functionality can be developed rapidly and demonstrated.
- Resource requirements are Minimum.
- Suitable for fixed or changing requirements
- Delivers early partial working solutions.
- Good model for environments that change steadily.
- Minimal rules, documentation easily employed.
- Enables concurrent development and delivery within an overall planned context.
- Little or no planning required.
- Easy to manage.
- Gives flexibility to developers

## **4.2 Design Strategy**

As we have researched a lot about how and what to do in our project. As we go deeper and deeper into research, we come to know there are various aspects to do. That's why we figured out how we can go further and plan our task so that the requirements of our project get fulfilled. So here we go following the approach shown in Figure 4.1. We have divided into a certain tasks. They are as follows:



**Figure 4.1: Strategy Diagram**

Task 1: Requirement Gathering.

In this task, the team will gather and analyze the requirements of the project. They will talk with stakeholders to identify the scope and objectives of the project. The team will also identify the project's constraints and risks.

Task 2: Market Analysis:

In this task, the team will conduct market research to identify trends, customer needs, and competitor analysis. The team will identify the target audience and assess the feasibility



of the project. The team will also analyze the market size and identify potential growth opportunities.

**Task 3: Planning:**

In this task, the team will create a plan that outlines the project's objectives, milestones, timelines, and resources required. They will also identify potential risks and contingencies. The team will create a project schedule and allocate tasks to team members.

**Task 4: App Development:**

In this task, the team will develop the mobile application. This includes designing the user interface, implementing features, integrating APIs, and testing the application. The team will also optimize the application for performance and security.

**Task 5: Web Development:**

In this task, the team will develop the website for the project. This includes designing the website layout, developing the website's front-end and back-end, integrating APIs, and testing the website. The team will also optimize the website for performance and security.

**Task 6: Testing:**

In this task, the team will test the application and website to ensure they meet the project requirements. The team will identify and resolve any bugs or issues. They will also conduct user acceptance testing to ensure the application and website are user-friendly and meet the user's needs.

### 4.3 Module Diagram

A block diagram is a graphical representation of a system or process that shows the major components or subsystems and the interconnections between them. It is a visual way to represent the functional relationships between the components of a project or system. A block diagram consists of blocks that represent the major components of a system or process, and lines that represent the connections or interfaces between the blocks. The blocks are often labeled with the name or function of the component, and the lines are labeled with the type of connection or interface between the components. Block diagrams are commonly used in many different fields, including engineering, electronics, software development, and project management. They are used to describe complex systems or processes in a simple and easy-to-understand way, and they can be used to communicate the design and functionality of a project to stakeholders and team members.

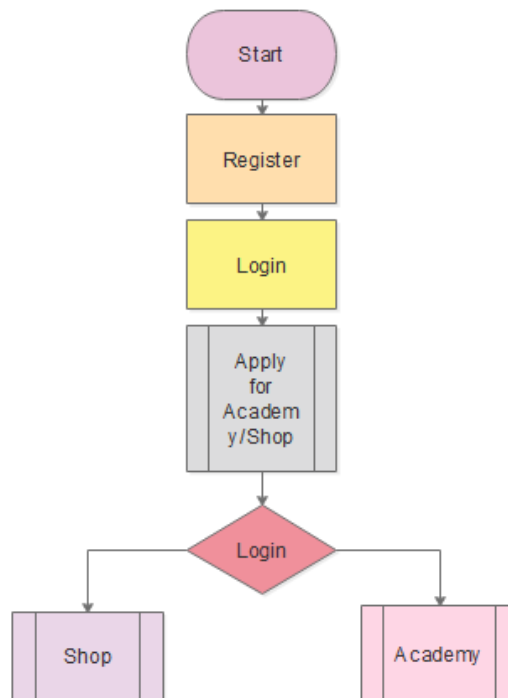


Figure 4.2 : Module Diagram

The importance of block diagrams can be summarized as follows:

1. **Visualization and Understanding:** Block diagrams provide a visual representation of complex systems or processes that can help to understand and analyze the various components and their interactions. By representing a system or process in a graphical form, it can be easier to identify and analyze problems or bottlenecks.
2. **Communication:** Block diagrams serve as a common language between different stakeholders who are involved in the design, development, and implementation of a system or process. They can be used to communicate complex concepts and ideas effectively to team members, customers, and other stakeholders.
3. **Design and Optimization:** Block diagrams can be used to design and optimize systems or processes by identifying and analyzing the various components and their interactions. They can be used to test different scenarios and identify the most efficient or effective design.
4. **Documentation:** Block diagrams provide a useful way to document systems or processes, as they provide a clear and concise representation of the various components and their interactions. They can be used to create user manuals, technical documentation, and other types of documentation.
5. **Troubleshooting and Maintenance:** Block diagrams can be used as a troubleshooting tool to identify problems or faults in a system or process. By analyzing the various components and their interactions, it can be easier to identify the root cause of a problem and implement the necessary corrective actions.

Overall, block diagrams are an important tool for visualizing, designing, documenting, and optimizing complex systems or processes, and they play a critical role in many fields of engineering and science.

This block diagram drift highlights the primary functionalities and additives of your student management system. Depending on the requirements and complexity of the project, the actual block diagram may change.

The block diagram demonstrates the interdependence of the front-end, back-end, and database to deliver a comprehensive school management website solution. The back end

and database make sure that the website is secure, scalable, and can handle a high amount of data and traffic, while the UI gives users of the website an intuitive and user friendly experience.

A flowchart is a type of diagram that represents a process or workflow. It is a visual representation of the steps involved in a project or process, and the sequence in which those steps occur. A flowchart typically uses symbols and arrows to represent the various steps in a process, along with decision points and branching paths. Flowcharts are commonly used in project management to help visualize and communicate complex processes. They are useful for identifying inefficiencies, bottlenecks, and potential areas of improvement in a project or process. Flowcharts are an essential tool for visualizing and documenting processes, workflows, and procedures in various fields, including project management, software development, engineering, and business management. They help break down complex systems or processes into simple, easy-to-understand diagrams, making it easier to communicate ideas, identify inefficiencies, and improve processes.

**Flowchart:**

Importance of flowchart:

1. Provides clarity and understanding:

Flowcharts provide a clear and easy-to-understand visual representation of a process or workflow. They help break down complex processes into simple, easy-to-follow steps, making it easier for team members, stakeholders, and clients to understand the process and identify areas for improvement.

2. Improves communication:

Flowcharts are an effective tool for communicating complex processes and workflows to team members, stakeholders, and clients. They provide a common visual language that allows everyone to understand and interpret the process in the same way. By improving communication, flowcharts can help ensure that everyone is on the same page and working towards the same goal.

3. Identifies inefficiencies and bottlenecks:

Flowcharts can help identify inefficiencies and bottlenecks in a process or workflow. By visualizing the process, team members can identify steps that are unnecessary, time, or redundant. This can lead to the elimination of unnecessary steps, streamlining of workflows, and faster completion times.

4. Facilitates decision-making:

Flowcharts can help with decision-making by providing a visual representation of the available options and potential outcomes. By mapping out the different paths that a process or workflow can take, team members can make informed decisions based on the available information and the potential consequences of their actions.

5. Helps with process improvement:

Flowcharts are an essential tool for process improvement. By identifying inefficiencies and bottlenecks, team members can develop strategies to improve the process and reduce cycle times. Flowcharts can also help with testing and validating new processes before they are implemented.

6. Enables process standardization:

Flowcharts can help standardize processes and workflows across teams, departments, and organizations. By creating a visual representation of the process, team members can develop a common understanding of how the process works and what is expected at each step. This can lead to more consistent and predictable outcomes and improve the quality of work.

7. Enhances quality control:

Flowcharts are an important tool for quality control. By mapping out the process and identifying potential sources of error or defects, team members can develop strategies to prevent or minimize these issues. This can help ensure that the final product or service meets the required standards and specifications.

8. Facilitates training and onboarding:

Flowcharts can be used to train new team members and onboard new hires. By providing a visual representation of the process, team members can quickly understand how the

process works and what is expected of them at each step. This can help reduce the learning curve and improve the speed at which new team members become productive. Flowcharts are used in many fields, including software development, engineering, project management, and business process management. They are often used to document and communicate processes, troubleshoot problems, identify bottlenecks, and optimize workflows.

The symbols used in a flowchart represent different types of actions or steps in a process. Some common symbols include:

- Start/end symbol: Indicates the beginning or end of a process.
- Process symbol: Represents a step or action in the process.
- Decision symbol: Indicates a branching point in the process where a decision must be made based on a condition.
- Input/output symbol: Shows where input or output data is entered or output from the process.
- Connector symbol: Links different parts of the flowchart together.

Lines and arrows are used to connect the symbols and show the flow of the process. The direction of the arrows indicates the order in which the steps should be performed.

There are different types of flowcharts, including:

- Basic flowchart: Shows the sequence of steps in a process.
- Swimlane flowchart: Shows the steps in a process across different departments or individuals.
- Data flow diagram: Shows how data moves through a system.
- Business process modeling notation (BPMN) diagram: A standardized diagram that shows the steps, actors, and data involved in a process.

This flowchart shows principal strategies and interactions for your student information system. Users log in with their credentials and are directed to their respective dashboards wherein they can perform diverse obligations including viewing attendance, marks and

uploading profile information. The system additionally includes an admin dashboard in which the administrator can control personal debts and permissions, view reports and analytics, and configure gadget settings. The flowchart also illustrates how the machine interacts with the database to keep and retrieve statistics related to students, teachers, and admins. The flowchart highlights the primary features and functionalities of your student management system, such as user authentication, information display, and data upload. It also indicates the special dashboards and options to be had for users, as well as the administrative capabilities of the system.

#### 4.4 Architecture Diagram

An architecture diagram is a visual representation of the overall structure and components of a system or application. It is an essential tool for software engineers, system architects, and developers to communicate the design and functionality of a system to stakeholders and team members. A well-designed architecture diagram should clearly illustrate the system's components, how they interact with each other, and how data flows through the system.

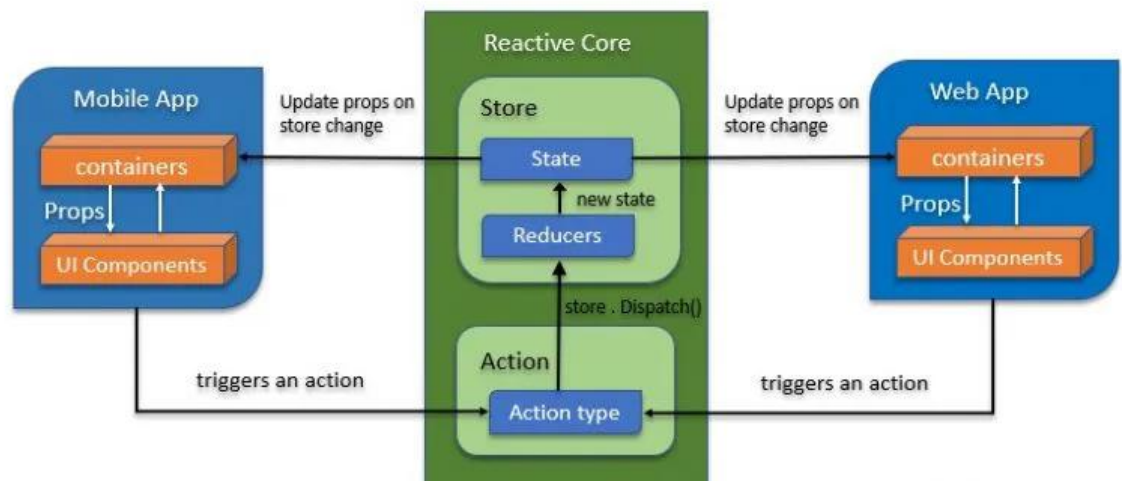


Figure 4.3: Architecture Diagram

The architecture diagram is typically divided into several layers, including the presentation layer, application layer, and database layer. The presentation layer includes the user interface and any other user-facing components, while the application layer contains the logic and business rules that control the system's behavior. The database layer stores the data used by the system, including any data processing or analysis components.

The diagram should also illustrate the different interfaces used by the system, including APIs, message queues, and other data exchange mechanisms. It should include any external dependencies or integrations, such as third-party services or data sources.

One of the key benefits of an architecture diagram is that it enables stakeholders and team members to visualize the entire system and understand how its components work together. This makes it easier to identify potential issues and dependencies and to plan for future changes or updates. The diagram can also help teams to streamline development and testing processes by providing a clear understanding of how the different components interact and function.

Overall, a well-designed architecture diagram is an essential tool for any software development project. It provides a clear understanding of the system's components and functionality and helps to ensure that the system is scalable, maintainable, and reliable.

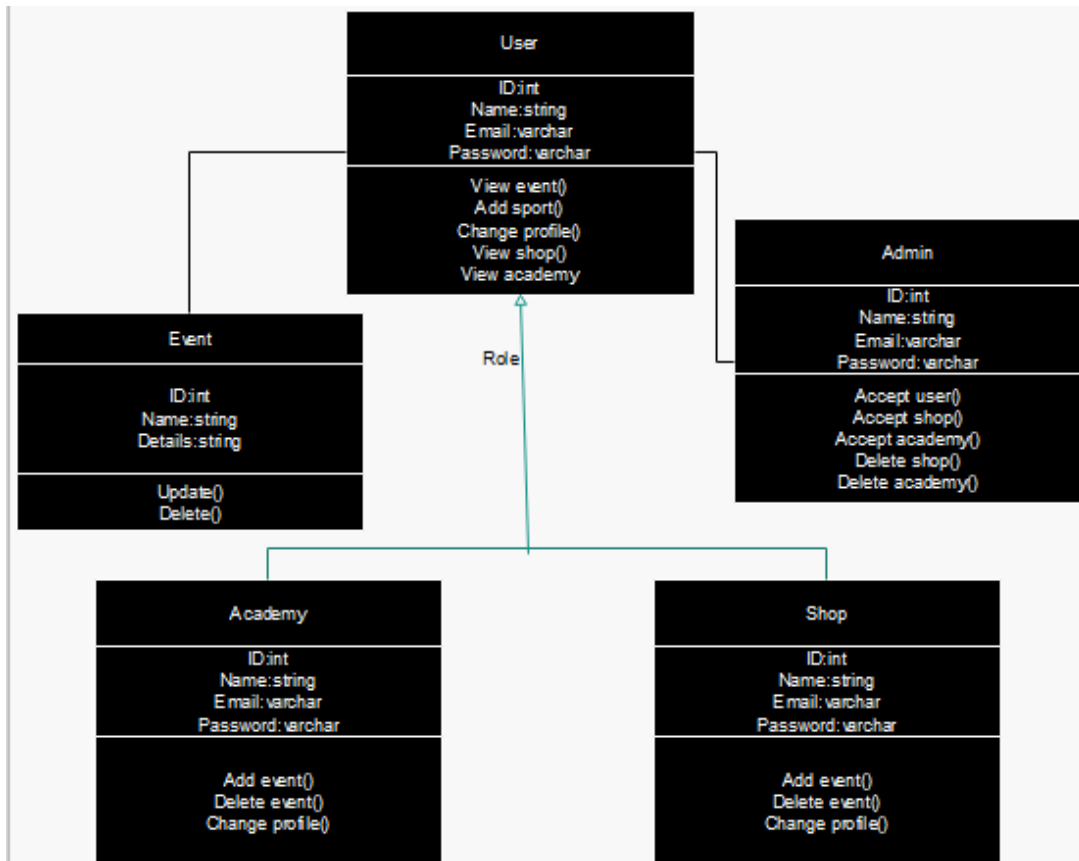
## **4.5 Class Diagram**

A class diagram is a type of static structure diagram in the Unified Modeling Language (UML) that represents the classes and their relationships to each other in a system. It is one of the most widely used UML diagrams, especially in object-oriented programming.

In a class diagram, classes are represented as boxes that contain the class name, attributes, and methods. The relationships between the classes are represented by lines



that connect them. These relationships can include inheritance, aggregation, and association.



**Figure 4.4: Class Diagram**

The class diagram provides a high-level view of the system, showing the classes, their attributes, and the methods that operate on them. It also shows the relationships between the classes, including the types of relationships and their cardinalities. This diagram is useful for understanding the structure of a system and the objects that make up the system.

In software development, class diagrams are used in the early stages of the design process to help developers understand the relationships between the classes in the system and

how they interact with each other. It provides a visual representation of the system's structure, which can help identify potential design flaws and make it easier to communicate the design to other stakeholders. Overall, class diagrams are a powerful tool for designing, modeling, and documenting object-oriented systems.

1. User: The User class represents all the individuals who use the Sport Strides application. This class includes information about the user, such as their name, email address, username, password, and profile picture. Additionally, the User class has methods for managing user data, such as creating and updating user profiles, managing user notifications, and tracking user activities.
2. Academy: The Academy class represents sports academies or training centers that provide professional training in different sports. This class includes information about the academy, such as its name, address, phone number, email address, and website. The Academy class also has methods for managing academy data, such as creating and updating academy profiles, managing training programs, and tracking academy performance.
3. Admin: The Admin class represents the system administrators who manage the Sport Strides application. This class includes information about the administrator, such as their name, email address, username, password, and profile picture. The Admin class has methods for managing system data, such as creating and updating user accounts, managing academy data, managing shop data, and managing event data.
4. Shop: The Shop class represents a sports equipment store that sells sports-related products. This class includes information about the shop, such as its name, address, phone number, email address, and website. The Shop class also has methods for managing shop data, such as creating and updating shop profiles, managing inventory, and tracking sales.

5.Event: The Event class represents sports events, such as competitions, tournaments, and matches. This class includes information about the event, such as its name, date, time, location, and type of event. The Event class also has methods for managing event data, such as creating and updating event profiles, managing event registration, and tracking event results.

In summary, the User, Academy, Admin, Shop, and Event classes represent the key entities in the Sport Strides application. Each class has its own attributes and methods for managing data related to users, sports academies, system administrators, sports equipment stores, and sports events. These classes work together to provide a comprehensive platform that helps users learn about sports, find professional training and equipment, and stay up-to-date with the latest sports events.

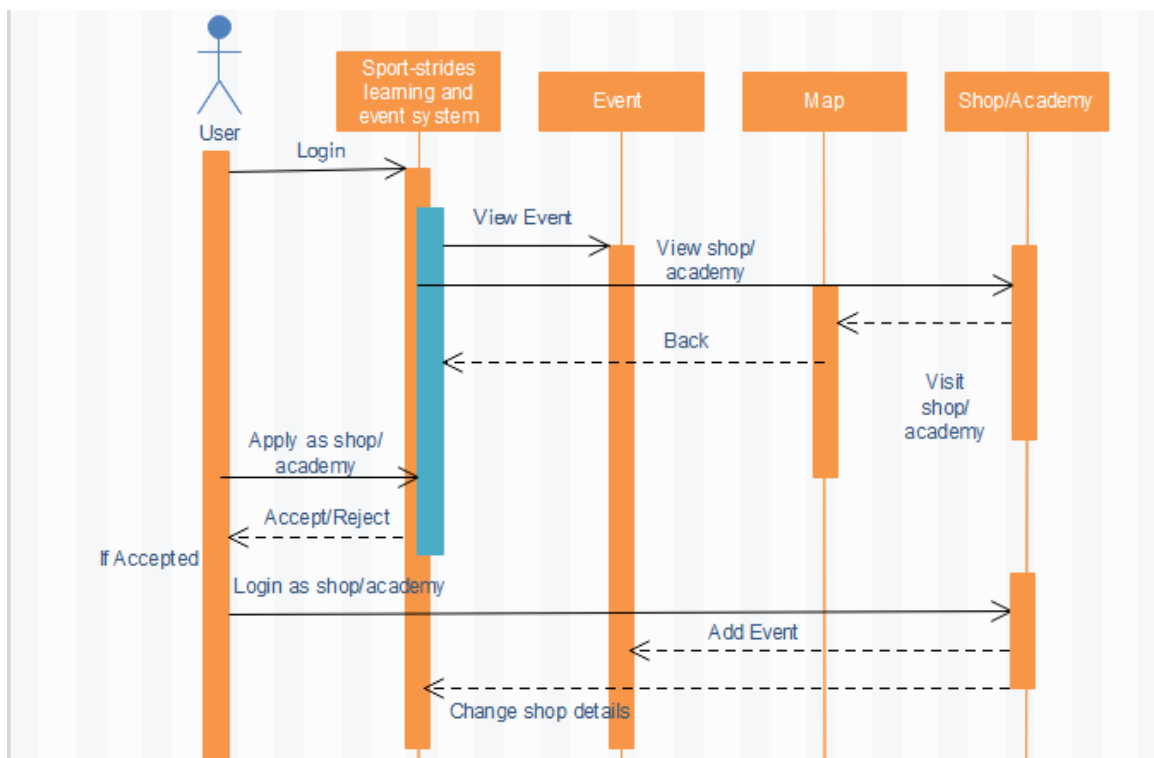
## **4.6 Sequence Diagram**

Sequence diagrams are a popular dynamic modeling solution in UML because they specifically focus on lifelines, or the processes and objects that live simultaneously, and the messages exchanged between them to perform a function before the lifeline ends. They are the most commonly used Interaction diagrams. 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 in 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 iterations as well as branches.

## Purpose of Sequence Diagrams

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

As shown in figure it shows the sequence diagram for Sport-Strides Learning and Event System. It shows how it works



**Figure 4.3: Sequence Diagram**

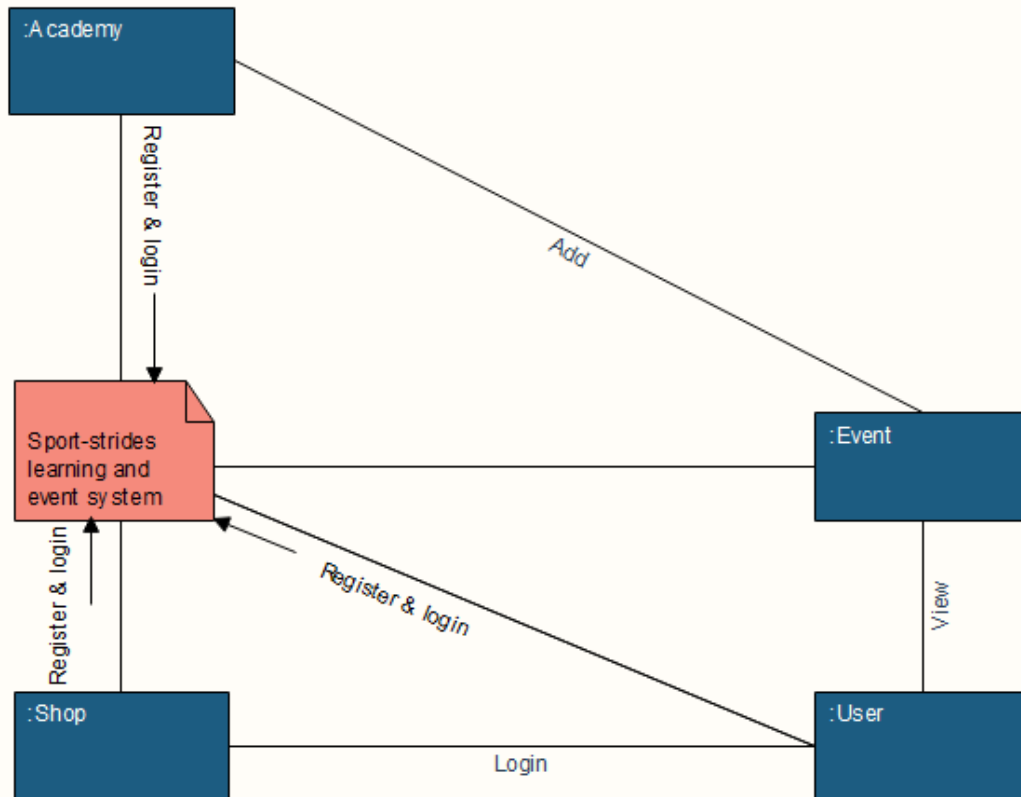
## **4.7 Collaboration Diagram**

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. An object 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. The collaborations are used when it is essential to depict the relationship between the objects. Both the sequence and collaboration diagrams represent the same information, but the way of portraying it is quite different. The collaboration diagrams are best suited for analyzing use cases.

### **Purpose of Collaboration Diagrams**

- The collaboration diagram is also known as the Communication Diagram.
- It mainly puts emphasis on the structural aspect of an interaction diagram, i.e., how lifelines are connected.
- The syntax of a collaboration diagram is similar to the sequence diagram; just the difference is that the lifeline does not consist of tails.
- The messages transmitted over sequencing are represented by numbering each individual message.
- The collaboration diagram is semantically weak in comparison to the sequence diagram.
- The special case of a collaboration diagram is the object diagram.
- It focuses on the elements and not the message flow, like sequence diagrams.

Following figure shown as Collaboration diagram



**Figure 4.4: Collaboration Diagram**

## 4.8 State Chart Diagram

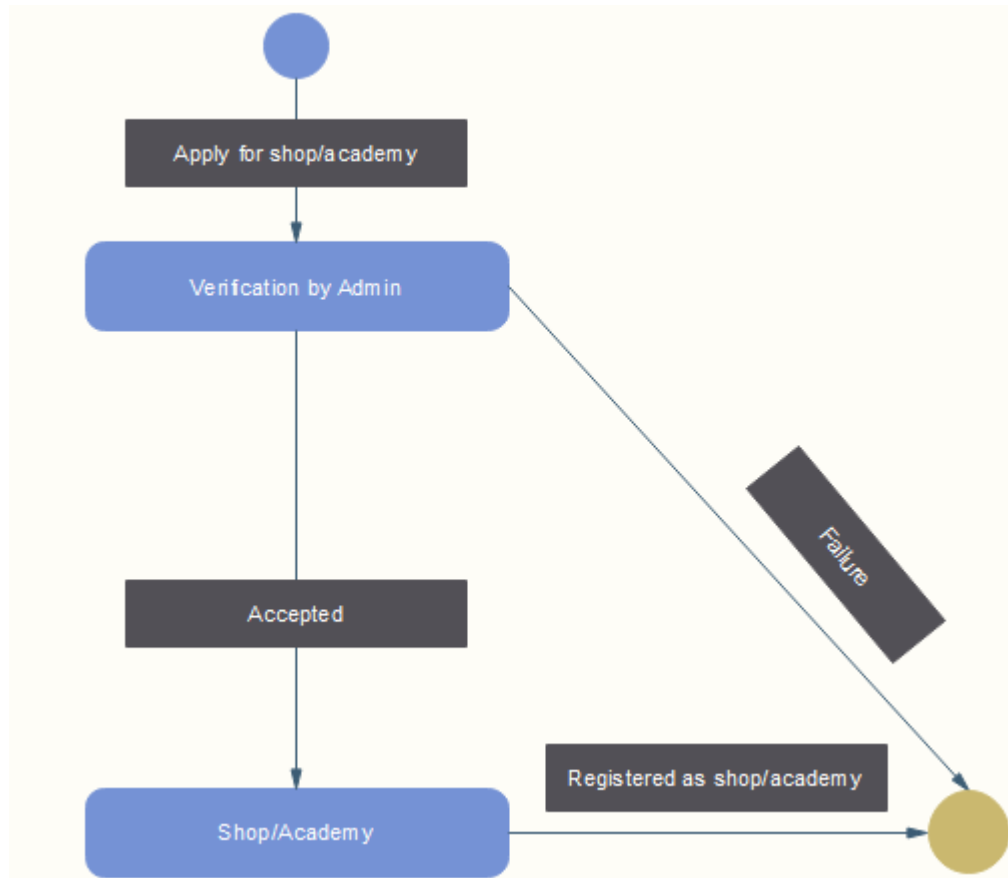
State chart diagrams provide us an efficient way to model the interactions or communication that occurs within the external entities and a system. These diagrams are used to model the event-based system. A state of an object is controlled with the help of an event. State chart diagrams are used to describe various states of an entity within the application system.

Figure shows the State chart diagram for system.

### **Purpose of State Chart Diagrams**

State chart 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. State chart 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 State chart diagram is to model lifetime of an object from creation to termination. State chart diagrams are also used for forward and reverse engineering of a system. However, the main purpose is to model the reactive system. Following are the main purposes of using State chart diagrams –

- To model the dynamic aspect of a system.
- To model the life time of a reactive system.
- To describe different states of an object during its life time.
- Define a state machine to model the states of an object



**Figure 4.6 : State Chart Diagram**

## 4.9 Activity Diagram

The general work-flow of the planner can be graphically represented in an activity diagram. Figure 4. shows how user will use the system and the step-by-step process they will go through as they progress through the site. The diagram shows the workflow for all average user. The user is then able to interact with selected modules, or open new modules. Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. The control flow is drawn from one operation to another



## **Purpose of Activity Diagrams**

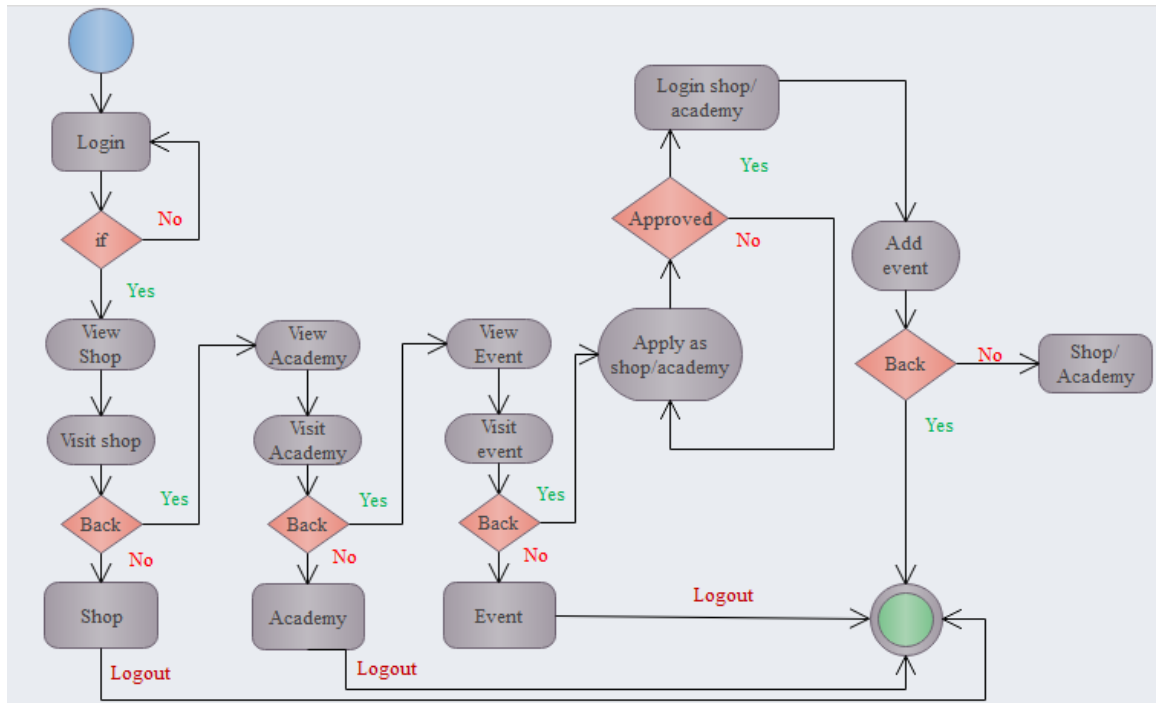
The basic purpose of activity diagrams is similar to other UML diagrams. It captures the dynamic behavior of the system. Other UML diagrams are used to show the message flow from one object to another but the activity diagram is used to show message flow from one activity to another.

Activity is a particular operation of the system. Activity diagrams are not only used for visualizing the dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in the activity diagram is the message part.

It does not show any message flow from one activity to another. Activity diagram is sometimes considered as the flowchart. Although the diagrams look like a flowchart, they are not. It shows different flows such as parallel, branched, concurrent, and single.

The purpose of an activity diagram can be described as:

- Draw the activity flow of a system.
- Describe the sequence from one activity to another.
- Describe the parallel, branched and concurrent flow of the system



**Figure 4.6 : Activity Diagram**

## **5. IMPLEMENTATION**

### **5.1 Implementation Strategy**

SPORT STRIDES is a platform designed to help people find information and resources related to different sports. The platform connects users with nearby academies and training institutes, provides links to upcoming events, and brings together businesses and consumers in a B2C service model.

To implement SPORT STRIDES, we will follow these steps. Firstly, we will research and gather information about various sports, including how they are played, their rules, and where to find professional training and equipment. Then, we will develop a database of academies, training institutes, and equipment vendors that offer services related to each sport. This database will be organized by location to help users find nearby resources.

We will develop a web interface and mobile application that allows users to search for sports and related resources based on their location and interests. Users can also filter results based on their budget and other preferences. We will implement a recommendation engine that suggests sports and resources based on user preferences and search history.

We will also develop partnerships with businesses, including academies, training institutes, and equipment vendors, to bring them on board the platform. These businesses can advertise their services on the platform and generate revenue through referrals from SPORT STRIDES. We will promote the platform through social media, search engine optimization, and targeted advertising to increase user adoption and engagement.

Lastly, we will collect user feedback and continuously improve the platform's user experience and features. The implementation of SPORT STRIDES can provide significant benefits to sports enthusiasts and businesses alike. Users can find the

information and resources they need to pursue their interests, while businesses can reach a wider audience and generate new revenue streams.

However, it is crucial to ensure that the platform's data sources and algorithms are accurate and reliable to provide users with relevant and useful information. Continuous monitoring and improvement of the platform will be necessary to maintain its effectiveness and relevance.

## **5.2 Hardware Platform Used**

In this project, a computer with sufficient processing power is needed.

- Laptop/PC
- System: Intel Processor i3/i5/i7 or AMD processors
- RAM
- Hard Disk: 1GB
- Minimum Android 8 device

### **Hardware Specification**

Hardware specification is an essential consideration for any software platform. In the case of Sport Strides, the hardware requirements will depend on the scale of the platform and the number of users it is expected to serve. As a web-based application, Sport Strides will require both server and client hardware to function optimally.

For the server-side hardware, the following specifications are recommended:

**Processor:** A high-performance multicore processor is recommended to handle the heavy load of user requests and data processing. A minimum of 4 cores is recommended, with speeds of at least 2 GHz.

**RAM:** A minimum of 8 GB of RAM is recommended to handle the application's memory requirements.

**Storage:** A minimum of 100 GB of storage is recommended to store the application's database and other related files.

**Operating system:** A Linux-based operating system, such as Ubuntu or CentOS, is recommended for its stability and security features.

**Web server:** A web server such as Apache or Nginx is recommended to handle user requests and serve web pages.

**Database:** A relational database management system (RDBMS) such as MySQL or PostgreSQL is recommended to store and manage the application's data.

For the client-side hardware, the following specifications are recommended:

**Processor:** A modern processor with at least 2 cores and speeds of at least 1 GHz is recommended.

**RAM:** A minimum of 4 GB of RAM is recommended to ensure smooth operation of the application.

**Storage:** A minimum of 100 GB of storage is recommended to store the user's data and related files.

**Operating system:** A modern operating system, such as Windows 10, macOS, or Linux, is recommended.

**Web browser:** A modern web browser such as Google Chrome, Mozilla Firefox, or Safari is recommended to access the Sport Strides platform.

**Mobile devices:** Sport Strides should be optimized for use on mobile devices such as smartphones and tablets. The application should be responsive and optimized for smaller screen sizes.

It is important to note that the hardware specifications mentioned above are only a general guideline, and the actual requirements may vary depending on the scale and complexity of the application. Additionally, hardware requirements may change as the application evolves and new features are added. Therefore, it is recommended to regularly assess and upgrade the hardware to ensure optimal performance of the application.

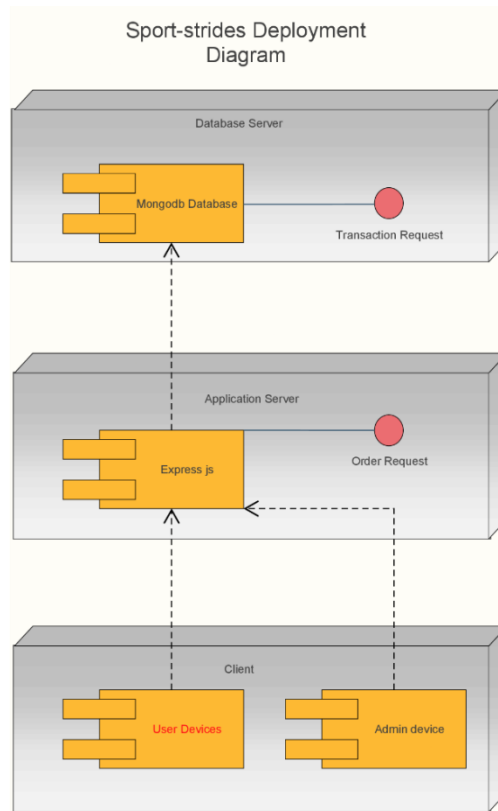
### **5.3 Software Platform Used**

- ReactJs
- ReactNative
- ExpressJs
- NodeJs
- MongooseJs
- ExpoSecureStore
- JWT
- Visual Studio Code Editor

### **Software Specification**

In this project, we used a combination of web development technologies and mobile app development tools to create a web application and mobile app. We used HTML, CSS, and JavaScript for web development, ReactJS and React-Native for mobile app development, and various other libraries and tools to enhance the functionality of the app and web application.

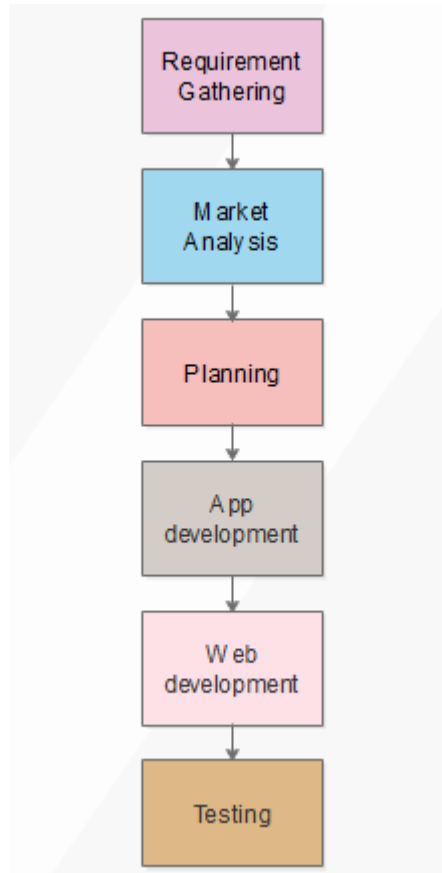
## 5.4 Deployment Diagram



**Figure 5.1 Deployment Diagram**

Deployment diagrams are used to visualize the topology of the physical components of a system, where the software components are deployed as shown in below figure 5.1. Deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consist of nodes and their relationships.

## 5.5 Implementation Level Details



**Figure 5.2: Implementation Model**

1. Requirement Gathering: In this task, you will gather and document all the requirements for the Sport Strides project. This includes identifying all stakeholders, understanding their needs and expectations, and gathering requirements for the features and functionality of the application.
2. Market Analysis: In this task, you will conduct market research to identify competitors and understand the market for sports training applications. This



includes identifying the strengths and weaknesses of competing products, as well as opportunities and threats in the market.

3. **Planning:** In this task, you will create a detailed project plan that includes timelines, milestones, and resource requirements. You will also identify potential risks and develop a risk mitigation plan.
4. **App Development:** In this task, you will develop the Sport Strides application for mobile devices. This includes developing the user interface, integrating the sensors and algorithms for gait analysis, and implementing the machine learning algorithms for personalized training recommendations.
5. **Web Development:** In this task, you will develop the web-based dashboard for the Sport Strides application. This includes creating a web interface for users to view their training progress, setting goals, and accessing personalized training recommendations.
6. **Testing:** In this task, you will test the Sport Strides application to ensure that it meets all the requirements and is ready for release. This includes functional testing, usability testing, and performance testing. You will also conduct user acceptance testing to gather feedback and make improvements to the application.

### **5.5.1 Web Development**

For web development, we used HTML, CSS, and JavaScript. HTML is the standard markup language used to create the structure of web pages, while CSS is used to add style and layout to the pages. JavaScript is used for adding interactivity and dynamic functionality to the pages. These three technologies are the backbone of web development, and they are used in almost every web development project. HTML provides a basic structure for web pages, while CSS is used to make the pages visually appealing. JavaScript provides the interactivity and dynamic functionality needed to create a rich user experience.

ReactJS is a popular JavaScript library used for building user interfaces. It allows developers to build reusable UI components and provides various tools and features for managing state and handling user interactions. ReactJS is widely used for building single-page applications, which are web applications that load a single HTML page and dynamically update the content as the user interacts with the app. ReactJS provides a component-based architecture that allows developers to create reusable UI components, making it easier to maintain and scale large applications.

ThunderBind API Client is a cloud-based platform used for building and deploying APIs. It provides a client library for React Native that makes it easy to integrate with ThunderBind APIs. ThunderBind is a platform that provides various tools and features for building, deploying, and managing APIs. It allows developers to create custom APIs that can be consumed by web and mobile applications. ThunderBind API Client provides a simple API for integrating with ThunderBind APIs, making it easy to build mobile apps that communicate with the ThunderBind API.

Visual Studio Code is a popular code editor used by developers for building web applications and mobile apps. It provides various features, such as syntax highlighting, debugging, and Git integration, that make it easy to write and debug code. Visual Studio Code is widely used by developers for its simplicity, ease of use, and extensive support for different programming languages.

## **5.5.2 Mobile App Development**

For mobile app development, we used React-Native, which is a framework for building native mobile apps using JavaScript. React-Native provides a way for developers to create mobile apps that look and feel like native apps, while using the same codebase as their web applications. This allows developers to build cross-platform mobile apps with a single codebase, reducing development time and costs.

Android Studio Emulator is an integrated development environment (IDE) used for developing Android apps. It includes an emulator that allows developers to test their apps on virtual Android devices. Android Studio provides a comprehensive set of tools and features for building Android apps, including a visual layout editor, code editor, and emulator.

React-Navigation is a library used for building navigation components in React Native. It provides various types of navigators, such as Stack Navigator, Tab Navigator, and Drawer Navigator, that allow developers to easily navigate between screens in the app. React-Navigation simplifies the process of building navigation components in mobile apps, reducing development time and making it easier to maintain the code.

ExpoSecureStore is a library used for secure data storage in React Native. It provides a simple API for storing and retrieving sensitive data, such as user authentication tokens, securely on the device. ExpoSecureStore is widely used by developers for its simplicity and ease of use.

Redux: Redux is a popular state management library for JavaScript applications. It is often used with React to manage the application state in a predictable and centralized manner. Redux uses a single global state store and a set of actions and reducers to modify and retrieve data from the store. It also provides middleware for handling asynchronous actions and for implementing additional functionality.

Maps API: The Maps API is a library provided by Google that allows developers to add maps and location-based services to their mobile apps. It provides various tools and features for displaying maps, adding markers and overlays, and retrieving location data.

### **5.5.3 Server Development**

For server development, we have used ExpressJs for NodeJs Environment.

**MongoDB:** MongoDB is a popular NoSQL database used for storing and managing data. It provides a flexible document-based data model and allows developers to easily scale their databases.

**Mongoose:** Mongoose is a MongoDB object modeling tool for Node.js. It provides a simple API for interacting with MongoDB and allows developers to define their data schemas and models in JavaScript.

**Node.js:** Node.js is a server-side JavaScript runtime that allows developers to build scalable and fast web applications. It provides various built-in modules and packages that make it easy to build web servers and APIs.

**Express.js:** Express.js is a popular web framework for Node.js. It provides various tools and features for building web applications, such as routing, middleware, and template engines.

**JWT:** JWT (JSON Web Token) is a standard used for securing web applications and APIs. It provides a way to securely transmit and verify data between different parties using a digitally signed token.

**Axios:** Axios is a popular HTTP client library for JavaScript applications. It provides an easy-to-use interface for making HTTP requests to a server or API and supports features such as request and response interception, automatic serialization of request and response data, and cancellation of requests.

**Socket.io:** Socket.io is a library for real-time, bidirectional and event-based communication between the client and the server in JavaScript applications. It provides a way for the client and the server to exchange data and events in real-time, enabling real-

time chat applications, live updates, and real-time gaming applications. Socket.io uses WebSockets as the primary transport protocol, but can also fallback to other protocols if necessary. It provides a simple API for creating and managing sockets, handling events, and transmitting data between the client and the server.

## **5.6 Testing**

Software testing can be stated as the process of verifying and validating whether a software or application is bug-free, meets the technical requirements as guided by its design and development, and meets the user requirements effectively and efficiently by handling all the exceptional and boundary cases.

The process of software testing aims not only at finding faults in the existing software but also at finding measures to improve the software in terms of efficiency, accuracy, and usability. It mainly aims at measuring the specification, functionality, and performance of a software program or application.

Software testing can be divided into two steps:

1. Verification: it refers to the set of tasks that ensure that the software correctly implements a specific function.
2. Validation: it refers to a different set of tasks that ensure that the software that has been built is traceable to customer requirements.

When the project is done and is in the working stage the project is to be tested before bringing it into practice. So, for this there are various testing technique as shown below:

### **5.6.1 Unit Testing**

Unit Testing is a type of software testing where individual units or components of a software are isolated from a section of code and verify its correctness. A unit may be an individual function, method, procedure, module, or object. Unit tests are automated and are run each time the code is changed to ensure that the new code does not break existing functionality. Unit tests are designed to validate the smallest possible unit of code, such as a function or a method, and test it in isolation from the rest of the system. This allows

developers to quickly identify and fix any issues early in the development process, improving the overall quality of the software and reducing the time required for later testing. In SDLC, Unit testing is the first level of testing technique that is usually performed.

Objective of Unit testing:

- To isolate a section of code.
- To verify the correctness of the code.
- To test every function and procedure.
- To fix bugs early in the development cycle and to save costs.
- To help the developers to understand the code base and enable them to make changes quickly.
- To help with code reuse.

Advantages of Unit Testing:

1. Early Detection of Issues
2. Improved Code Quality
3. Faster Development
4. Better Documentation
5. Facilitation of Refactoring
6. Reduced Time and Cost

Disadvantages of Unit Testing:

1. The process is time-consuming for writing the unit test cases.
2. Unit testing will not cover all the errors.
3. Unit testing is not efficient for checking the errors in the UI.
4. It requires more time for maintenance when source code is changed frequently.
5. Difficulty in testing complex units.

## **5.6.2 Regression Testing**

Tests the software after changes or modifications have been made to ensure the changes have not introduced new defects. Regression testing is a black box testing technique. It is used to authenticate that a code change in the software does not impact the existing functionality of the product. Regression testing is making sure that the product works fine with new functionality, bug fixes, or any change in the existing feature. Regression testing is a type of software testing. Test cases are re-executed to check the previous functionality of the application is working fine, and the new changes have not produced any bugs.

Regression testing can be performed on a new build when there is a significant change in the original functionality. It ensures that the code still works even when the changes are occurring. Regression means Re-test those parts of the application, which are unchanged. Regression tests are also known as the Verification Method. Test cases are often automated. Test cases are required to execute many times and running the same test case again and again manually, is time-consuming and tedious too.

Advantages of Regression Testing:

1. Regression Testing increases the product's quality.
2. It ensures that any bug fix or changes do not impact the existing functionality of the product.
3. Automation tools can be used for regression testing.
4. It makes sure the issues fixed do not occur again.

Disadvantages of Regression Testing:

1. Regression Testing should be done for small changes in the code because even a slight change in the code can create issues in the existing functionality.
2. If automation is not used in the project for testing, it will be a time consuming and tedious task to execute the test again and again.

### **5.6.3 Integration Testing**

Tests the integration of different components of the software to ensure they work together as a system. Integration testing is the second level of the software testing process that comes after unit testing. In this testing, units or individual components of the software are tested in a group. The focus of the integration testing level is to expose defects at the time of interaction between integrated components or units. Unit testing uses modules for testing purposes, and these modules are combined and tested in integration testing. The Software is developed with a number of software modules that are coded by different coders or programmers. The goal of integration testing is to check the correctness of communication among all the modules. Once all the components or modules are working independently, then we need to check the data flow between the dependent modules is known as integration testing. Integration testing is a software testing technique that focuses on verifying the interactions and data exchange between different components or modules of a software application. The goal of integration testing is to identify any problems or bugs that arise when different components are combined and interact with each other.

Advantages of Integration Testing:

1. It is convenient for small systems.
2. Simple and straightforward approach.
3. Can be completed quickly.
4. Does not require a lot of planning or coordination.
5. May be suitable for small systems or projects with a low degree of interdependence between components.

Disadvantages of Integration Testing:

1. There will be quite a lot of delay because we have to wait for all the modules to be integrated.



2. High-risk critical modules are not isolated and tested on priority since all modules are tested at once.
3. Not good for long projects.
4. High risk of integration problems that are difficult to identify and diagnose.
5. Can lead to system downtime and increased development costs.
6. Can lead to decreased efficiency and productivity.

### **5.6.4 System Testing**

Tests the complete software system to ensure it meets the specified requirements. System testing is a type of software testing that evaluates the overall functionality and performance of a complete and fully integrated software solution. It tests if the system meets the specified requirements and if it is suitable for delivery to the end-users. This type of testing is performed after the integration testing and before the acceptance testing. System Testing is a type of software testing that is performed on a complete integrated system to evaluate the compliance of the system with the corresponding requirements. In system testing, integration testing passed components are taken as input. The goal of integration testing is to detect any irregularity between the units that are integrated together. System testing detects defects within both the integrated units and the whole system. The result of system testing is the observed behavior of a component or a system when it is tested. System Testing is carried out on the whole system in the context of either system requirement specifications or functional requirement specifications or in the context of both. System testing tests the design and behavior of the system and also the expectations of the customer.

System Testing Main Focus Areas:

- **Hardware Interfaces:** System interfaces like software connectivity with USB port, reading DVDs, etc. are working fine in a system.
- **Complex functionalities:** System is behaving as expected for complex functions like output to a file in desired format, etc.
- **System Security:** System integrated as a whole is secured enough and allows intended users to access the system functionalities assigned to user.
- **Disaster Recovery / COB Testing:** How long a system doing to take to recover from outage or disaster without impacting the continuity of business.
- **Performance Testing:** Performance testing is done to make sure the system is able to withstand the unexpected load or request without breakdown.

- **User Interface:** How easily the system responds to user interface for request like AJAX call, button click, file upload, etc.
- **Install ability:** How easy the software is to get installed without much effort or knowledge needed.
- **Documentation:** How efficiently use manual is documented to use software by the end user.
- **Usability:** How easy the system software is designed so that it can be put into use by naïve users.
- **Load or stress testing:** This testing defines the maximum load capacity of the system software before it could breakdown or crash.
- **Back-activity Compatibility:** If a new version of software is developed, new system should make sure that it supports all the existing interfaces

#### Advantages of System Testing:

1. Testers do not require more knowledge of programming.
2. It will test the entire product or software so that we will easily detect the errors.
3. The testing environment is similar to that of real time production.
4. It checks the entire functionality of the system with different test cases.
5. After this testing, the product will almost cover all the possible bugs or errors and hence the development team will confidently go ahead with acceptance testing.

#### Disadvantages of System Testing:

1. This testing is a more time consuming process than others.
2. The cost for the testing will be high since it covers the testing of the entire software.
3. It needs a good debugging tool otherwise the hidden errors will not be found.

### **5.6.5 Functional Testing**

Checks an application, website, or system to ensure it's doing exactly what it's supposed to be doing. Functional testing is the process of validating functionality of a software application. Pass or fail is the result of a functional test, because either a feature works as designed or it does not.

The purpose of functional testing is to validate that the requirements of the software application have been met. It is important because functional testing assesses an application's fitness to be released to end users. While software engineering has evolved in the past decade, functional testing remains a core part of quality testing.

Advantage of Functional Testing:

1. It helps to identify any issues with the system's functionality before they become too much of a problem.
2. It can be used to verify that required features are working as expected and that the system is able to cope with unexpected conditions.
3. It can help to ensure that the product meets customer expectations and is bugfree.
4. It is an effective way to test the system under a variety of conditions and in a variety of scenarios.
5. It can be used to track progress and revise testing plans as needed.

Disadvantages of Functional Testing:

1. Functional testing is slow - Because functional testing is a detailed process, it can take a long time to complete. This can be a problem if you need to test a new feature quickly.
2. Functional testing is less accurate - Functional testing is less reliable than other types of tests because it relies on the actual function of the software being tested. This means that it can be difficult to find bugs that occur during normal usage.

3. Functional testing can be tedious - Because functional testing is focused on the actual functionality of the software, it can be tedious to conduct. This can lead to slow test times and missed bugs.
4. Functional testing is more expensive -functional testing is more expensive than other types of tests because it requires more time and effort to complete.

## **6. CONCLUSION**

In conclusion, the sport shops and academy business app project using React Native has the potential to address the challenges faced by newbies in obtaining information about sports. By creating a platform that brings together sports academies, equipment vendors, and users seeking information and resources related to their preferred sports, the project aims to generate revenue through business-to-customer services and advertising.

The project has the potential to create value for users by providing a one-stop solution for discovering and accessing information and resources related to sports, as well as for businesses by helping them reach out to new consumers and increase their visibility.

Furthermore, the use of React Native technology allows for the creation of a cross-platform app that can be used on both iOS and Android devices, making it accessible to a wider range of users.

Overall, the success of this project could potentially lead to a more informed and engaged sports community, with increased participation in sports activities and events, as well as increased revenue and growth opportunities for sports-related businesses.

## **FUTURE WORK**

Nothing is perfect and complete and there is always a scope of improvement in each and every product. Everything needs to be updated or upgraded on a timely basis to cope up with the current technology. There are many future scopes for this project and hopefully it will emerge into the biggest benefit in the field of artificial intelligence. There were many features we had hoped to integrate into our system, but we were compelled to cut them due to time constraints. However, given more time to work on the product, there are a few changes that we would make.

There is always a scope for enhancements in any developed system, especially when the project builds using the latest trending technology and has a good scope in future.

- The Sport-Strides project has great potential for future growth and expansion. Here are some possible areas of future development:

1. **Integration with Wearable Technology:** With the increasing popularity of wearable technology like smartwatches and fitness trackers, there is a potential for integrating these devices with the Sport-Strides platform. Users could track their progress in real-time, get personalized coaching, and access a range of other features.

2. **Expansion into Other Sports:** Initially, the project could focus on one or a few sports, but in the future, it could expand to cover a wider range of sports. This would broaden the user base and create new revenue streams for the platform.

3. **Integration with Social Media:** The platform could integrate with social media platforms like Facebook and Instagram to allow users to share their progress and achievements with their friends and followers. This would increase engagement on the platform and attract new users.

4. Virtual Coaching: The platform could offer virtual coaching to users who are unable to attend physical training sessions. This would enable users to receive personalized coaching from top coaches around the world.

5. Global Expansion: The project could expand globally, enabling users from around the world to access the platform. This would require localizing the platform for different languages and cultures.

Overall, the Sport-Strides project has immense potential for future growth and development. By incorporating new technologies and expanding into new sports and markets, the platform could become a leading player in the sports industry.



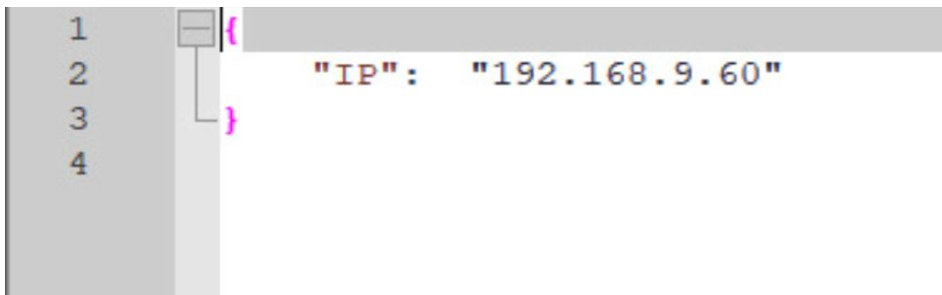
## User Manual

Step 1: install the packages in all 3 directories.

"npm i" in server

"npm i" in AdminPanel

"npm i" in SportStrides



```
1 {  
2   "IP": "192.168.9.60"  
3 }  
4
```

Step 2: Update local ip address in SportStrides in "ip.json" file

Step 3: Run "npx nodemon app.js" in server folder



```
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows  
PS C:\Users\yashb\Desktop\Main\Main - Copy\backend> npx nodemon app.js
```

#### Step 4: Run "npx expo start" in Stride Folder



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\yashb\Desktop\Main\Main - Copy\Stride> npx expo start
```

- Scan the QR CODE in expo mobile app



```
C:\WINDOWS\system32\cmd. x + -
Starting Metro Bundler

[QR Code]

> Metro waiting on exp://10.0.2.136:19000
> Scan the QR code above with Expo Go (Android) or the Camera app (iOS)

> Press a | open Android
> Press w | open web

> Press j | open debugger
> Press r | reload app
> Press m | toggle menu

> Press ? | show all commands

Logs for your project will appear below. Press Ctrl+C to exit.
```

- Now user can being to use app

- Existing users will continue with the login screen, else register screen.

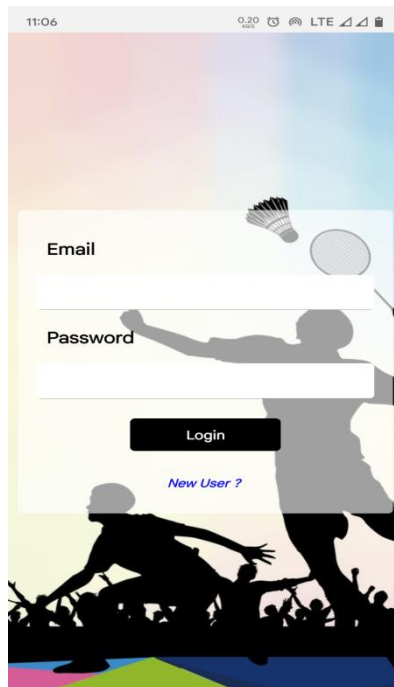


Figure: Login

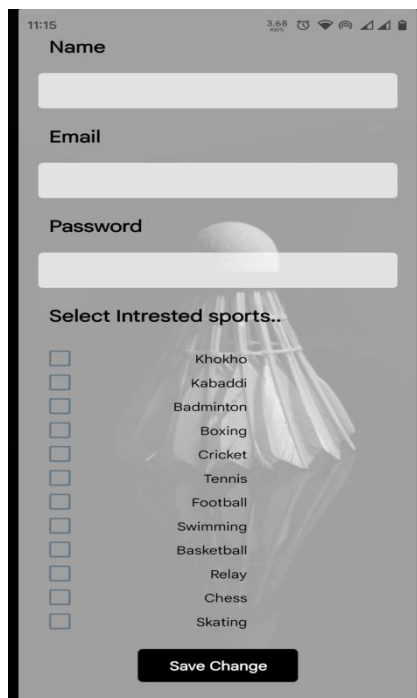


Figure: Register

- After filling form he will simply login to app
- Then user will redirected to Home Screen
- At home user can explore academies,shops and event as well



Figure: Home

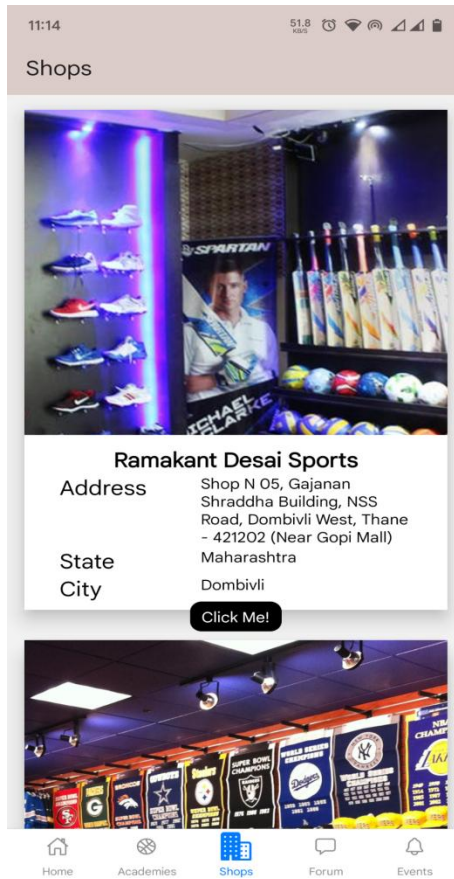


Figure: Shops

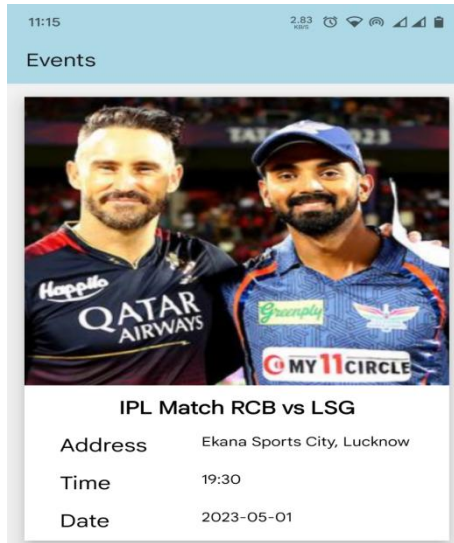
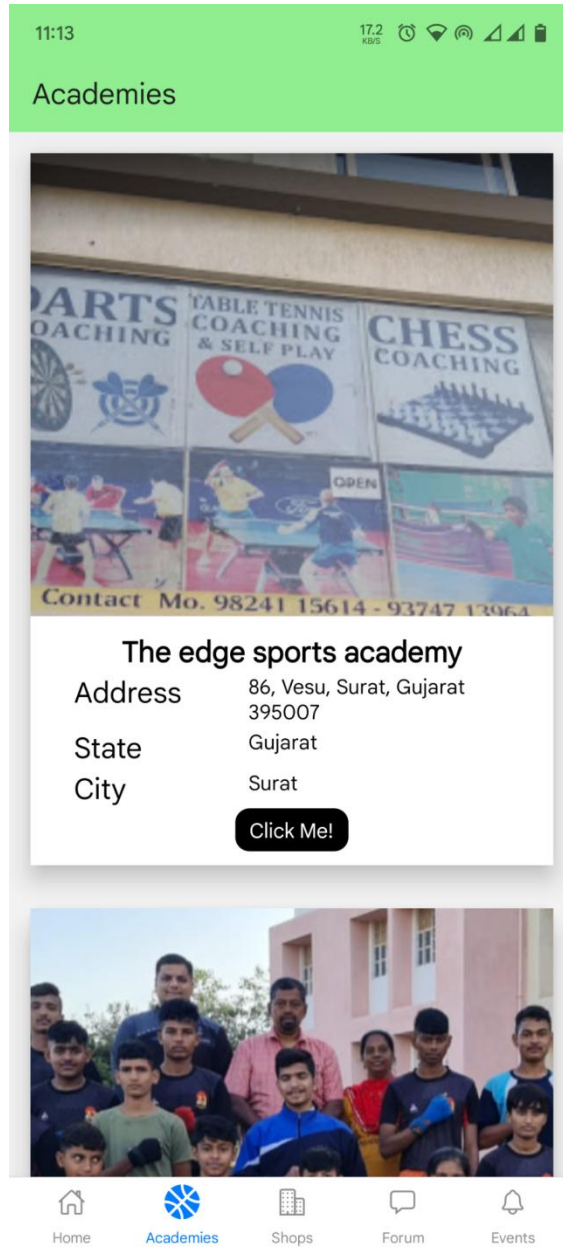


Figure: Events



**Figure: Academies**

- Also user can participate in realtime chat with their questions and suggestions

### Forum

1. Here user can discuss queries
2. Can give suggestions
3. Can ask Questions
4. Can connect with the fellow app users

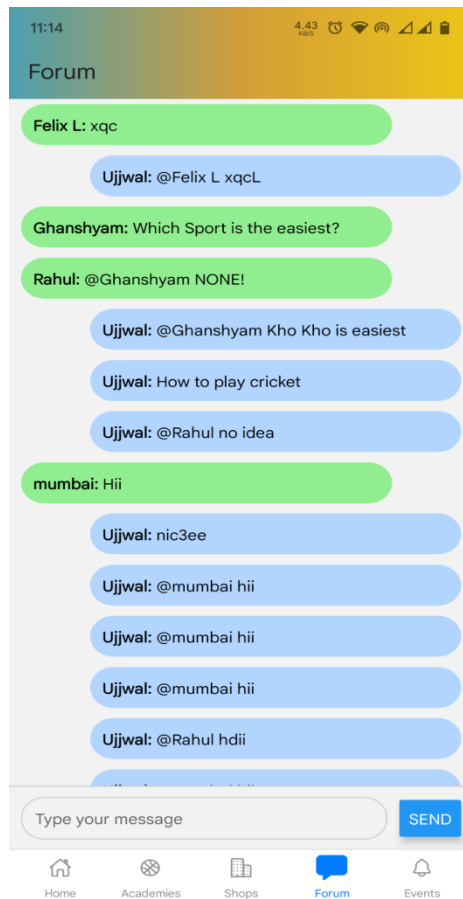
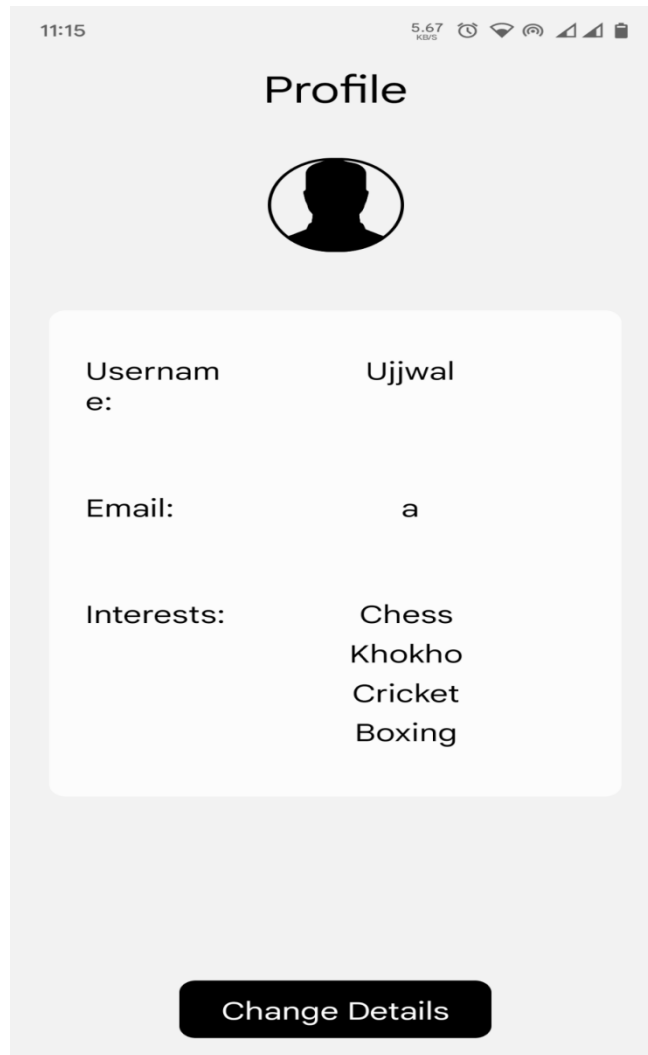


Figure: Forum

- User Can change their profile



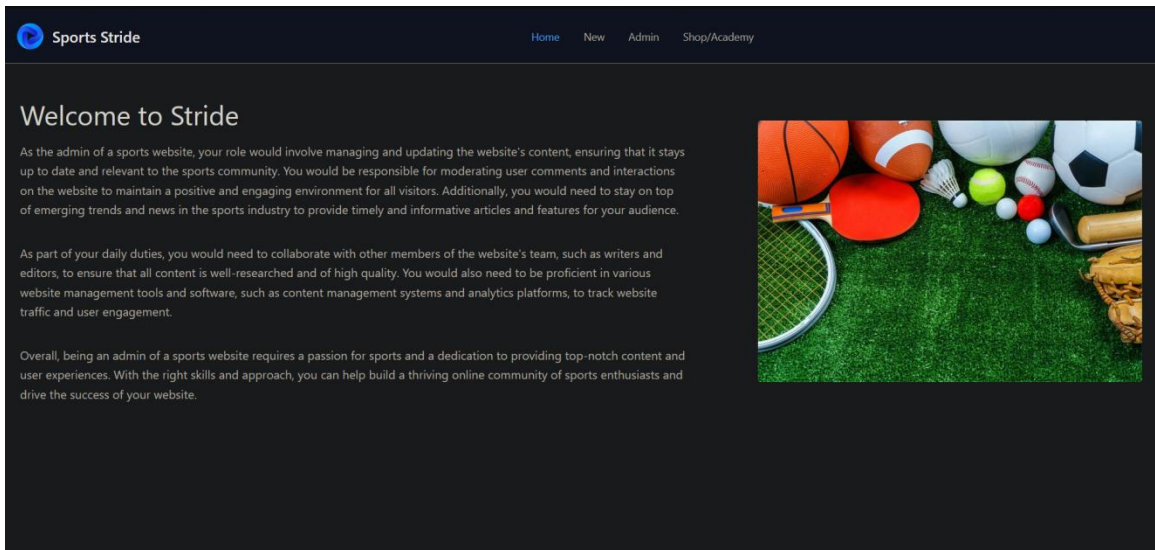
**Figure: Change Profile**

- User can also register their self as Shop/Academy by clicking “press here” of home page
- The process of accessing and using a web application is simple and straightforward. By clicking on the link and opening the web application in a web browser, users can easily navigate through the platform to accomplish their

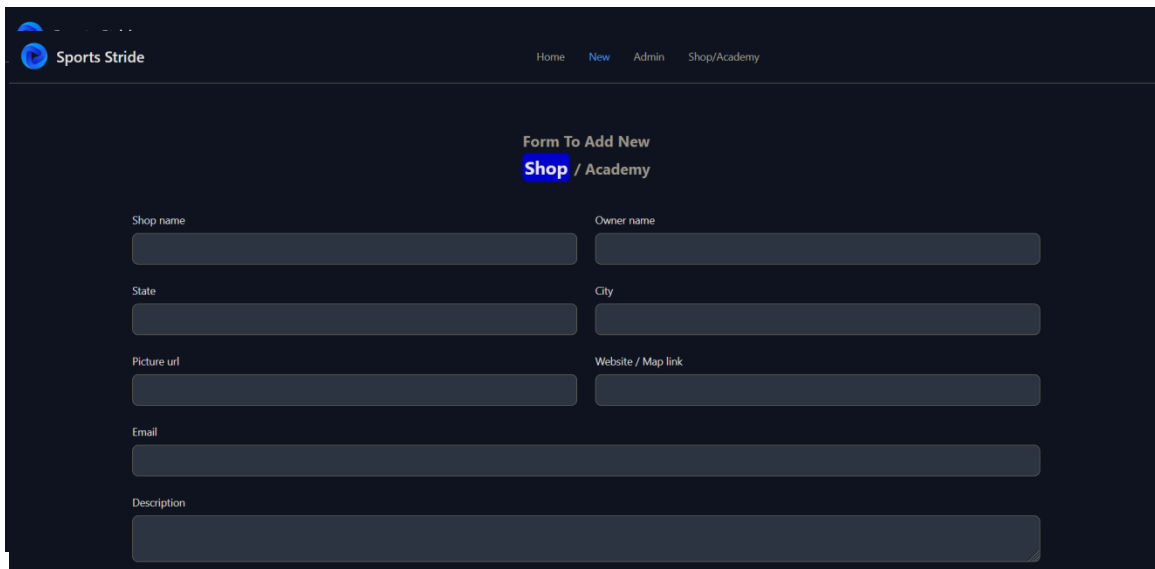


desired tasks. With a user-friendly interface and the ability to be accessed from anywhere, web applications are a powerful tool for productivity and collaboration.

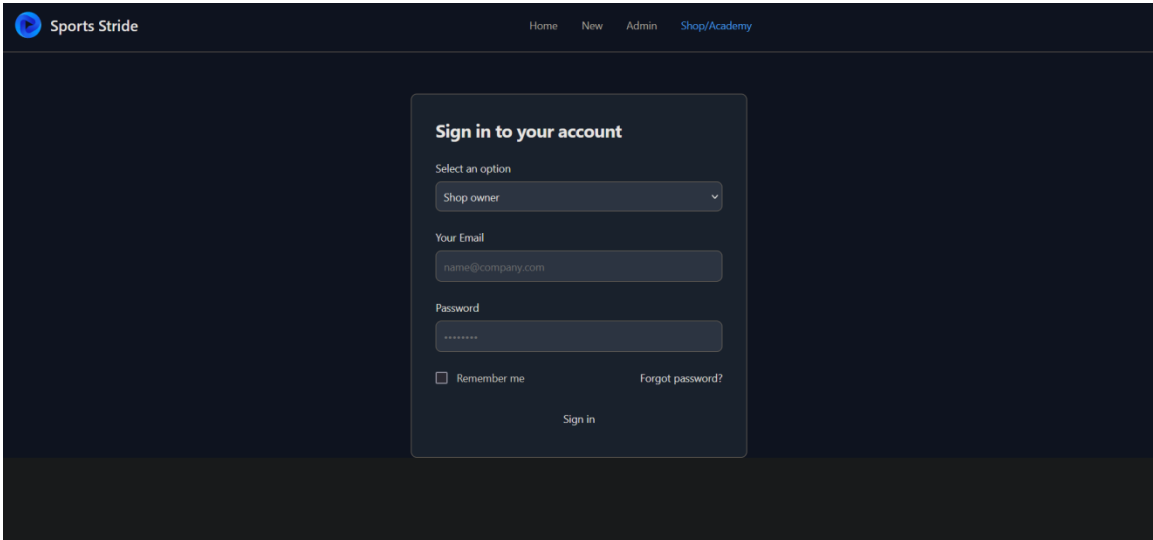
- Users can go to 4 different tabs. Home, New, Admin, Shop/Academy



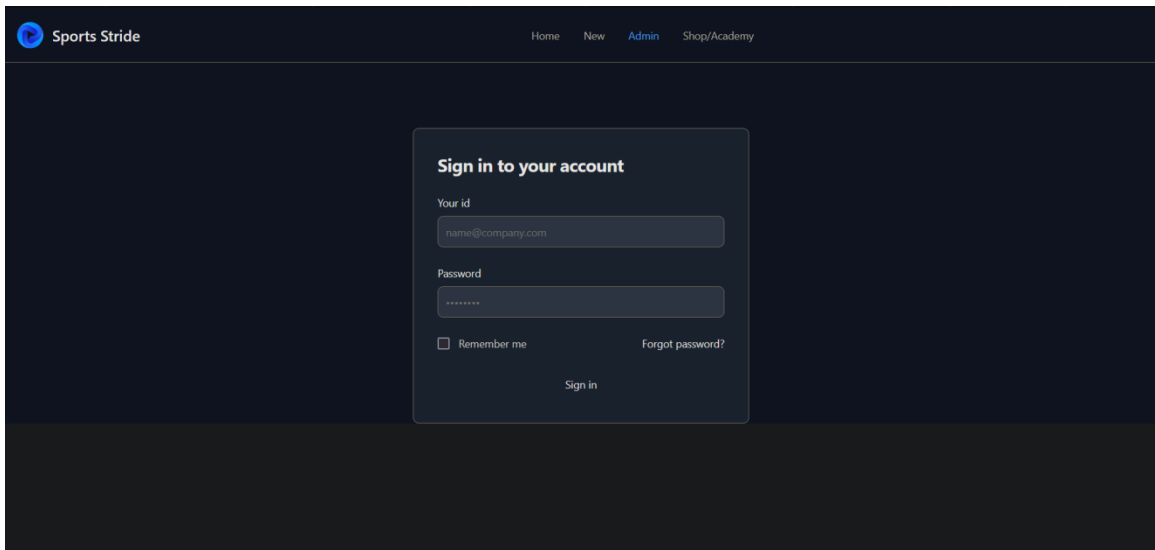
- Users can apply for a shop or an academy on the web app in the “New” tab.



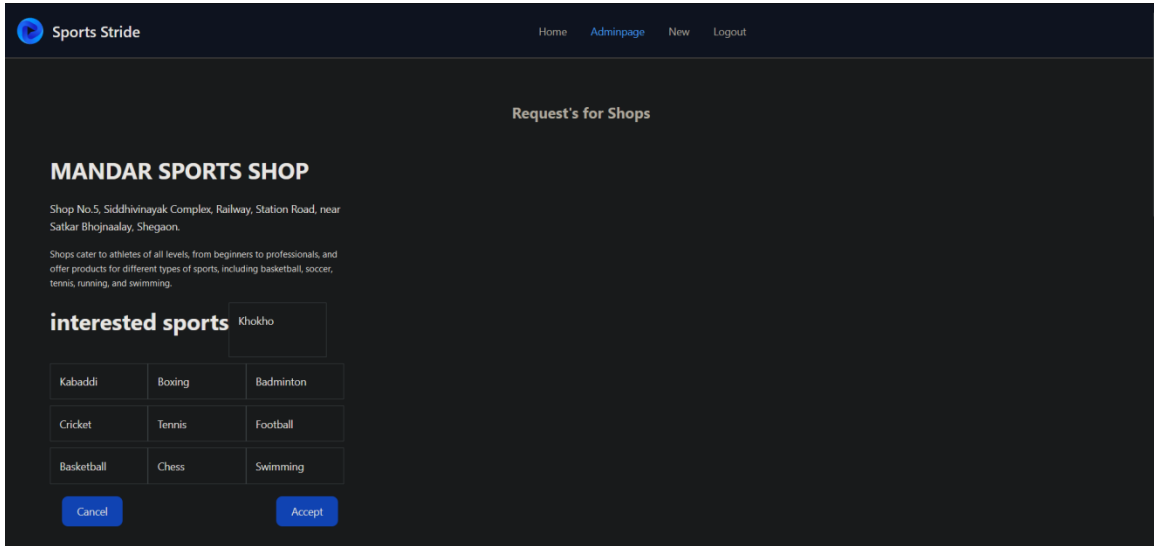
- Then login to use the functionalities of the site as a shop/academy.



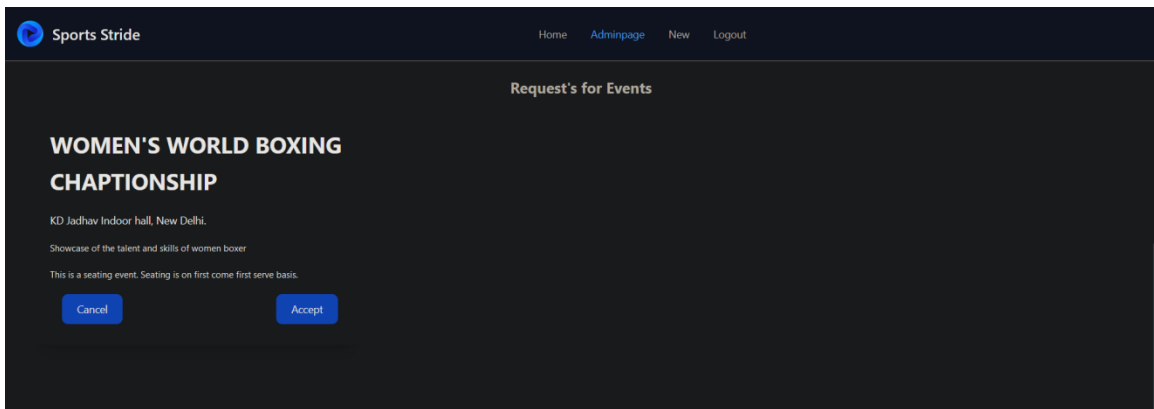
- Admin can login into the admin panel in the Admin Tab.



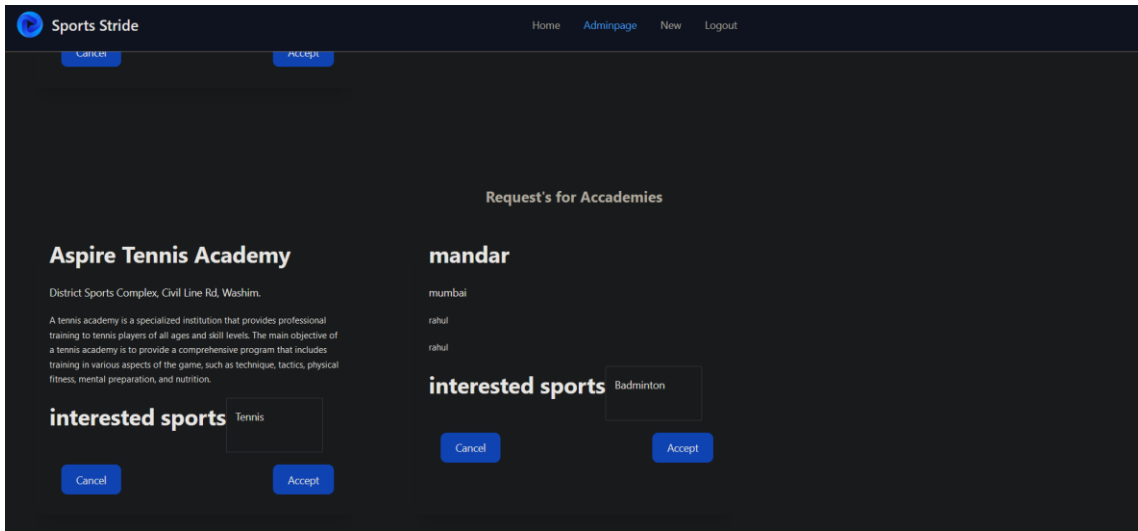
- After login admin can see dashboard like this



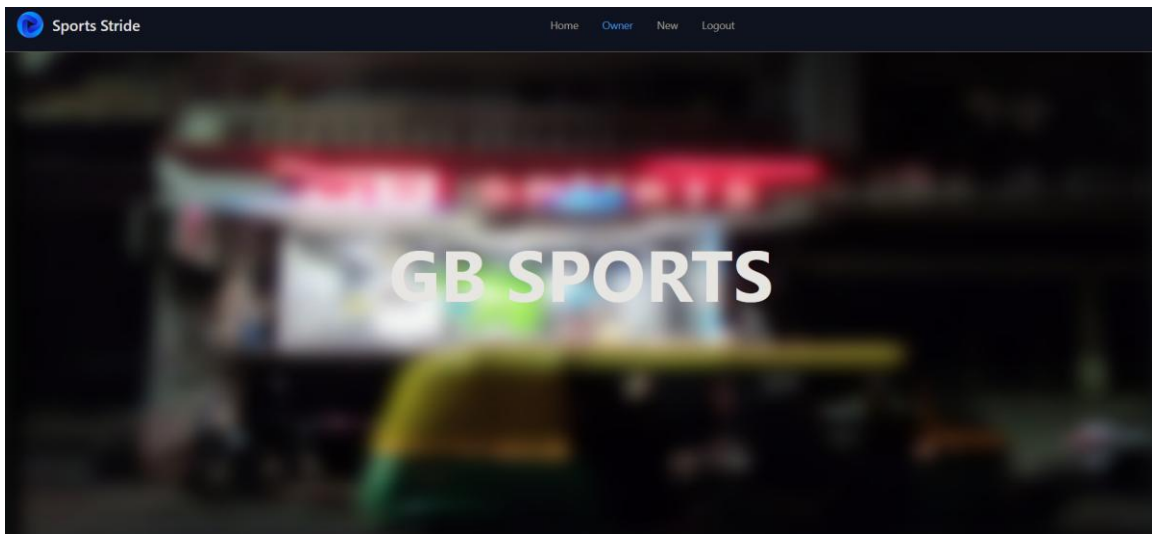
- Admin can accept or reject Shop/Academy



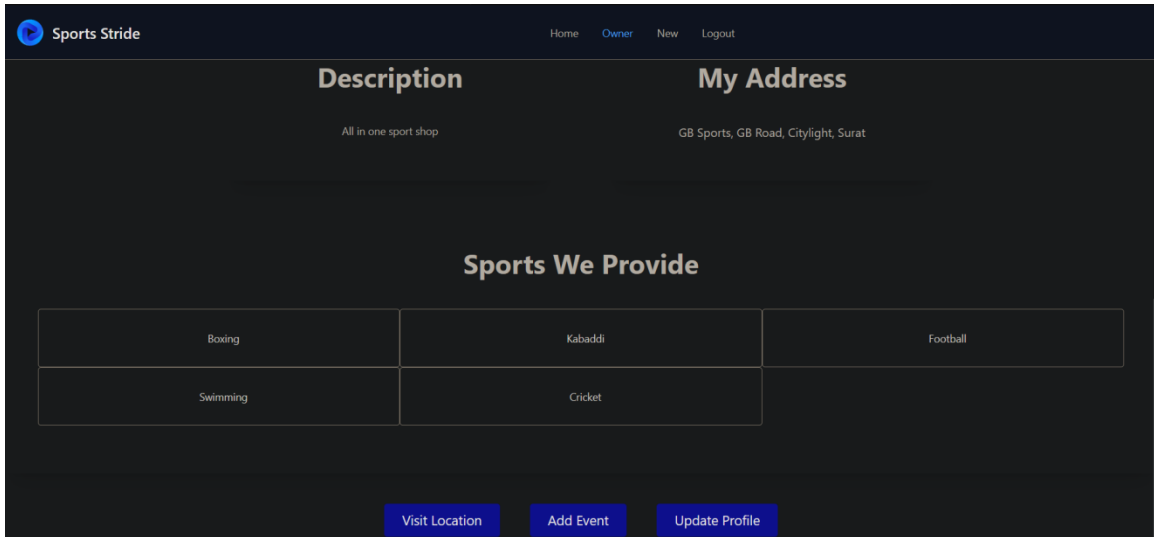
- Admin can accept or reject an event that has been posted by a shop or academy.



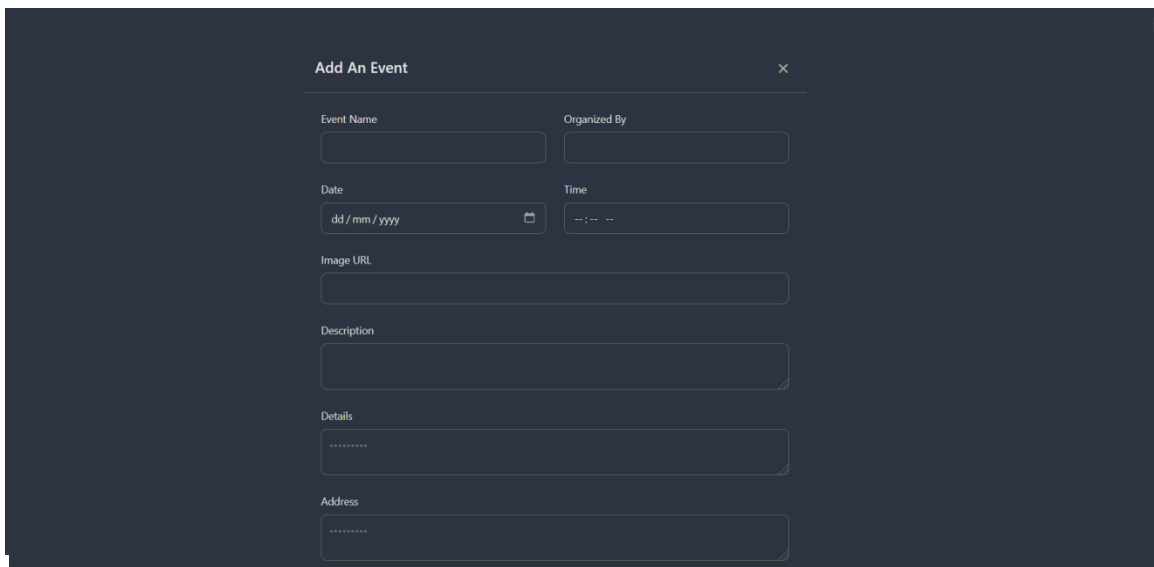
- Shop detail page after Shop Login



- Shop/Academy after login can view its Description, Address, Visit Location, Add new events, Update Shop/Academy Profile.



- Shop/Academy can add new Events.



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## **Dissemination of Work**

- 1) Review Paper - International Journal of Advanced Research in Science, Communication and Technology(IJARCST)**

**Title - “Sport-Strides learning and event system “**

**Authors - Narendra Mahalle, Yash Bora, Ujjwal Devre**

**Publisher - ISSN No - 2581-9429**

**Volume - Volume 3,Issue 1**

**DOI - 10.48175/IJARCST-9702**

**Issue - May 2023**



## **SOURCE CODE LISTING**

### **List of Screen Components in the App**

- Home.js
- Events.js
- InfoPage.js
- Shops.js
- Discussions.js
- Academies.js
- Profile.js
- UpdateProfile.js

### **List of Server Api Endpoints**

- login
- register
- deleteuser
- getdata
- getsports
- getshops
- getacademies
- update
- updateacademy
- updateshop
- getshops
- getshoprequest
- getacademyrequest
- geteventlist

## Sport-Strides (Sports Learning and Event System)

Narendra Mahalle, Ujjwal Devre, Yash Bora

Shri Sant Gajanan Maharaj College of Engineering, Shegaon, India

**Abstract:** *Sport-Strides is a pioneering initiative that aims to tackle the challenge of insufficient information and resources pertaining to various sports. The project strives to create a unified platform that brings together institutions, academies, and equipment vendors to provide a business-to-customer service experience. Through this platform, users can explore diverse sports and areas of interest, identify nearby training institutes and academies, and access resources related to upcoming events. One of the key highlights of this platform is its provision of external links related to upcoming events for different sports, thereby enabling users to stay up-to-date with the latest happenings. The platform offers a win-win situation for vendors, as they can attract new consumers referred from the platform. Additionally, the project aims to help training institutes get discovered by more users looking for a professional training space.*

**Problem Statement:** *As a Newbie, there is currently no resource accessible to learn about a certain sport, including how it is played, its rules, where to receive professional training for the sport, and where to find the equipment needed for the activity. Lack of knowledge about events at the local, national, and international levels for the specific sport.*

**Keywords:** Android app, React native, Javascript, Academy, Shops, Organizers

### I. INTRODUCTION

Since ancient times, sports have played a major role in human civilization, fostering social interaction and encouraging physical health and wellness. Finding trustworthy information about a sport's regulations, how to play it, and where to get expert training can be difficult for many individuals, especially the ones who are usually new to it. Additionally, it might be difficult to keep up with activities at the local, national, and worldwide levels, which results in a lack of interest and participation in the sport.

The goal of this study paper is to examine the difficulties novices encounter while trying to learn about sports and to suggest a remedy in the shape of an extensive sports information platform. The suggested platform will serve as a primary information hub for information about different sports, such as how to play, rules and regulations, possibilities for training, and access to facilities and equipment. Additionally, the portal will include details about local, national, and international sporting events, giving users the chance to engage with and take part in their preferred sports.

This study will conduct a literature analysis to examine the current research on the difficulties experienced by novices in learning about sports in order to construct this platform. It will also examine the current condition of sports information platforms and how well they can help beginners with their problems. The complete sports information platform's model, including its features, functionality, and potential impact, will then be suggested in the paper.

An extensive sports information resource is the intended result of this research paper.

platform that will encourage and enable beginners to join in sports. The platform will give trainers and sports organisations a tool to reach new audiences, opening up chances for the sports business to expand and thrive. In general, the goal of this study article is to promote sports as a way to promote physical fitness, wellness, and social cohesion.

By uniting institutions, academies, and instrument vendors onto one platform, we will implement a business model on this issue in order to make money off of it.

Users will learn about sports and fields that they could be interested in. The user can locate nearby Academies or Training facilities that are relevant to their field.

The user will utilise tools like external links that we supply in relation to the impending events in the fields.

Vendors will receive new clients through our platform.

A greater number of people searching for a place to receive professional training will find institutes. Our platform, which offers business to customer (B2C) service, brings together Institutes/Academies/Instrument-Vendors (Businesses) and Users/Seekers (Consumers). As the site gains more users, revenue will also come from adverts.

## II. LITERATURE SURVEY

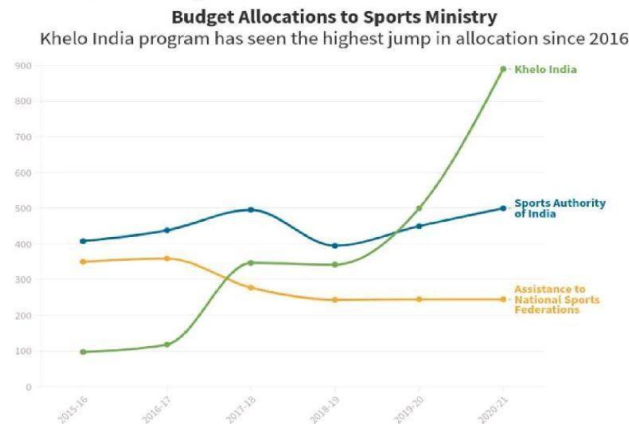
This research paper aims to explore the need for a comprehensive platform that provides all-in-one-place information about sports for potential users. The paper highlights the increasing demand for sports information and the complexity of searching for information on various sports, which can be overwhelming and demotivating for newcomers. The platform aims to address this problem by providing users with information about different categories of sports, rules of each sport, major tournaments, how to get into the sport, where to start learning, physical accessories required, and where to buy them.

The literature survey found that there is a gap in the market for a comprehensive platform that provides all-in-one-place information about sports. Although there are some apps like Sportstoons that provide information about sports, they are limited in terms of the number of sports covered and do not provide information about events, tournaments, or professional training.[1]

The proposed platform aims to cater to potential users by providing a user-friendly interface that offers information on a wide range of sports, including the most popular and lesser-known sports. The platform also offers features for organisers, institutes/academies, and shops to promote their events, subscription plans, and products related to sports.[1] One of the key features of the proposed platform is its ability to connect users with coaches and trainers for professional training. Many newcomers to sports may feel overwhelmed or unsure of where to begin when it comes to training and developing their skills. The platform can provide a centralized location for users to find coaches and trainers for various sports, along with information on their qualifications and experience. Users can also leave reviews and ratings of coaches and trainers, helping others make informed decisions when selecting a coach or trainer.[2]

The platform can also offer a community aspect where users can connect with other sports enthusiasts, share information, and participate in discussions. Users can create profiles, join groups, and follow their favourite sports and teams. The platform can also provide a section for user-generated content, such as blog posts, reviews, and tutorials. This can create a sense of community and encourage users to share their experiences and knowledge with others, helping to build a comprehensive and vibrant platform for sports enthusiasts of all levels.

The technology stack used for the platform includes JavaScript for the frontend, React-Native framework, and NodeJS for the backend. The database used is MongoDB.



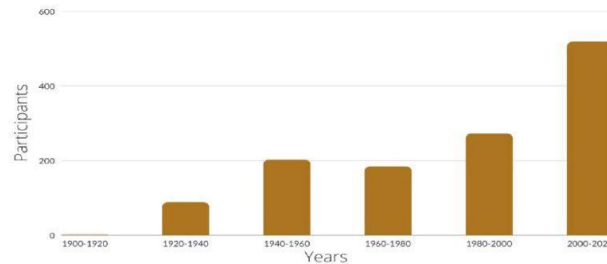
This [https://en.wikipedia.org/wiki/India\\_at\\_the\\_Olympics#List\\_of\\_competitors](https://en.wikipedia.org/wiki/India_at_the_Olympics#List_of_competitors) source states that from 1980 to 2000, 272 times, and from 2000 to 2020, India participated in the Summer Olympics from 1950 to 1960 a total of 168 times.[7] 518 times, demonstrating India's expanding interest in sports.[2]

More awareness is brought on by the rise in the number of international events held in India. The number of international sporting events held in India increased by 92.86% between the years 2001 and 2010 and 2010 to 2020 (Source).[3]

The youth are further encouraged to join in and practise sports by the notable budgetary increases for programmes and organisations like Khelo India Programme and Sports Authority of India.

## OLYMPICS

### INDIA'S PARTICIPATION



In conclusion, this research paper highlights the need for a comprehensive platform that provides all-in-one-place information about sports for potential users. The proposed platform aims to cater to this need by providing a user-friendly interface and features for organisers, institutes/academies, and shops. The technology stack used for the platform includes JavaScript, React-Native, NodeJs, and MongoDB. The app can be a very valuable aid for sports enthusiasts and newcomers looking to explore and learn about various sports.

### III. METHODOLOGY

The Sport-Strides(Sports Learning and Event System) project intends to develop a one-stop shop where sports aficionados may study, buy gear, locate training centres, and keep up with events in their particular sports. The approach used to create the Sport-Strides platform is covered in this section.

To start, our team thoroughly investigated the requirements and difficulties faced by those who are interested in sports. We searched for sources on event management, instrument stores, training academies, and sports learning. We browsed through these references using related keywords and chose the ones that would be most useful for our project.

We started thinking about concepts and designs for the Sport-Strides platform after weeding out the most pertinent references. In order to best meet the needs of our project, our team collaborated to mix the greatest features and functionalities from the chosen references.

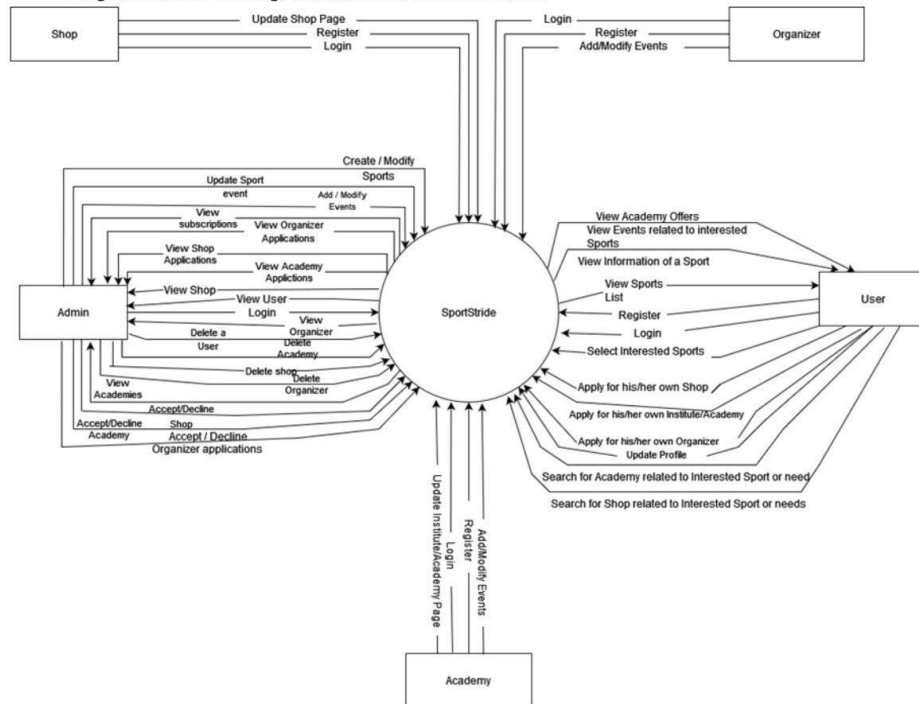
User authentication, sports equipment buying, a listing of sports academies and trainers, event listing and registration, and sports-specific learning materials are just a few of the major components of the Sport-Strides platform. Modern web technologies and frameworks, such React.js and Firebase, will be used to build the platform.

The Sport-Strides project's overall goal is to give sports aficionados a comprehensive platform where they can learn, buy gear, locate training centres, and keep up with news regarding their particular sports. In order to produce the best user experience for our target audience, a rigorous research process and teamwork were used to design this platform.

Users can do:

1. Browse and search for sports: Users can browse and search for sports they are interested in learning more about to find out more about the rules, how the sport is played, where to obtain professional training, and where to find the necessary equipment.

2. Find sports academies and shops: Users can look for local sports academies and shops to find expert instruction and gear for their preferred sport.
3. View and participate in sports events: Users can register through the app to participate in these events and view forthcoming sporting events at the local, national, and worldwide levels.
4. Connect with other sports enthusiasts: Users can establish connections with other sports fans in the neighbourhood to exchange advice, stories, and create teams.



**IV. DATA FLOW DIAGRAM**

- Partnership Development: To give users a complete experience, the Sport-Strides team collaborates with sports academies, retailers, and event planners. This includes highlighting the partners' services on the app, giving them a platform to connect with potential clients, and marketing their events.
- App Development: The Sport-Strides team creates a mobile app that collects all the sports-related information and services. The software includes a training and event registration system, personalised recommendations based on the user's hobbies and preferences, and an easy-to-use user interface.
- Testing and iteration: To receive feedback on the user experience and spot areas for improvement, the Sport-Strides team tests the app with a set of beta testers. The group then refines the app in response to user feedback to make sure it fulfils their needs.

In general, the Sport-Strides philosophy is focused on giving newcomers to the world of sports a seamless and all-encompassing experience. The Sport-Strides team seeks to develop an app that aids users in learning about sports, locating training and equipment, and connecting with other enthusiasts. To this end, they combine user research, content production, partnership development, app development, testing, and iteration.

## V. TECHNOLOGY STACK

In this section, we will explore the various software components that make up your technology stack.

- **JavaScript:** JavaScript is an extensively used programming language that's primarily used for creating interactive web applications. It runs on both the client-side and server-side, making it a versatile language for building modern applications.
- **React Native:** It is a framework used for building mobile apps with JavaScript and React. It enables developers to build native mobile apps for iOS and Android platforms using a single codebase. It uses a similar design compared to React, which allows developers to create UI components that can be shared between web and mobile applications.
- **ReactJs:** It's a JavaScript library used for developing and creating user interfaces. It provides a declarative approach to building UIs and enables developers to create reusable UI components that can be used across an application.
- **NodeJs:** Node.js is an open-source server environment that runs JavaScript code on the server-side. JavaScript allows developers to create scalable, fast apps. The event-driven, non-blocking I/O mechanism provided by Node.js makes it the perfect platform for developing real-time applications.
- **ExpressJs:** A well-liked web framework for Node.js is Express.js. It offers a convenient method for creating web applications and APIs. Numerous features, including routing, middleware, and error handling, are available with Express.js.
- **MongooseJs:** It's an (ODM) short for Object Data Modeling library used in MongoDB / Node.js. It provides a higher-level API for interacting with MongoDB, allowing developers to define data models and interact with the database in an easy and consistent manner.
- **JWT Tokens:** JSON Web Tokens (JWT) are a type of token-based authentication mechanism. JWTs are used to securely transmit information between parties, typically as part of a user authentication process.
- **APIs:** APIs (Application Programming Interfaces) are sets of protocols and standards that enable communication between different software applications. APIs allow developers to access and manipulate data from different sources, such as social media platforms, weather services, and payment gateways.
- **MongoDB:** MongoDB is a popular NoSQL database that provides a flexible and scalable way to store and manage data. It allows developers to store data in a document format, making it easier for developers to work with and on unstructured data. MongoDB is also a distributed database, which means that it can scale horizontally across multiple servers.

## VI. DISCUSSION

Sport-Strides is an innovative project that seeks to address a common problem in the sports industry - a lack of information and resources about a particular sport. The project has been designed to offer a comprehensive solution to this problem by bringing together institutions, academies, and equipment vendors on one platform to offer a business to customer service platform.

The primary objective of the project is to help users discover sports and fields of interest, find nearby academies or training institutes, and access resources related to upcoming events. One of the key features of the project is the ability to provide external links related to upcoming events related to the fields, which will be helpful for users to stay updated about the latest events. This feature will enable sports enthusiasts to remain informed about upcoming events and be well-prepared for them.

The platform is also expected to be beneficial to vendors, who will receive new consumers referred from the platform. By bringing vendors and consumers together on one platform, the project has the potential to create new business opportunities and foster the growth of the sports industry. Moreover, the project will also help institutes to be discovered by more users seeking a place to train professionally. This feature will help increase the visibility of training institutes and enable them to attract more students.



Impact Factor: 7.301

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From a business perspective, the project has a potential revenue stream through advertisements as the platform reaches more users. This may be a big source of income for the platform as the user base expands. Additionally, the platform has the potential to monetize user data to generate more revenue streams.

However, the success of the project largely depends on the execution of the business model and the ability to attract users and vendors to the platform. To achieve this, the platform needs to be user-friendly and offer a seamless experience to the users. Additionally, the project needs to ensure that the vendors are legitimate and offer quality products or services. The platform must also implement strict data privacy policies to ensure that user data is adequately protected.

Moreover, the platform must leverage digital marketing strategies to attract a broad user base. By utilising effective digital marketing techniques, the platform can target the right audience and increase its reach. Furthermore, the platform must continuously evolve to meet the needs of its users, and user feedback must be incorporated to make the platform better.

Overall, the Sport-Strides project has the potential to be a game-changer in the sports industry by providing a comprehensive solution for sports enthusiasts and businesses in the industry. The platform's unique business model and features make it stand out in the crowded sports industry, and if executed correctly, it could significantly improve the sports industry's efficiency and growth.

#### VII. CONCLUSION

The project aims to solve the problem of a lack of information about a particular sport and related resources. By bringing institutions, academies, and equipment vendors on one platform, the project intends to generate revenue by offering a business to customer service platforms. Users will be able to discover sports and fields of interest, find nearby academies or training institutes, and access resources related to upcoming events.

Vendors will benefit from new consumers referred from the platform, while institutes will be discovered by more users seeking a place to train professionally. The project also plans to generate revenue through advertisements as the platform reaches more users. Overall, the project has the potential to provide a comprehensive solution for sports enthusiasts and businesses in the industry.

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