

FITNESS TO DO



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

Guided by
Prof. S.S. Muddalkar

Submitted by
Shreya Kharche
Neha Saraf
Tuhar Ingle
Omsing Bhonde

DEPARTMENT OF INFORMATION TECHNOLOGY
SHRI SANT GAJANAN MAHARAJ COLLEGE OF
ENGINEERING, SHEGAON (M.S.)
2022- 2023

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



2022-2023

CERTIFICATE

This is to certify that **Shreya Kharche, Neha Saraf, Tushar Ingle, Omsing Bhonde** 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 "**Fitness To Do**" 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.

Prof. S. S. Muddalkar
(Project Guide)

Dr. A. S. Manekar
Head of the Department
SSGMCE, Shegaon

Dr. S. B. Somani
Principal
SSGMCE, Shegaon

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



2022-2023

CERTIFICATE

This is to certify that the project work entitled “**Fitness To Do**” submitted by **Shreya Kharche, Neha Saraf, Tushar Ingle, Omsing Bhonde**, 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.

Internal Examiner

External Examiner

Date:

Date:

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Student Names :

1 Shreya Kharche

2 Neha Saraf

3 Tushar Ingle

4 Omsing Bhonde

ABSTRACT

Being Physically and rationally fit is extreme crave for each human being. This require has been realized by the individuals behind the improvement of wellness applications. Due to busy lives peoples are continuously moving from one city to another city so they find it difficult to track nearby gym location. To serve the different needs of clients, these apps offer personalization conjointly offer nutrition-based eat less plans by dietitian and exercise centre adornments other than work out and workouts. The apps offer incredible help to people who do not have time to visit the Exercise centres and health centres so casually such applications will help user to save their time and focus on their fitness regime.

Exercise plans and nutrition plans are the essential parts of healthy lifestyle management in this modern time. In the time of modern developing technology, stressful work, busy schedules, people often tend to neglect their health. Teenagers are the major victims of health problems and obesity. Their uneven schedule makes it difficult to keep track of nutritional value of their meal intake and maintaining health fitness. This project aims to develop an app for proper workout plans, nutrition plans, track nearby gym locations and daily calorie intake to modify fitness and healthy life style. Problems associated with weight gain, overweight, underweight during young adulthood also problems associated with physical activity, consumption of fast food, fruit and vegetables, soft drinks, sugar-sweetened foods. The android application provide solution for major problems faced during achieving good physique and healthy lifestyle with proper nutrition and workout plans.

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1. INTRODUCTION

1.1 Preface

Being Physically and rationally fit is extreme crave for each human being. This require has been realized by the individuals behind the improvement of wellness applications. Due to busy lives peoples are continuously moving from one city to another city so they find it difficult to track nearby gym location. To serve the different needs of clients, these apps offer personalization conjointly offer nutrition-based eat less plans by dietitian and exercise centre adornments other than work out and workouts. The apps offer incredible help to people who do not have time to visit the Exercise centres and health centres so casually such applications will help user to save their time and focus on their fitness regime.

Exercise plans and nutrition plans are the essential parts of healthy lifestyle management in this modern time. In the time of modern developing technology, stressful work, busy schedules, people often tend to neglect their health. Teenagers are the major victims of health problems and obesity. Their uneven schedule makes it difficult to keep track of nutritional value of their meal intake and maintaining health fitness. This project aims to develop an app for proper workout plans, nutrition plans, track nearby gym locations and daily calor..ie intake to modify fitness and healthy life style. Problems associated with weight gain, overweight, underweight during young adulthood also problems associated with physical activity, consumption of fast food, fruit and vegetables, soft drinks, sugar-sweetened foods. The android application provide solution for major problems faced during achieving good physique and healthy lifestyle with proper nutrition and workout plans.

1.2 Statement of Problem

To understand the problem faced by the people who are continuously moving from one city to another city and to help them to track nearby gym/location/shops/Healthcenters. In this busy society, people find it difficult to dedicate time for their health and the cost of accessing fitness centres are very high. This research is undertaken to study the users' perspectives on users' health. Nowadays the usage of such apps has increased rapidly as everyone is leading a busy life. So, this study is very effective as it helps to know

how much these apps influence the adult health as well as to find the impact and influence of fitness applications on improving the adult health at low cost.

1.3 Objectives of Project:

The objectives of making this android application are:

- To Shows nearby gym locations and their facilities to the user.
- To analyse the effectiveness of fitness apps on developing fitness of a user.
- To get the information about gym equipment from the stores.
- To study the effect of fitness application to save users time and help them with their busy schedules.
- To provides proper workout plan, nutrition plan by the dietitian as per the need of user in order to achieve a healthy life style.
- To understand whether wellness application is favoured over fitness centres and how it in turn helps users.
- To provides most importantly everything in one application gym information, trainer information, their contacts and nutrition-based diet plans and shop locations which contains gym equipment's.
- To observe the popularity of wellness application among users and how it has helped them to come up with their busy schedules.

1.4 Scope and Limitations of the Project

1.4.1 Scope:

This research is notable as it is helpful in analysing the effectiveness of the fitness apps in improving the health of the users. Most of the people are conscious of their health and wants to remain fit. However, many find it difficult to go to fitness centres due to various constraints like cost, time and accessibility. As such, the importance of these apps is increasing today. This research helps in finding the reason for choosing these apps over fitness centres and how it improves users' health.

1.4.2 Limitations:

This application has some limitations as follows:

- This application is constrained for working for a particular city.
- As this application is a prototype model so reaching towards user is a major challenge.
- It may be challenging for the gym/shop owners to register on the app if they are not registered on google map.

1.5 Organization of the Project

When it comes to organizing for fitness, there are a few different approaches you can take depending on your goals and preferences.

Here are some ideas:

Join a gym: A gym is a great option if you want access to a variety of equipment and group fitness classes. Many gyms offer personal training services as well, which can help you develop a customized workout plan.

Find a workout buddy: If you struggle with motivation, finding a friend or family member who shares your fitness goals can be a great way to stay accountable and have fun while working out.

Use fitness apps: There are many fitness apps available that can help you track your progress, find workouts, and stay motivated. Some popular options include MyFitnessPal, Fitbit, and Nike Training Club.

Hire a personal trainer: If you want a more individualized approach, hiring a personal trainer can be a great option. A trainer can assess your fitness level, create a customized workout plan, and provide ongoing support and motivation.

Join a sports team: If you enjoy team sports, joining a local league or club can be a fun way to stay active and meet new people.

Ultimately, the key to organizing for fitness is finding an approach that works for you and that you enjoy. Whether you prefer to work out alone or with others, at home or at a gym, there are many different options to explore

2. LITERATURE SURVEY

There are many health issues in today's time and due to the busy lives, people are moving from one city to another so they find it difficult to track the nearby gyms.

People need to have a proper diet plan which is nutrition based and given by the fitness trainer also there is no such application available. People are finding it difficult to track the shop which contains all the required gym accessories. Keeping this problem in mind we have realized the need of this application which will provide everything in one platform.

Amidst the several challenges faced during the outbreak, people took out time to find newer ways to lead healthier lifestyles and take better care of themselves. A recent report observed that 75% of Indians were consuming home-cooked food, 54% were exercising regularly, 47% were going for consistent health check-ups, and 30% were upgrading their fitness regimes using advanced apps and devices. Through a variety of fitness and wellness apps, fitness enthusiasts were not only meeting their daily walk and body workout targets but were also practicing mindfulness and meditation on the go.

Physical fitness is not only one of the most important keys to a healthy body, it is the basic of dynamic and creative intellectual activity. Thus, to provide an all-in-one platform to the users from finding nearby gyms to getting proper diet and necessary gym accessories we are making this android application.

Android is the first mass-produced consumer-market open-source mobile platform that allows developers to easily create applications and users to readily install them. However, giving users the ability to install third-party applications poses serious security concerns.

While the existing security mechanism in Android allows a mobile phone user to see which resources an application requires, she has no choice but to allow access to all the requested permissions if she wishes to use the applications.

Paper 01:

Saritha Anna Joseph, Reshma Raj K., Sony Vijayan 6, March 2020 IJRTE “User’s Perspective about Mobile Fitness Applications”

Description:

Being fit physically and mentally is every human being’s ultimate desire. This need has been realized by the pioneers behind the development of fitness applications. To serve the diverse needs of users, these apps offer personalization and also offer diet and nutrition besides exercise and workouts. The apps have been a great relief to people who do not have time to visit fitness centres. Also, it provides cost free exercise guidelines and diet packages. Many people who have realized the importance of these apps in their daily life have started making use of such apps. This study aims to understand the user’s stance on fitness apps available in mobile devices. Basically, the study focuses on the effectiveness of fitness apps in terms of various factors like time, cost and accessibility. Also, it digs into the reasons why these apps are preferred over fitness centres. Requisite information regarding various related aspects was collected through primary data from one hundred respondents. The study also alludes on the means to increase and improve the user participation towards using the apps.

An application is a program which performs some definite function. It has now become an essential part of the human body. Most of the apps play an important role in one’s day to-day life. The apps have become an indispensable part of human lives. Apps can be accessed using various mobile computing devices which have made the use of these apps at ease. Originally the apps were meant for email, contacts, calendar, etc. but the increased public demand became the reason for its expansion to other areas such as mobile games, GPS services, recharge and ticket booking facilities, fitness services resulting in millions of apps available at various application distribution platforms. One of the emerging apps is Fitness apps. These apps can be used anywhere at any time for getting fit. They have now become a perfect solution for those people having busy lives. Most of the people are relying on these apps since they provide easy access to them at any time.

Paper 02:

Adria Montaner-Mas, Antonio Martinez-Nicolas, Carl J. Larvie, Steven N. Blair, Robert Ross, Ross Arena, and Francisco B. Ortega (2019). A Systematic Review of Fitness Apps and Their Potential Clinical and Sports Utility for Objective and Remote Assessment of Cardiorespiratory Fitness. *Sports Medicine* 2019, 49(4), 587-600. doi:10.1007/s40279-019-01084-y

Description:

In recent years, with the promotion of the concept of sports to gain health, the cause of national fitness has stepped into the fast lane of development. However, for ordinary fitness people, due to the lack of corresponding supervision and evaluation feedback, resulting in long-term inaccurate or even wrong fitness process. Therefore, this paper designs and implements a skeleton-based fitness action evaluation system. Firstly, open pose algorithm is applied to extract the skeleton nodes of each frame in the video, and then the extracted data is prepossessed by key node alignment, skeleton node balancing and other technologies. Then the skeleton nodes are used to evaluate the action duration, speed and scale. Finally, the evaluation model is established, the skeleton node is used to calculate the duration, speed and standard degree of the action, and the standard degree of the action is divided into three grades: excellent and poor, so as to guide the standardization of the trainer's action. Cardiorespiratory fitness (CRF) assessment provides key information regarding general health status that has high clinical utility. In addition, in the sports setting, CRF testing is needed to establish a baseline level, prescribe an individualized training program and monitor improvement in athletic performance. As such, the assessment of CRF has both clinical and sports utility. Technological advancements have led to increased digitization within healthcare and athletics. Nevertheless, further investigation is needed to enhance the validity and reliability of existing fitness apps for CRF assessment in both contexts. The present review aimed to (1) systematically review the scientific literature, examining the validity and reliability of apps designed for CRF assessment; and (2) systematically review and qualitatively score available fitness apps in the two main app market.

Paper 03:

G. Dini, F. Martinelli, I. Matteucci, M. Petrocchi, A. Saracino, D. Sgandurra, “A Multicriteria Based Evaluation of Android Applications,” in 4th International Conference on Trusted Systems, InTrust 2012. Springer-Verlag, December 2012.

Description:

Android applications (apps) pose many risks to their users, e.g., by including code that may threaten user privacy or system integrity. Most of the current security countermeasures for detecting dangerous apps show some weaknesses, mainly related to users’ understanding and acceptance. Hence, users would benefit from an effective but simple technique that indicates whether an app is safe or risky to be installed. In this paper, they present MAETROID (Multi-criteria App Evaluator of Trust for Android), a framework to evaluate the trustworthiness of Android apps, i.e., the amount of risk they pose to users, e.g., in terms of confidentiality and integrity. MAETROID performs a multi-criteria analysis of an app at deploy-time and returns a single easy-to-understand evaluation of the app’s risk level (i.e., Trusted, Medium Risk, and High Risk), aimed at driving the user decision on whether or not installing a new app. The criteria include the set of requested permissions and a set of metadata retrieved from the marketplace, denoting the app quality and popularity. They have tested MAETROID on a set of 11,000 apps both coming from Google Play and from a database of known malicious apps. The results show a good accuracy in both identifying the malicious apps and in terms of false positive rate. Currently, apps for mobile devices are distributed through online marketplaces, such as Google Play or App Store. These marketplaces act as a hub where app developers publish their own products, which can be bought or downloaded for free by users. While official markets may charge users for these apps, several unofficial marketplaces distribute their own apps free of charge. When downloading apps from unofficial markets, trust is at risk, since there is no centralized control, as it happens with official markets, and it may happen that untrusted developers distribute malicious apps.

Paper 04:

Y. Zhou, X. Zhang, X. Jiang, V. W. Freeh, "Taming information stealing smartphone applications (on android)," in 4th International Conference on Trust and Trustworthy Computing (TRUST 2011), June 2011.

Description:

Remote obstetrics care monitoring is currently being used in many different countries to improve the quality of pre-natal care, with promising results. The next generation of remote monitoring systems take advantage of improvements in wireless communications and mobile phone technologies to incorporate off-the-shelf equipment, such as Android smartphones, into their design. This not only reduces the overall cost, but also allows for greater flexibility, since the patient can perform monitoring in the comfort of their home. However, our analysis suggests that recently proposed systems have inadequate security protections needed to meet HIPAA requirements for health data. They also proposed recommendations to improve the security of these emerging systems. The majority of research on remote obstetrics monitoring systems have either focused on the medical effectiveness of using these systems, or the technical challenges (battery power management, data processing, etc.) in designing one. There has been relatively little research on another important issue, which is the security of such systems. Recently reported vulnerabilities on other types of medical devices, such as pacemakers only serve as a reminder on the importance of ensuring the security of obstetrics monitoring systems. There are two additional factors which make the security of remote monitoring systems especially important. The first is the shift away from hospital-grade monitoring equipment towards the use of consumer-grade equipment, such as smart-phones, to build these monitoring systems. Consequently, obstetrics monitoring systems will now have to deal with the security vulnerabilities of such consumer grade equipment. The second factor would be the legal requirements that govern systems, like remote obstetrics monitoring systems, that deal with electronic health data. An example of legal requirements are the specific requirements laid forth by the Health Insurance Portability and Accountability Act, HIPAA.

Paper 05:

M. Nauman, S. Khan, X. Zhang, “Apex: Extending Android Permission Model and Enforcement with User-defined Runtime Constraints,” in 5th ACM Symposium on Information Computer and Communication Security (ASIACCS’10). ACM, April 2010.

Description:

Android is the first mass-produced consumer-market open-source mobile platform that allows developers to easily create applications and users to readily install them. However, giving users the ability to install third-party applications poses serious security concerns. While the existing security mechanism in Android allows a mobile phone user to see which resources an application requires, she has no choice but to allow access to all the requested permissions if she wishes to use the applications. There is no way of granting some permissions and denying others. Moreover, there is no way of restricting the usage of resources based on runtime constraints such as the location of the device or the number of times a resource has been previously used. In this paper, they present Apex – a policy enforcement framework for Android that allows a user to selectively grant permissions to applications as well as impose constraints on the usage of resources. They also describe an extended package installer that allows the user to set these constraints through an easy-to-use interface. Our enforcement framework is implemented through a minimal change to the existing Android code base and is backward compatible with the current security mechanism. Third party developers creating applications for Android can submit their applications to Android Market from where users can download and install them. While this provides a high level of availability of unique, specialized or general-purpose applications, it also gives rise to serious security concerns. When a user installs an application, she has to trust that the application will not misuse her phone’s resources. At install-time, Android presents the list of permissions requested by the application, which have to be granted if the user wishes to continue with the installation. This is an all-or-nothing decision in which the user can either allow all permissions or give up the ability to install the application.

Paper 06:

D. Barrera, H.G. Kayci, P.C. van Oorschot, A. Somayaji, “A Methodology for Empirical Analysis of Permission-Based Security Models and its Application to Android,” in 17th ACM Conference on Computer and Communications Security (CCS’10. ACM, October 2010.

Description:

Permission-based security models provide controlled access to various system resources. The expressiveness of the permission set plays an important role in providing the right level of granularity in access control. In this work, they present a methodology for the empirical analysis of permission-based security models which makes novel use of the Self-Organizing Map (SOM) algorithm of Korhonen (2001). While the proposed methodology may be applicable to a wide range of architectures, they analyse 1,100 Android applications as a case study. Our methodology is of independent interest for visualization of permission-based systems beyond our present Android-specific empirical analysis. They offer some discussion identifying potential points of improvement for the Android permission model, attempting to increase expressiveness where needed without increasing the total number of permissions or overall complexity. Access control lists (ACLs) and permission-based security models allow administrators and operating systems to restrict actions on specific resources. In practice, designing and configuring ACLs (particularly those with a large number of configuration parameters) is a complicated task. More specifically, reaching a balance between the detailed expressiveness of permissions and the usability of the system is not trivial, especially when a system will be used by novices and experts alike. One of the main problems with ACLs and permission models in general is that they are typically not designed by the users who will ultimately use the system, but rather by developers or administrators who may not always foresee all possible use cases. While some argue that the problem with these permission-based systems is that they are not designed with usability in mind, they believe that in addition to the usability concerns, there is not a clear understanding of how these systems are used in practice, leading security experts to blindly attempt to make them better without knowing where to start.

Paper 07:

A.P. Felt, E.Chin, S. Hanna, D. Song, D. Wagner, “Android Permissions Demystified.” in 8th ACM conference on Computer and Communications Security (CCS’11). ACM, 2011, pp. 627 – 638.

Description:

instrumented the Android platform to collect data regarding how often and under what circumstances smartphone applications access protected resources regulated by permissions. They performed a 36-person field study to explore the notion of “contextual integrity,” i.e., how often applications access protected resources when users are not expecting it. Based on our collection of 27M data points and exit interviews with participants, they examine the situations in which users would like the ability to deny applications access to protected resources. At least 80% of our participants would have preferred to prevent at least one permission request, and overall, they stated a desire to block over a third of all requests. Our findings pave the way for future systems to automatically determine the situations in which users would want to be confronted with security decisions. Research has shown that few people read the Android install-time permission requests and even fewer comprehend them. Another problem is habituation: on average, Android applications present the user with four permission requests during the installation process. While iOS users are likely to see fewer permission requests than Android users, because there are fewer possible permissions and they are only displayed the first time the data is actually requested, it is not clear whether or not users are being prompted about access to data that they actually find concerning, or whether they would approve of subsequent requests. They modified Android to log whenever an application accessed a permission-protected resource and then gave these modified smartphones to 36 participants who used them as their primary phones for one week. The purpose of this was to perform dynamic analysis to determine how often various applications are actually accessing protected resources under realistic circumstances. Afterwards, subjects returned the phones to our laboratory and completed exit surveys

Paper 08:

O'Donovan G., Blazeovich A. J., Boreham C., Cooper A. R., Crank H., Ekelund U., Fox K. R., Gately P., Giles-Corti B., Gill J. M. R., Hmaer M., McDermott I., Murphy M., Mutrie N., Reilly J. J., Saxton J. M., and Stamatakis E., "The ABC of Physical Activity for Health: A consensus statement from the British Association of Sport and Exercise Sciences," *Journal of Sports Sciences*, 2010, 28:6, pp. 573-591.

Description:

Physical Activity for Health, A is for All healthy adults, B is for Beginners, and C is for Conditioned individuals. All healthy adults aged 18-65 years should aim to take part in at least 150 min of moderate-intensity aerobic activity each week, or at least 75 min of vigorous-intensity aerobic activity per week, or equivalent combinations of moderate- and vigorous-intensity activities. Moderate-intensity activities are those in which heart rate and breathing are raised, but it is possible to speak comfortably. Vigorous-intensity activities are those in which heart rate is higher, breathing is heavier, and conversation is harder. Aerobic activities should be undertaken in bouts of at least 10 min and, ideally, should be performed on five or more days a week. All healthy adults should also perform muscle-strengthening activities on two or more days a week. Weight training, circuit classes, yoga, and other muscle-strengthening activities offer additional health benefits and may help older adults to maintain physical independence. Beginners should work steadily towards meeting the physical activity levels recommended for all healthy adults. Even small increases in activity will bring some health benefits in the early stages and it is important to set achievable goals that provide success, build confidence, and increase motivation. For example, a beginner might be asked to walk an extra 10 min every other day for several weeks to slowly reach the recommended levels of activity for all healthy adults. It is also critical that beginners find activities they enjoy and gain support in becoming more active from family and friends. week, or 150 min or more of vigorous-intensity aerobic activity each week, or equivalent combinations of moderate- and vigorous-intensity aerobic activities.

Paper 09:

“Hamer M., and Chida Y., “Walking and primary prevention: a meta-analysis of prospective cohort studies,” *British Journal of Sports Medicine*, vol. 42, pp. 238-243, 2008.”

Description:

The burden of peripheral artery disease (PAD) is not well known among apparently healthy people in Africa. Aim: To determine the prevalence and associated risk factors of PAD in a group of blood donors seen at the Douala General Hospital—Cameroon. Methods: Between 1st November 2015 and 30th April 2016, they carried out a cross-sectional study. Participants were consenting adults of both sexes, aged ≥ 21 years who presented for blood donation, and were tested HIV negative. They collected sociodemographic data and their past history. they carried out a physical examination and measured their Ankle-Brachial Index (ABI). they defined PAD as an ABI Results: they recruited 103 participants, 55.4% males. The mean age was 33 ± 10 years. The mean ABI on left and right leg was 1.04 ± 0.1 and 1.02 ± 0.1 respectively. ABI was higher in males than females both legs ($p = 0.05$). PAD was seen in 11 (10.7%) participants. This was higher in females than males (3.6% versus 19.2%, $p = 0.026$). Among those with PAD, 8 (72.7%) were asymptomatic (Males: 100% versus Females: 66%, $p = 0.9$). After adjusting for age and gender, sedentary lifestyle (a OR: 7.14, [95% CI: 1.38 - 33.3], $p = 0.019$), and female gender (a OR: 6.2, [95% CI: 1.26 - 30.5], $p = 0.025$) were significantly associated with PAD. Conclusion: The prevalence of PAD was high in this group of HIV negative blood donors, most of whom were asymptomatic. This was associated with females, and a sedentary lifestyle. It is well-known that the power of Cochran’s Q test to assess the presence of heterogeneity among treatment effects in a clinical meta-analysis is low due to the small number of studies combined. Two modified tests (PL1, PL2) were proposed by replacing the profile maximum likelihood estimator (PMLE) into the variance formula of logarithm of risk ratio in the standard chi-square test statistic for testing the null common risk ratios across all k studies ($I = 1, L, k$). The simply naive test (SIM) as another comparative candidate has considerably arisen.

Paper 10:

Haskell W. L., Lee I., Pate R. R., Powell K. E., Blair S. N., Franklin B. A., Macera C. A., Heath G. W., Thompson P. D., and Bauman A., “Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association,” *Official Journal of the American College of Sports Medicine*, pp. 1423-1434, 2007.

Description:

More than 10 years have passed since this recommendation was issued. New science has added to our understanding of the biological mechanisms by which physical activity provides health benefits and the physical activity profile (type, intensity, amount) that is associated with enhanced health and quality of life. The intent of the original recommendation, however, has not been fully realized. Physical inactivity remains a pressing public health issue. Technology and economic incentives tend to discourage activity, technology by reducing the energy needed for activities of daily living, and economics by paying more for sedentary than active work. In addition, there are people who have not accepted, and others who have misinterpreted, the original recommendation. Some people continue to believe that only vigorous intensity activity will improve health while others believe that the light activities of their daily lives are sufficient to promote health. Compounding these challenges, physical activity recommendations have been published in the interim that could be interpreted to be in conflict with the 1995 recommendation (4,26,57,71). Favorable trend data from 1990 to 2004 in the United States based on the CDC Behavioural Risk Factor Surveillance System indicate that over time fewer men and women reported no leisure-time physical activity (. The prevalence of leisure-time physical inactivity remained fairly constant through 1996, but more recently has declined in both genders (Fig. 1). In 2005 23.7% of adults reported no leisure-time activity However, there remains a broad range of evidence to underscore concern that US adults are still not active enough. For example, data from 2005 indicate that less than half (49.1%) of U.S. adults met the CDC/ACSM physical activity recommendation.

Paper 11:

Deslandes A., Moraes H., Ferreira C., Veiga H., Silveira H., Mouta R., Pompeu F. A. M. S., Coutinho E. S. F., and Laks J., "Exercise and Mental Health: Many Reasons to Move," *Neuropsychobiology*, vol. 59, pp. 191-198, 2009.

Description:

The relationship between physical activity and mental health has been widely investigated, and several hypotheses have been formulated about it. Specifically, during the aging process, physical exercise might represent a potential adjunctive treatment for neuropsychiatric disorders and cognitive impairment, helping delay the onset of neurodegenerative processes. Even though exercise itself might act as a stressor, it has been demonstrated that it reduces the harmful effects of other stressors when performed at moderate intensities. Neurotransmitter release, neurotrophic factor and neurogenesis, and cerebral blood flow alteration are some of the concepts involved. In this review, the potential effects of exercise on the aging process and on mental health are discussed, concerning some of the recent findings on animal and human research. The overwhelming evidence present in the literature today suggests that exercise ensures successful brain functioning. There is growing interest in the effects of voluntary wheel running activity on brain and behaviour in laboratory rodents and their implications to humans. Here, the major findings to date on the impact of exercise on mental health and diseases as well as the possible underlying neurobiological mechanisms are summarized. Several critical modulating factors on the neurobehavioral effects of wheel running exercise are emphasized and discussed--including the amount of wheel running, sex and strain/species differences. It is concluded that the wheel running paradigm represents a unique environmental manipulation for the investigation of neurobehavioral plasticity in terms of gene-environment interactions relevant to the pathogenesis and therapies of certain neuropsychiatric conditions

Paper 12:

“Hamer M., Stamatakis E., and Steptoe A., “Dose-response relationship between physical activity and mental health: the Scottish Health Survey,” *British Journal of Sports medicine*, vol.”

Description:

Regular physical activity is thought to be associated with better mental health, although there is a lack of consensus regarding the optimal amount and type of activity to achieve these benefits. The association between mental health and physical activity behaviours was examined among a representative sample of men and women from the Scottish Health Surveys. Self-reported physical activity was measured and the General Health Questionnaire (GHQ-12) was administered in order to obtain information on current mental health. Participants were 19 842 men and women. Risk estimates per category of physical activity sessions per week were calculated using logistic regression models. Psychological distress (based on a score of 4 or more on the GHQ-12) was evident in 3200 participants. Any form of daily physical activity was associated with a lower risk of psychological distress after adjustment for age, gender, social economic group, marital status, body mass index, long-standing illness, smoking and survey year (OR 0.59, 95% CI 0.52 to 0.66. Mental health benefits were observed at a minimal level of at least 20 min/week of any physical activity. The reason for some of the conflicting findings is largely related to incomplete measurements that did not enquire about all physical activity types, variation in the methods used to assess mental health, insufficient sample sizes and lack of adjustment for possible confounding factors. As a result, the amount and type of activity that is required to achieve mental health benefits has not been clearly established and at present is insufficient to inform public health policy.

Paper 13:

Blay S., Andreoli S., Fillenbaum G., and Gastal F. L., “Depression morbidity in later life: prevalence and correlates in a developing country,” *The American Journal of Geriatric Psychiatry*, vol. 15, pp. 790-799, 2007

Description:

It is widely known that physical activity helps preventing several diseases. However, unsupervised training often results in low exercise quality, ineffective training, and, in worst cases, injuries. Automatic tracking and quantification of exercises by means of wearable devices could be an effective mean for the monitoring of exercise correctness. As a consequence, such devices could help motivating people, thus improving the quantity of performed physical exercise, with positive effects on users' health conditions. However, despite the availability of several commercial devices, the performance and effectiveness are not well documented. This work proposes a new solution for fitness workout supervision exploiting machine learning techniques, in particular Linear Discriminant Analysis for analysing data coming from wearable Inertial Measurement Units. Efforts have been done in order to reduce the computational requirements, thus assuring compatibility in perspective of embedded implementation. The experimental tests carried out to assess the proposed approach performance showed an accuracy in exercise detection over 93% and error in exercise counting less than 6%. Depressive symptoms include feeling sad, anxious or hopeless. The condition can also cause difficulty with thinking, memory, eating and sleeping. A diagnosis of major depressive disorder (clinical depression) means you have felt sad, low or worthless most days for at least two weeks while also having other symptoms such as sleep problems, loss of interest in activities, or change in appetite. Depression is common all over the world. Healthcare providers estimate that nearly 7% of American adults have depression every year. More than 16% of U.S. adults — around 1 in 6 — will experience depression in their lifetime.

Paper14:

A. Mylonas, A. Kastania, and D. Gritzalis, “Delegate the smartphone user? Security awareness in smartphone platforms,” *Computers & Security*, vol. 34, no. 0, pp. 47 – 66, 2013.

Description:

Smartphone users increasingly download and install third-party applications from official application repositories. Attackers may use this centralized application delivery architecture as a security and privacy attack vector. This risk increases since application vetting mechanisms are often not in place and the user is delegated to authorize which functionality and protected resources are accessible by third-party applications. In this paper, they mount a survey to explore the security awareness of smartphone users who download applications from official application repositories (e.g. Google Play, Apple’s App Store, etc.). The survey findings suggest a security complacency, as the majority of users trust the app repository, security controls are not enabled or not added, and users disregard security during application selection and installation. As a response to this security complacency, they built a prediction model to identify users who trust the app repository. Then, the model is assessed, evaluated, and proved to be statistically significant and efficient. Meanwhile, the rate of downloads for smartphone applications from app repositories is on the rise. This popularity of smartphone applications has drawn the attention of attackers, who try to use the app repository as a security and privacy attack vector. In this context, an increasing number of malicious applications have already been discovered in app repositories. Nonetheless, it is unclear whether the burden of making security decisions is reasonable for normal users. Studies have shown that normal users are not able to make such decisions, nor are able to use security controls adequately.

Paper 15:

Saaty, T.L.: How to make a decision: The analytic hierarchy process. *European Journal of Operational Research* 48(1) (1990) 9–26.

Description:

The identification of potential sites for water harvesting is an important step towards maximizing water availability and land productivity in the arid and semi-arid areas. This research aimed to select the optimum sites for water harvesting in the Azraq basin of Jordan through the use of GIS techniques. The Azraq basin is characterized by flash floods that involve large quantities of runoff. The selection criteria in this research were based on six parameters identified based on an extensive literature review. Five experts were then asked to evaluate the importance of each criterion. The consistency ratio between the experts' opinions was evaluated using the pairwise comparison method and a final weight was computed for each criterion. A water harvesting suitability map was then generated following the weighted linear combination (WLC) method. The sites that are not suitable for water harvesting within the study area were identified and eliminated following the Boolean method, and final water harvesting suitability map was generated. Finally, the findings of this research can be used to assist in the efficient planning of the water resources management to ensure a sustainable development of the water in Jordan and in other areas suffering from water shortages.

Paper 16:

Igor Khokhlov, Leon Reznik, “Android system security evaluation”, IEEE Annual Consumer Communications & Networking Conference (CCNC), pp. 695-699, 2018 .

Description:

The biggest risk to the privacy of data and personal information of Android users that have mobile fitness and healthcare applications is the unencrypted connection between the application and an internet server. Another risk is the potential security threats, brought about because users often skip the alert message at install time. In this paper, both the applications and network communication processes are evaluated. The security part of the application takes place during downloading and using the applications, then determining what personal information the applications save in the local storage inside these devices, comes after. The security part of network communication includes analysing the WIFI communication between the instead application and the Internet. They try to help Android health and fitness applications users to easily understand how trustworthy an application is by proposing a new security evaluation method based on both multi-criteria evaluations and privacy risks of an application. Out of the 110 apps found in different markets which were tested, 51 apps were trusted, 31 apps were untrusted, and 18 gave a short report to help the user to make a decision about installing the application or not.

Below mentioned are some apps which we surveyed for developing our application and found out the gaps and similarities between them.

1. Google Developers. (2017). Platform Overview | Google Fit | Google Developers showed that Google Fit is a health-tracking platform developed by Google for the Android operating system. It is a single set of APIs that blends data from multiple apps and devices. Google Fit uses sensors in a user's activity tracker or mobile device to record physical fitness activities (such as walking or cycling), which are measured against the user's fitness goals to provide a comprehensive view of their fitness. User can choose who their fitness data is shared with as well as delete this information at any time. Google Fit (free) is a new Android app that consolidates your activity and health stats into one platform—or that's the pitch anyway. As is the case with many Google products first seeing the light of day, Google Fit isn't a finished product yet. When installed on an Android phone, you can use it to automatically track your walking, running, bicycling, and weight, but not much else. Integration with third-party apps that collect more data is in the works, but not yet available. A number of apps are integrated with Google Fit. Some examples are Aquert, Nike, Polar Beat, Running, and Strava. Google Fit uses sensors in a user's activity tracker or mobile device to record physical fitness activities (such as walking or cycling). Users can choose who their fitness data is shared with as well as delete this information at any time. Some of disadvantages of Google Fit are that, Google Fit is available to all android users running 4.0 or above. It does not support all platform work on android. Correspondence to Daniel Evans MyFitnessPal is a free smartphone app and website that tracks diet and exercise to determine optimal caloric intake and nutrients for the users' goals. In a Consumer Reports diet rating, MyFitnessPal was rated the best free program (with 83 points) in overall satisfaction, "maintenance, calorie awareness, and food variety.

2. My fitness Pal can be a great app that can help you track your diet and exercise to determine optional caloric and nutrient intake to help achieve weight and body composition goals. However, it isn't fool proof and may not be for everyone, if not used correctly it can core than likely hinder your goal. We are told be many sources now that we don't need to track calories and instead place emphasis to build better lifestyles and nutritional habits with eating good quality food. This is certainly true and sound advice many people can certainly achieve their goal by doing this. MyFitnessPal had 80 million users at the time. The user may enter the name of the food or scan the barcode to find the item in a large database of over 5 million foods. It has some of disadvantages. Name of the food or scan the barcode not exist for all country. The same food item may contain several variations of the caloric count possibly depending on which country the food item was purchased.

3. S Health helps you stay fit by acting as a personal coach, trains and assists in achieving user daily goals. The various training programs helps in improving user overall fitness, health and lifestyle. Whether user walk or run, hike or bike, play indoor or outdoor sports, user can track the various physical exercises and activities in a single step using the various built-in trackers. User can also record the step count activity using Pedometer. S Health helps to create a balanced lifestyle pattern by recording a variety of information like user food, caffeine and water intake details. Provide user daily snacks, food, water and caffeine intake and track your diet and weight on the go while stay comfortable using the sleep & stress tracker. Manage health and environmental records such as heart rate, blood pressure, blood glucose levels, stress, weight & SPO₂ using built-in sensors and third-party devices. Trackers enable user to easily and quickly check meaningful data based on user preferences. The intuitive charts, helpful tips and physical exercise programs guide user 10 to achieve your fitness and diet goals. User can also personalize your Dashboard by adding or removing Goals. Manage your fitness activities, track user weight and monitor your diet using Samsung Galaxy and Gear devices. Supports all Samsung smartphones

starting from Galaxy S3 onwards and includes non-Samsung Android smartphones as well. Some of its disadvantages are it inaccurately measured the heart rate. Calculation number of steps is not accurate, any vibration of the mobile calculated as a step. Most of the data is inserted manually, and the user feels the burden of use the application. Determine the number of hours of sleep with a time limit, and is this time gives the user the result of hours of sleep that bad, even though the sleeping hours are sufficient and appropriate.

4. Life sum helps user make better food choices, improve your exercise, and reach user health goals. Build healthy habits in small, sustainable steps and make health a part of user lifestyle, not another thing on your to-do list. Life sum helps you keep track of user food and activity so that you can live healthier and happier. Reminders to help you drink enough water. Feedback to improve the quality of what you eat. Advice for the days you might struggle. A selection of diets to help you embrace healthy living. Overview of your nutrition and exercise habits so you can improve them. Body summary to show you how you are progressing (including weight and measurements). Some of its disadvantages are It doesn't focus on daily exercise. Most of the data is inserted manually. Many people don't know how to use

3. ANALYSIS

3.1 Detailed Statement of the Problem

Due to busy lives peoples are continuously moving from one city to another city so they find it difficult to track nearby gym location. To serve the different needs of clients, these apps offer personalization conjointly offer nutrition-based eat less plans by dietitian and exercise centre adornments other than work out and workouts. The apps offer incredible help to people who do not have time to visit the Exercise centres and health centres so casually such applications will help user to save their time and focus on their fitness regime.

Being Physically and rationally fit is extreme crave for each human being. This require has been realized by the individuals behind the improvement of wellness applications. This project aims to develop an app for proper workout plans, nutrition plans, track nearby gym locations and daily calorie intake to modify fitness and healthy life style. Problems associated with weight gain, overweight, underweight during young adulthood also problems associated with physical activity, consumption of fast food, fruit and vegetables, soft drinks, sugar-sweetened foods. The android application provide solution for major problems faced during achieving good physique and healthy lifestyle with proper nutrition and workout plans.

3.2 Requirement Specifications

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

- ❖ Windows Operating System
- ❖ Android Studio
- ❖ My SQL Database

- ❖ Postman
- ❖ XAMPP

3.2.2 Hardware Requirement

- ❖ Laptop/PC
- ❖ System: Intel Processor i5/above
- ❖ Hard Disk: 500GB
- ❖ RAM:4-8GB

3.3 Functional Requirements

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.

Functional requirements need to be clear, simple, and unambiguous. There are numerous applications for keeping up the wellness in genuine life. They offer assistance clients to track their day-by-day calorie burns and keep up wellness calendars or eat less charts. Downloading numerous sorts of wellness app to attain your wellbeing objectives doesn't seem a great thought, because it can drastically moderate down your smartphones. There is all in one app that let you avail all your wellness offices beneath a single roof. An all one app lets you track your workout by empowering you to form a custom timetable for workout sessions conducted by a master wellness coach. Other than this, you will be able track advance in particular lifts.

3.3.1 Data Flow Diagram

DFD Level 1 Shows the login and registration system for the user.

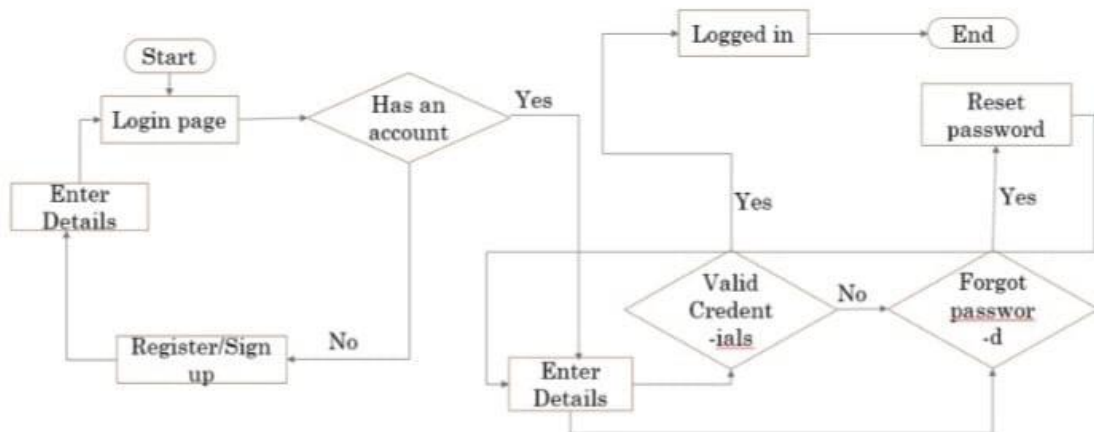


Figure 3.1: DFD of User Login/Registration

- Input:

1. User has to enter their mobile numbers and password for login.
2. If user do not have any account, then they need to register.

- System: System detect if the credentials are correct or not.

- Output: If all the information filled by the user is correct then system will show the success.

Hence, the data flow diagram indicates the visualization of system with its input and output flow.

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 as shown in Figure 3.2.

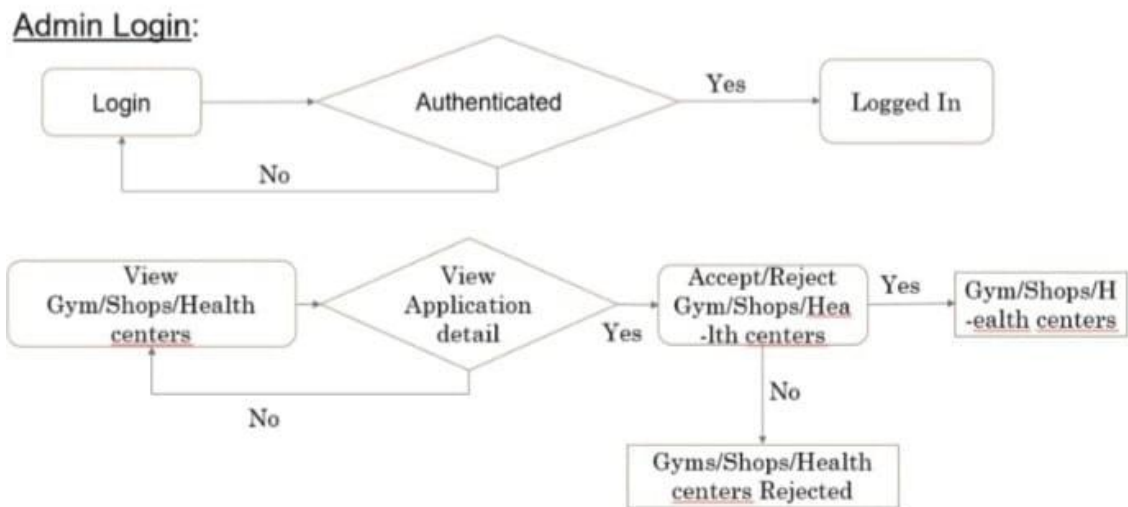


Figure 3.2: DFD of Admin accept/Reject Gyms/Shops/Health Centres

3.4 Non-Functional Requirement

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).

3.4.1 Supporting Technologies

Implementation should be feasible using technologies that are accessible to the end users.

With the help of java programming language and Android Studio, we developed the android application for tracking nearby gym locations, healthcare centres, nutrition-based diet plans.

3.4.2 Device Software Compatibility

Minimum requirement for application, for device capability is Android device with android OS and minimum 4GB RAM.

3.4.3 Time Response

Application performs in a proper time constraint that typing speed, motion and obstacles in the internet. Response time for saving and retrieving data from database is very high.

3.4.4 Accessibility

The “Fitness to do” have interactive user interface so that Admin or any new person can easily understand it and able to access the different features of the project.

3.4.5 Maintainability

If some error occurred during execution of system, then the system can resolve all error by restarting or debugging of system.

3.4.6 Usability

User has to install the app in their android phone. After installing the application, homepage display. Homepage contain simple module which can access on clicking the buttons. All module is easy to understand and easy to perform many operations.

3.5 Feasibility Study

Feasibility study is an un-biased evaluation of an App idea, conducted for the purpose of determining whether the idea is viable and worth pursuing. The feasibility study is undertaken to determine merits and demerits of each alternative and recommended system that will be most appropriate. All are feasible given unlimited resource and identified infinite, so it is essential to evaluate and estimate the advantage of one system over another.

3.5.1 Market Feasibility

- Assessment of the overall appeal to the market for the Android based application.
- Market timeliness: best suitable time for release

- Identification of the target audience
- Comparing with other similar competing applications.
- Past and present supply position.
- Imports and exports
- Structure of competition
- Elasticity of demand
- Administrative, technical and legal constraints
- Cost structure
- Production possibility and constraints
- Consumer behaviour, intentions, motivations, attitude, preferences and requirements
- Consumption trends in the past and the present consumption level
- Distributive Channels

3.5.2 Economical Feasibility

- Resource cost is based on the estimated resources within the technical analysis.
- Cost of maintenance of equipment is much less.
- In economic feasibility, we study about cost of developing our system. The software and hardware requirement are at affordable costs. This project is economical feasible.

3.5.3 Product Feasibility

- Considering the major features of the current scope (at a high level) and evaluating if they are feasible.
- New concept: Android-based Application is purely based on new concept
- Low Competition Android application.
- Product placement
- The Target markets
- Marketing and Advertisement

- The Competition
- Pricing strategies

3.5.4 Technical Feasibility

- Experimental features: Identify the features in the design that seem experimental in nature, such as untried or unproven technologies, techniques, perspectives, or other unique ideas.
- Technical feasibility also involves the evaluation of the hardware, software, and other technical requirements of the proposed system.
- To check the selected scale of operation is optimal or not.
- Choose suitable production process.
- Appropriate equipment and machines
- The technology proposed to be employed appropriate from the social point of view
- Provision of auxiliary equipment and supplementary engineering works
- Establishment of the availability of raw material, power, and other inputs
- Provision for the treatment of effluents
- Proper layout of the site, buildings, and plant

3.5.5 Behavioural Feasibility

- Behavioural feasibility refers to the system to see whether the data input is readily available or collectable.
- This project is easily access and for understanding to people.
- System performs all functionality correctly and in a fraction of time.

3.5.6 Operational Feasibility

- Operational feasibility is mainly concerned with issues like whether the system will be used if it is developed and implemented.
- This system interacts with the user and is user-friendly and it will benefit the organization.

- The accessibility of the information will not be lost. User information will be secured and no loss of integrity.

3.6 Use Case Diagrams

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 analysed to gather its functionalities, use cases are prepared and actors are identified as shown in Figure 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.

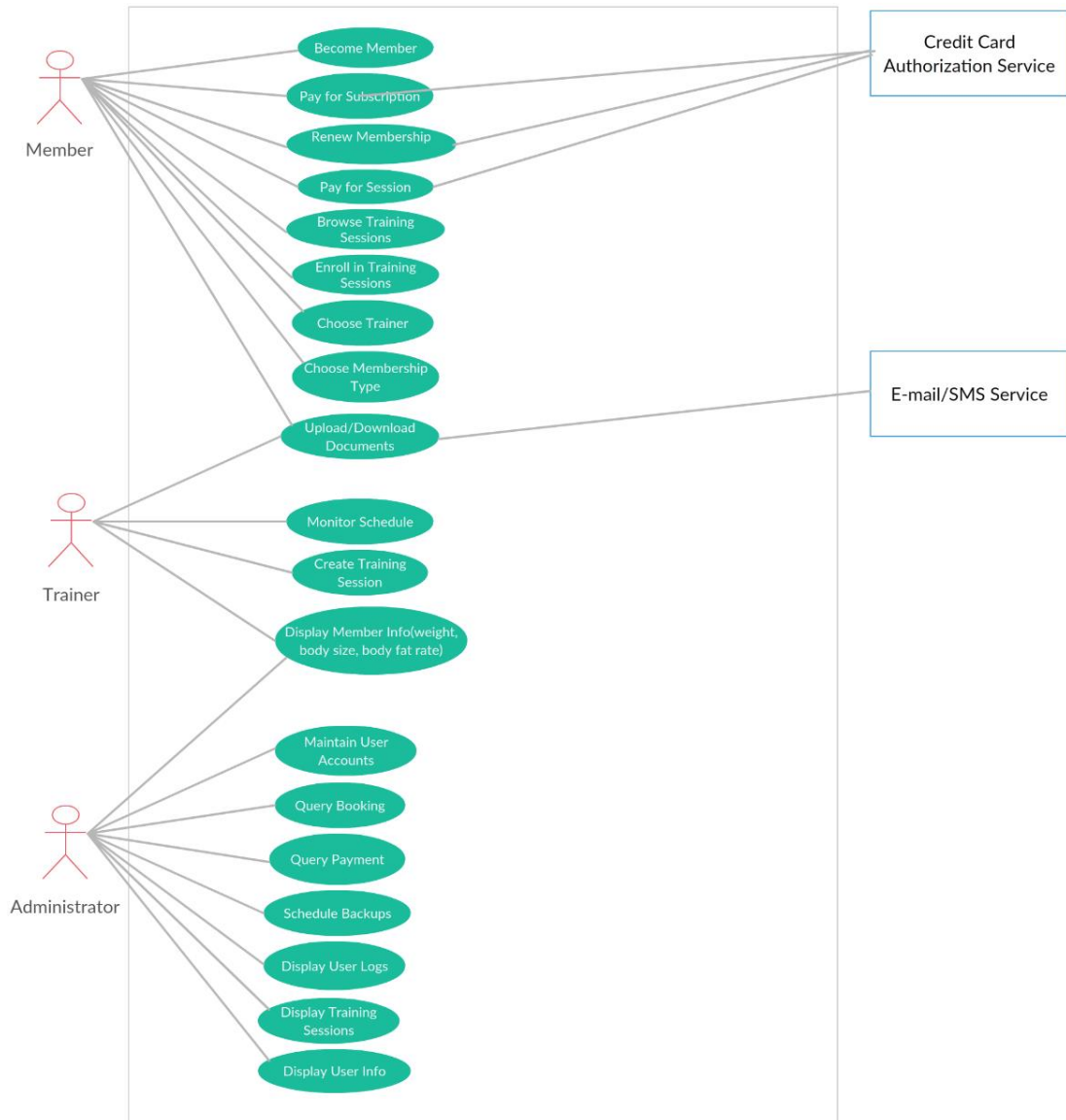


Figure 3.3: Use case View of Fitness app

The above use case diagram has three actors include member, trainer and administrator who have their own features. as member actor has to manage their profile, and they track nearby gym locations.

Trainer actor have to provide nutritional based diet plan for the member. and has to monitor schedule for gym.

Administrator actor have to manage the number of users, display training sessions.

3.7 Use Case Specification

Use case specification is a type of document that describes the behaviour of a system or application from the perspective of an external user or actor. Use cases are a key component of the Unified Modelling Language (UML) and are used to capture and describe functional requirements of the system being developed.

A typical use case specification document includes the following elements:

- Use case ID: A unique identifier for the use case.
- Use case name: A descriptive name for the use case.
- Actors: A list of the external actors (i.e., users or systems) who interact with the system.
- Preconditions: Any conditions or requirements that must be met before the use case can be executed.
- Basic flow: A step-by-step description of the main flow of events for the use case.
- Alternative flows: Descriptions of alternative or exception paths that the use case may take.
- Postconditions: Any conditions or requirements that must be met after the use case is executed.
- Business rules: Any relevant business rules or policies that apply to the use case.
- Special requirements: Any additional requirements or constraints that apply to the use case, such as performance or security requirements.

Use case specifications are often created during the requirements gathering phase of software development and are used to communicate the functional requirements of the system to developers, testers, and other stakeholders. By using use case specifications, development teams can ensure that they are building a system that meets the needs of its users and stakeholders.

3.7.1 Enter Mobile Number -

In this user have to enter the mobile number upload in the application so that after detection of fall event the SMS is sent to that number only.

3.7.2 Fetching Data –

In this module user's credentials are checked and accordingly data is fetched.

3.7.3 Detection -

After getting the data from user system checks user is registered or not and if registered user can login using the credentials

4. DESIGN

4.1 Design Goals

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.

The complete application has three different design modules which are web application, iOS application and Android application. Web application is designed to ease the use of teacher and administrator

4.2 Design Strategy

Design is a meaningful engineering representation of something that is to be built. It can be traced to a customer's requirements and at the same time assessed for quality against a set of predefined criteria for good design. In the software engineering context, design focuses on four major areas of concern: data, architecture, interfaces, and components. The design process translate requirement into representation of software that can be accessed for a quality before core generation. Design is the process through which requirement are translated to blue print for constructing into software. Initially the blueprint depicts the holistic view of software. This is the design represented at the high level of abstraction. During various stages of system development and design following strategy have been setup for a complete architecture

- Planning
- Analysis
- Design
- Implementation
- Testing
- Deployment

Requirement analysis is a software engineering task that begins the gap between the system level engineering and software design. The job of requirement analysis is to understand specific requirement that must be achieved to build high quality software. Software requirement analysis is divided into five area of effort. They are problem recognition, evaluation, synthesis, modelling, specification and review. It is also important to review the software scope in order to estimate the planning estimates.

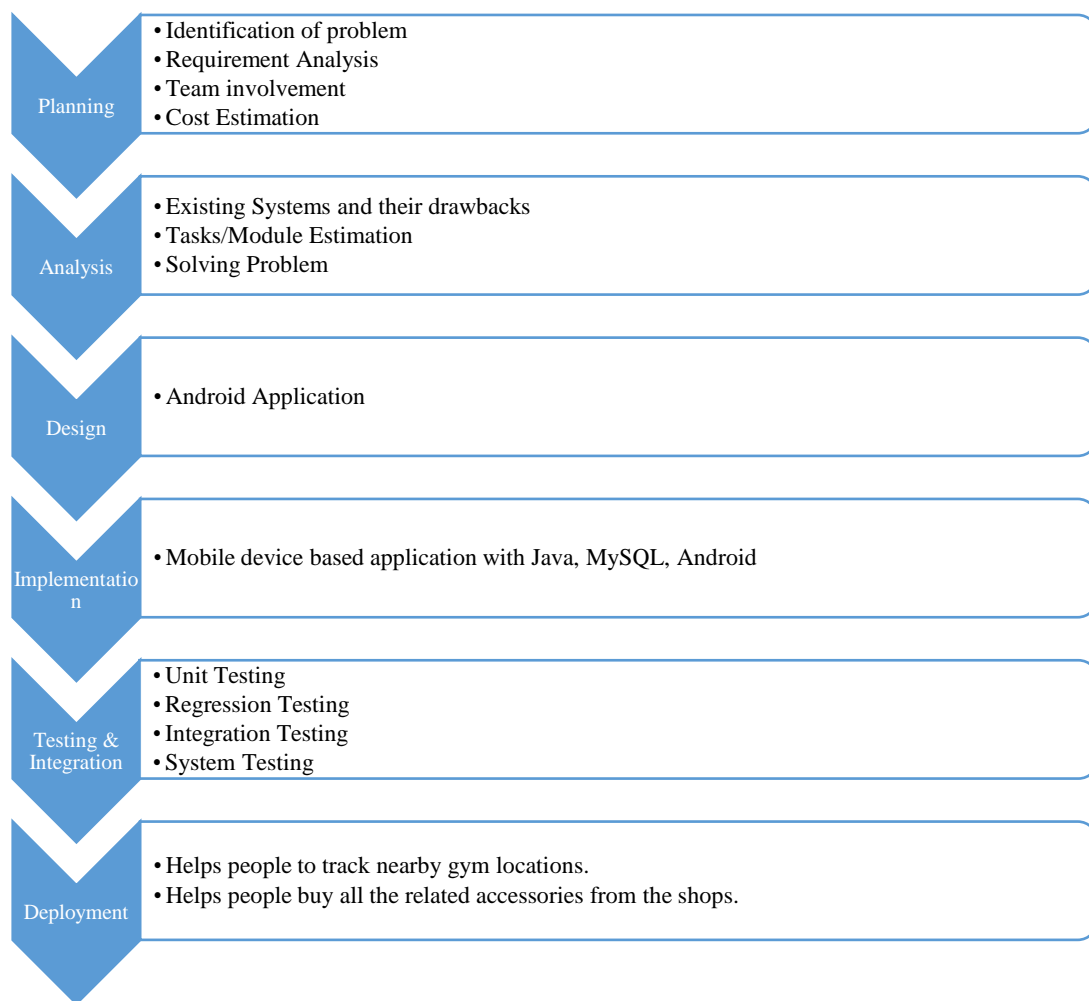


Figure 4.1: SDLC for Fitness to Do

4.3 Module Diagram

Module diagrams are used to show the allocation of classes and objects to modules in the physical design of a system, that is module diagrams indicate the partitioning of the system architecture. Through these diagrams it is possible to understand the general physical architecture of a system. The two essential elements of a module diagram are modules and their dependencies. The first three icons denote files specification and the body icon denote files containing the declaration and definition of entities.

Module diagram defines the logic of the model. The following Figure. 4.2 shows the convolution layers at different stages and how they are concentrated and diverged between different layers.

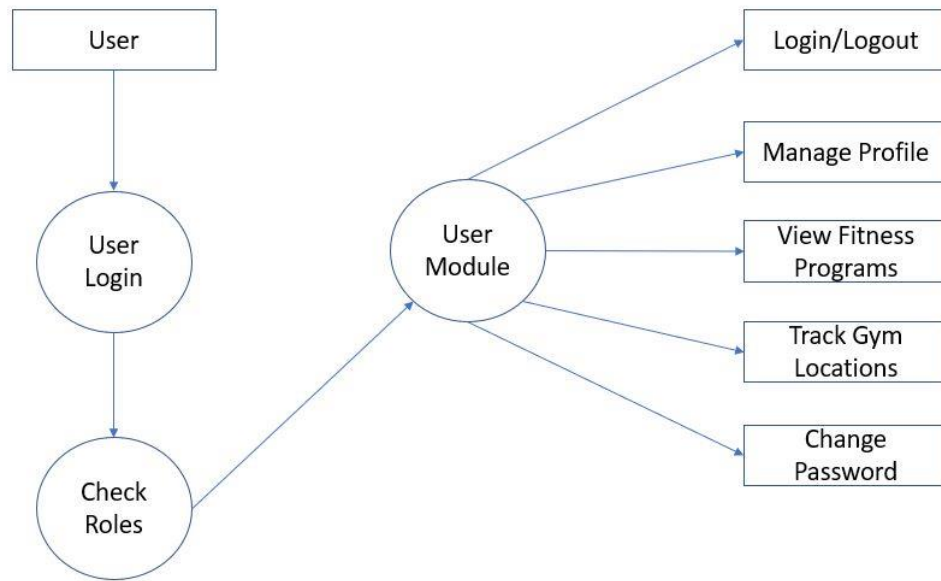


Figure 4.2: Module Diagram for Fitness to Do

The above diagram depicts the flow for user module in the application fitness to do, this starts from login, after login system will check the user roles and user modules.

4.4 Architecture Diagram

Architecture Diagram Definition - On Dragon an Architecture Diagram is: A graphical representation of the concepts, their principles, elements and components that are part of Architecture. Architecture is a coherent set of concepts for a structure these concepts are often visualized at four levels of abstraction. These are

- Conceptual Level-showing an overview of concepts
- Logical Level showing a logical design of one or more concepts, containing at least the key elements of concepts and showing the principles of the concepts (i.e., how the concepts work)
- Physical Level - showing a component design depicting the elements
- Implementation Level - showing the vendors and products with which the components will be implemented.

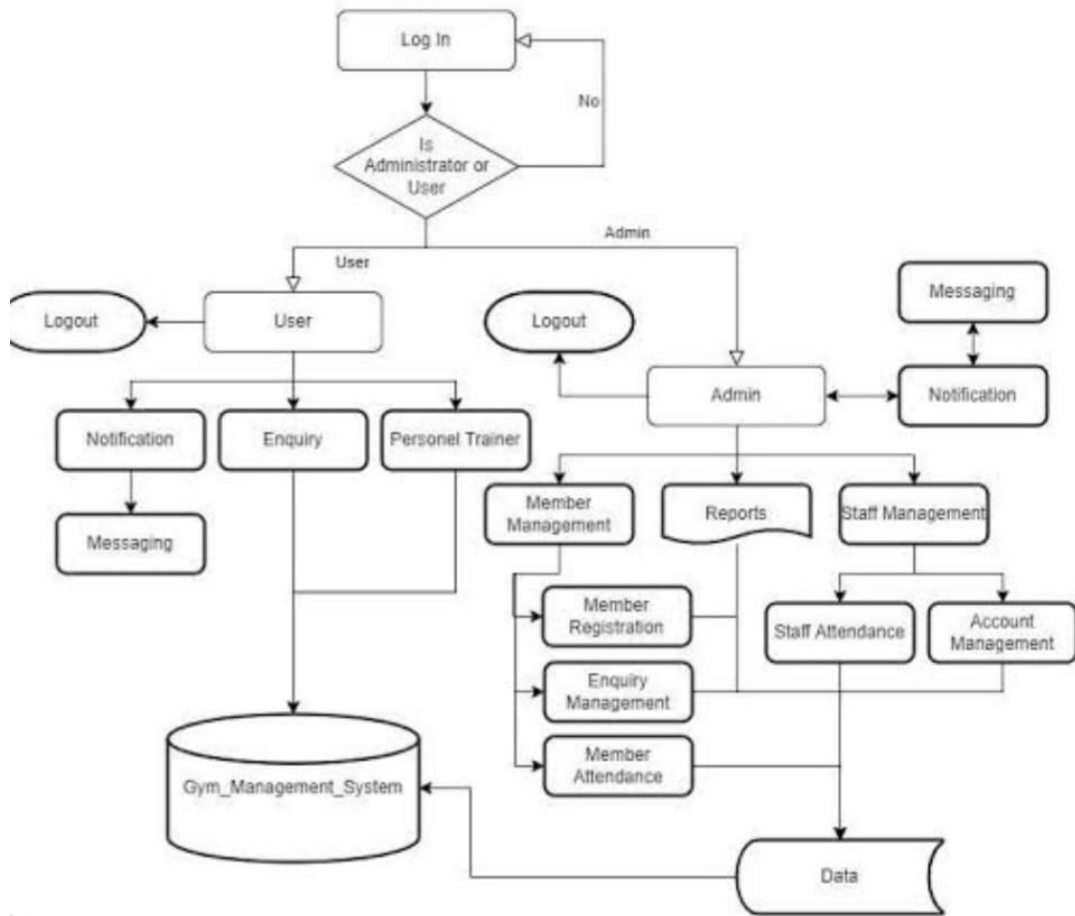


Figure 4.3: Architecture Diagram for Fitness to Do

The above figure shows the architectural diagram of fitness to do application which include steps from login to logout the system.

4.5 Class Diagram

The class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualization describing and documenting different aspects of a system but also for constructing executable code of the software application. The class diagram describes the attributes and operations of the class and also the constrain imposed on the system. The class diagrams are widely used in the modelling of the object- oriented system because they are the only UML diagram which can be mapped directly with object -oriented languages. UML provides mechanism to

represent class members, such as attributes and method and additional information about them.

4.5.1 Purpose of Class Diagrams

The purpose of class diagram is to model the static view of an application. Class diagrams are the only diagrams which can be directly mapped with object-oriented languages and thus widely used at the time of construction.

UML diagrams like activity diagram, sequence diagram can only give the sequence flow of the application, however class diagram is a bit different. It is the most popular UML diagram in the coder community.

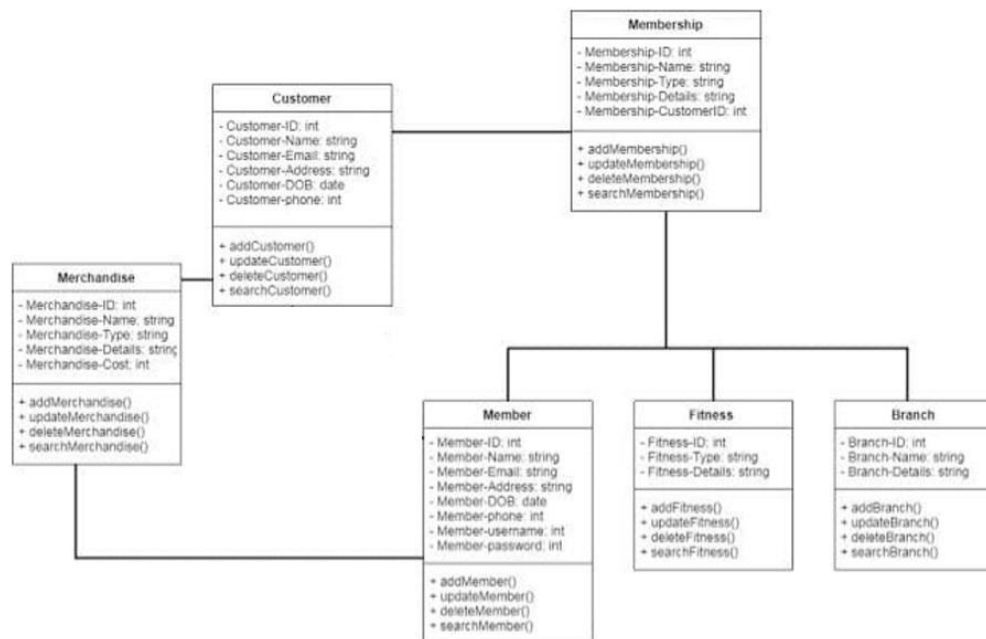


Figure 4.4: Class Diagram for Fitness to Do

The purpose of the class diagram can be summarized as –

- Analysis and design of the static view of an application.
- Describe responsibilities of a system.
- Base for component and deployment diagrams.
- Forward and reverse engineering

4.6 Sequence Diagram

In this sequence diagram, the Epilepsy Patient falls and triggers the Fall Detection System. The system then determines the location of the patient and alerts nearby people and relatives.

The nearby people and relatives confirm the alert and the system checks their status. Finally, the system checks the status of the Epilepsy Patient to ensure they are okay.

Sequence diagrams are a popular dynamic modelling 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 at the run time. In UML, the lifeline is represented by a vertical bar, whereas the message flow is represented by a vertical dotted line that extends across the bottom of the page. It incorporates the iterations as well as branching.

4.6.1 Purpose of Sequence Diagrams

While there is the assumption that Sequence Diagrams were made for developers, the truth is that a company's business staff could use such diagrams to communicate how exactly the business presently currently works by illustrating how the different business objects interact. In addition to this, a business-level sequence diagram may also be used as a "requirements document" to showcase the prerequisites for a future system implementation. It is at the requirements period of a certain project that analysts can take use cases to the next level by offering a more formal level of refinement. It is when this happens that use cases are often refined into 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 model's generic interactions or some certain instances of interaction

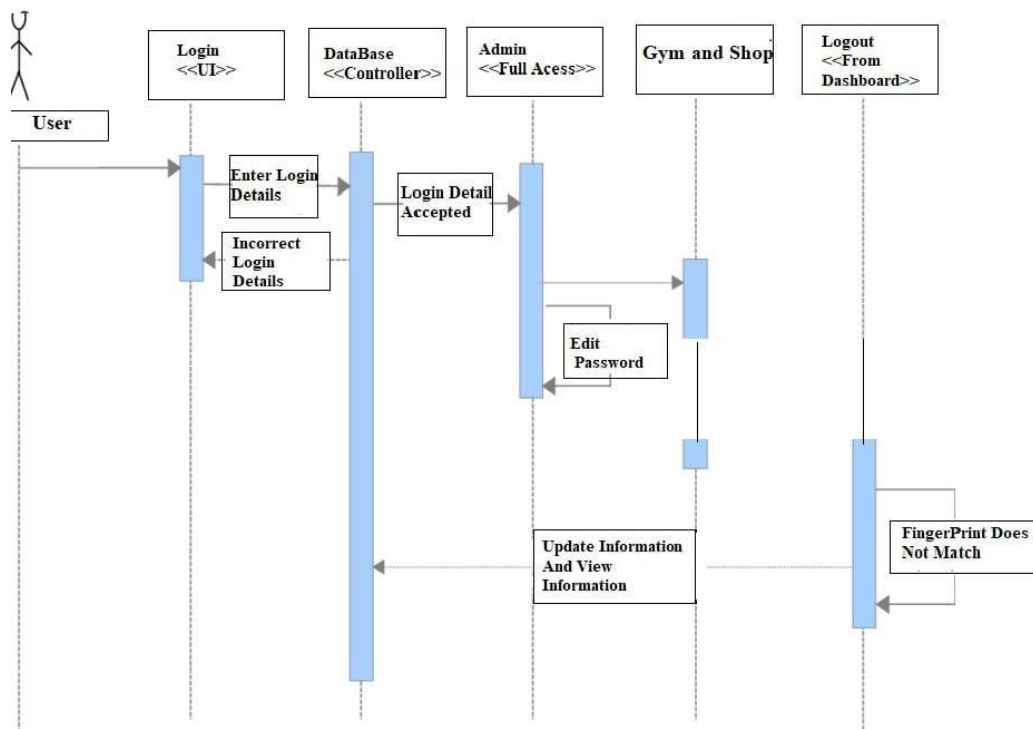


Figure 4.5: Sequence Diagram for Fitness to DO.

The above figure shows the sequence diagram for the user module. that allows the message passing from one stage to another stage the login stage send message to the database and so on.

4.7 Collaboration Diagram

The collaboration diagram shows the interactions between different components of the system. The Monitoring component continuously monitors the user's movements using sensors.

If a fall is detected, the Fall Detection component confirms the fall and sends a signal to the Alerting component. The Alerting component then sends alerts to nearby people and relatives, waiting for an acknowledgment response.

Once an acknowledgment response is received, the Alerting component sends a signal to the Fall Detection component, which then sends a signal to the Monitoring

component to stop the alerts. If no acknowledgment response is received, the alerts continue until a timeout is reached.

The collaboration diagram shows that the different components of the system work together to detect a fall, confirm it, and notify nearby people and relatives.

4.7.1 Purpose of Collaboration Diagrams

- The collaboration diagram is also known as 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.

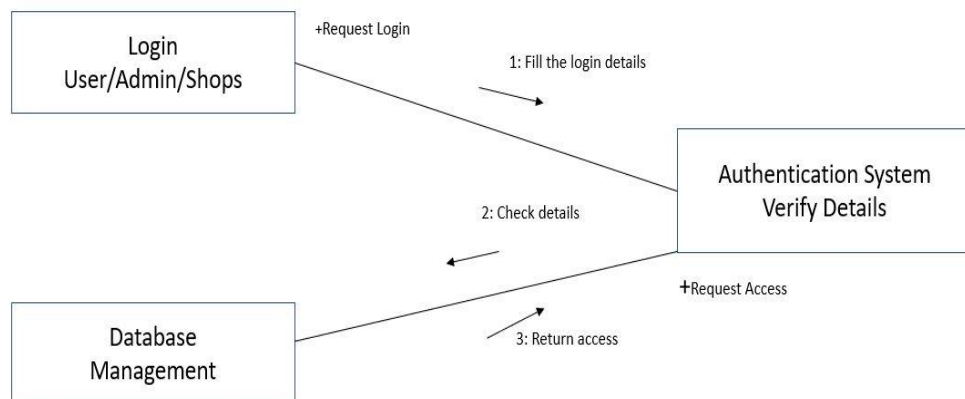


Figure 4.6: Collaboration Diagram for Fitness to Do

- The messages transmitted over sequencing is 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

4.8 State Chart Diagram

The system starts in the Monitoring state, where it continuously monitors the user's movements using sensors. If a fall is detected, it transitions to the Fall-down Detection state, where it confirms the fall by analysing the user's movements and posture.

Once the system has confirmed a fall, it transitions to the Alerting state, where it sends alerts to nearby people and relatives to notify them of the fall. The system waits for an Acknowledged Response from any of the notified people. If an acknowledgment is received, it transitions to the Notification Acknowledged state, where it notifies the user that help is on the way.

If no acknowledgment is received, the system continues to send alerts until someone acknowledges the alert or until the system reaches a timeout. Once the system reaches the timeout, it transitions to the idle state, where it waits for the next event to occur. If the user gets up and resumes their normal activity, the system will transition back to the Monitoring state.

4.8.1 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.

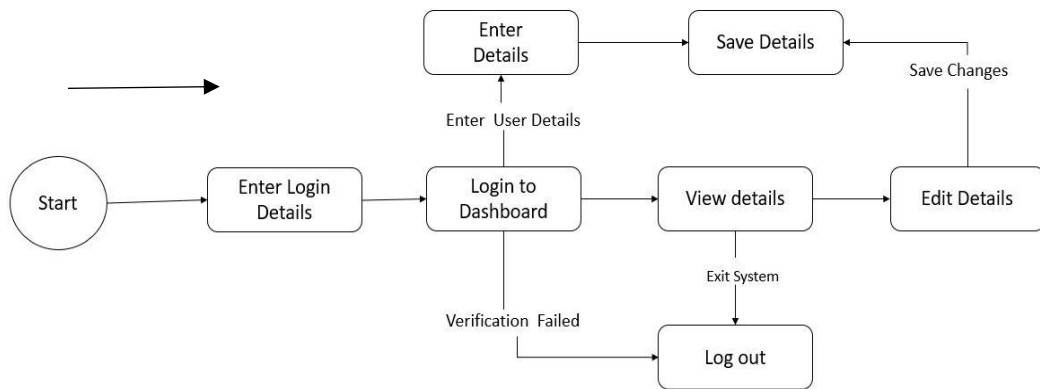


Figure 4.7: State Chart Diagram for Fitness to Do.

The above figure shows the state chart diagram for the project fitness to do it starts with login after login it will go to the next page/screen where user can see various features/activities they can manage their profile and the save the changes they have made after this they can logout from the app.

4.9 Activity Diagram

The activity diagram starts with the Monitoring state, where the system continuously monitors the user's movements. If a fall is detected, the system transitions to the Fall Detected state.

Once a fall is detected, the system transitions to the Alerting state, where it sends alerts to nearby people and relatives to notify them of the fall. The system waits for an acknowledgment response from anyone who received the alert.

If an acknowledgment response is received, the system transitions to the Notification Acknowledged state, where it notifies the user that help is on the way. Once help arrives, the system transitions to the Help Arrives state, where the user receives assistance.

After the user receives assistance, the system transitions back to the Monitoring state to continue monitoring the user's movements. If no acknowledgment response is received, the system continues to send alerts until it reaches a timeout or until someone acknowledges the alert.

An activity diagram is a type of UML (Unified Modelling Language) diagram that visually represents the flow of activities, actions, and transitions in a system or process. Activity diagrams are often used in software development to model business processes, use cases, and system workflows. Here are the key elements of an activity diagram:

1. **Initial node:** This represents the start of the activity or process being modelled.
2. **Action or activity:** This represents a specific task or action that needs to be performed as part of the process.
3. **Decision or branch:** This represents a decision point in the process, where the flow can take one of several paths depending on certain conditions.
4. **Fork or join:** This represents a point in the process where the flow splits into multiple parallel paths (fork) or converges from multiple paths back into a single path (join).
5. **Merge:** This represents a point in the process where two or more parallel paths merge back into a single path.
6. **Final node:** This represents the end of the activity or process being modelled.

Activity diagrams use symbols and arrows to represent these elements, with arrows indicating the flow of activity or transitions between elements. By using activity diagrams, developers can gain a better understanding of the flow of a system or process and identify potential issues or areas for optimization.

4.9.1 Purpose of Activity Diagrams

The basic purpose of activity diagrams is similar to other UML diagrams. It captures the dynamic behaviour 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

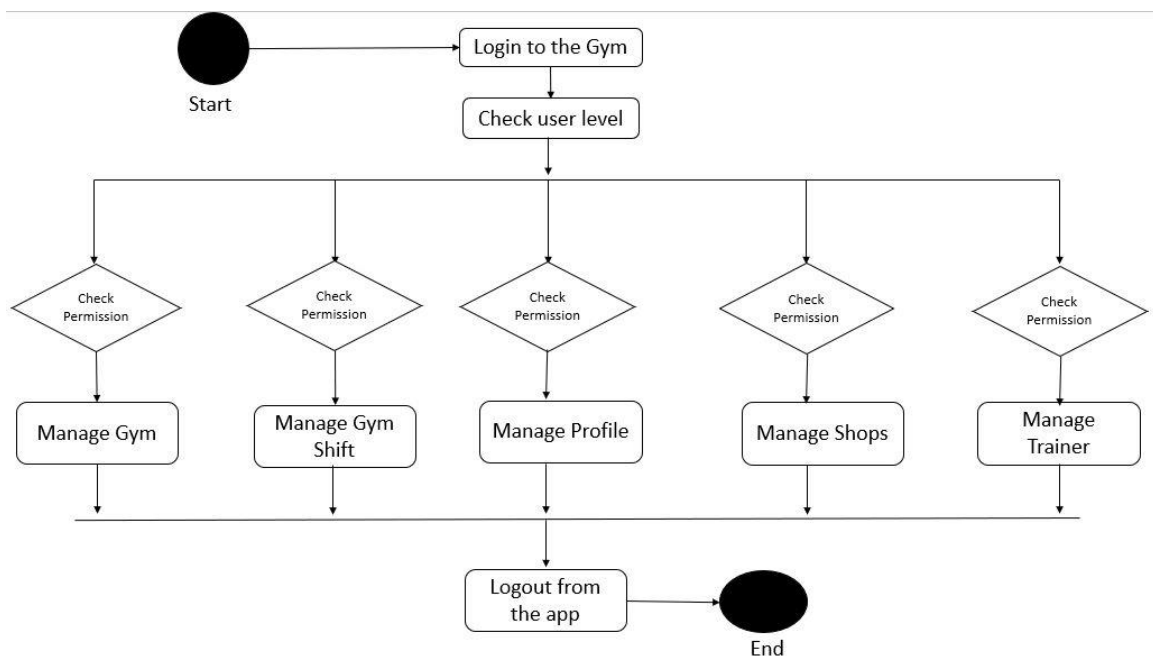


Figure 4.8: Activity Diagram for Fitness to Do

The above diagram shows the complete flow of the activities in the project. As the activity diagram shows the complete flow from one activity to another activity. This is the activity diagram for a particular login and logout system. First, the user/admin needs to login to the fitness application; then the system will check the user level. After that, it asks for the permission, then the admin will be able to manage gym, shift, shops, trainer, and user. Then the user/admin can logout from the system.

5. IMPLEMENTATION

5.1 Implementation Strategy

People have been avoiding active tasks these days, partly due to the facts that more and more technologies have been invented to make our lives easier and less rigorous. We drive and work in the office, sitting for hours. Machines make our laundry. We entertain ourselves with TV programs for unreasonable hours and a few people engage themselves in physical work. We move around less and burn off less energy than people used to. Research suggests that many adults spend more than 5 hours a day sitting down, at work and during their leisure time. Inactivity is described by the Department of Health as a silent killer In United Kingdom. Evidence could be seen that idleness, such as sitting or lying down for longer periods, is terrible for the health of an average human. People need to get involved in one activity or another to ward off diseases, improve quality of life, control body weight and keep fit at all times. It has been proven that eating a balanced diet alone is not enough for body fitness. Performing a regular exercise for different parts of the body would keep the muscles of the body in healthy condition and good shape. As per the design, we have developed this web application.

5.2 Hardware Platform Used

For making this project we need many hardware platforms without which this project is impossible. Main role plays here is the sensors required for the detection purpose.

- ❖ Android phone
- ❖ Computer Machine with minimum 4GB RAM
- ❖ Mobile Android Device with minimum 1GB RAM

5.3 Software Platform Used

- ❖ Windows Operating System
- ❖ Minimum Java 8.0 JDK
- ❖ Android Studio with Android SDK platform
- ❖ Android Version 5.0 or Above

5.4 Deployment Diagram

Deployment diagrams are used to visualize the topology of the physical components of a system, where the software components are deployed as shown in below Figure.

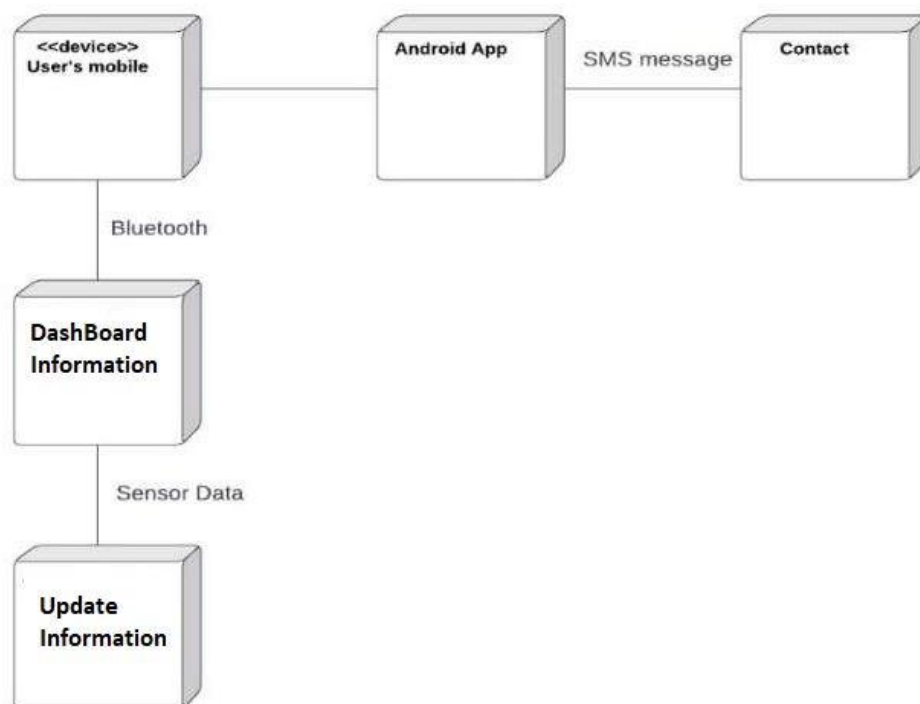


Figure 5.1: Deployment Diagram for Fitness to Do

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

5.5.1 Technology Used:

5.5.1.1 Android:

This is the most thing required for this project to be successful. The overall working of the system depends on the mobile device. And we have worked upon the android operating system devices only as it is the most commonly used. Android is an open source and Linux-based Operating System for mobile devices such as smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies.

Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android.

The first beta version of the Android Software Development Kit (SDK) was released by Google in 2007 where as the first commercial version, Android 1.0, was released in September 2008.



Figure 5.2: Features of Android

Android has various reasons that is features as follows:

1. Beautiful UI: Android OS basic screen provides a beautiful and intuitive user interface.
2. Connectivity: GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.
3. Storage: SQLite, a lightweight relational database, is used for data storage purposes.
4. Media support: H.263, H.264, MPEG-4 SP, AMR, AMR-WB, AAC, HE-AAC, MP3, MIDI, OggVorbis, WAV, JPEG, PNG, GIF, and BMP.
5. Messaging: SMS and MMS
6. Web browser: Based on the open-source Web Kit layout engine, coupled with Chrome's V8 JavaScript engine supporting HTML5 and CSS3.
7. Multi-touch: Android has native support for multi-touch which was initially made available in handsets such as the HTC Hero.
8. Multi-tasking: User can jump from one task to another and same time various application can run simultaneously.
9. Resizable widgets: Widgets are resizable, so users can expand them to show more content or shrink them to save space.
10. Multi-Language: Supports single direction and bi-directional text.
11. GCM: Google Cloud Messaging (GCM) is a service that lets developers send short message data to their users on Android devices, without needing a proprietary sync solution.
12. Wi-Fi Direct: A technology that lets apps discover and pair directly, over a high-bandwidth peer-to-peer connection.
13. Android Beam: A popular NFC-based technology that lets users instantly share, just by touching two NFC-enabled phones together.

Android Application:

Android applications are usually developed in the Java language using the Android Software Development Kit.

Once developed, Android applications can be packaged easily and sold out either through a store such as Google Play, Slide ME, Opera Mobile Store, Mobango, F-droid and the Amazon Appstore.

Android powers hundreds of millions of mobile devices in more than 190 countries around the world. It's the largest installed base of any mobile platform and growing fast. Every day more than 1 million new Android devices are activated worldwide.

Categories of Android Applications:

- Music
- Sports
- News
- Lifestyle
- Multimedia
- Food & Drink
- Travel
- Weather
- Books
- Business
- Reference
- Navigation
- Social media
- Utilities
- Finance

For making android applications usually android studio is used.

5.5.1.2 Android Studio:

- Android Studio is the official integrated development environment (IDE) for developing Android applications. It was developed by Google and is based on the IntelliJ IDEA platform. Android Studio provides a comprehensive set of tools and features for developers to build, test, and deploy Android applications.
- Android Studio includes a code editor with syntax highlighting, code completion, and debugging tools, as well as an emulator to simulate the Android

environment for testing applications. It also includes a visual layout editor for creating user interfaces, and tools for managing dependencies, building and signing APKs, and integrating with version control systems like Git.

- Overall, Android Studio provides a powerful and efficient development environment for creating high-quality Android applications, and it is widely used by developers around the world.
- It supports Java, Kotlin and C++ programming languages for developing Android applications. Kotlin is the recommended language for Android development as it is more concise and expressive than Java.
- It also provides a rich set of templates for creating new Android projects, including templates for building apps with different architectures such as MVVM, MVP, and MVC.
- Android Studio includes an advanced code

5.5.1.3 Java

Java is a dynamic language, which makes it possible for developers to modify the program structure while it is running. Java offers many security features in addition to frameworks like Spring and Spring Boot, which is also known as Spring Security.

As a multi-threaded language, Java includes a built-in garbage collector and supports memory management, unlike other languages like C++. Because it is network-centric, Java facilitates distributed computing, and it supports checked exceptions that are caught as they occur.

Java is renowned for its WORA feature, meaning “write once run anywhere”. With this portability, you can use Java on any platform. Java creates static members once that can be shared by all instances of the class. Java is a versatile and powerful programming language that can be used for developing a wide range of applications. It is platform-independent, which means it can be run on any platform, including Android and iOS. Compared to other programming languages, Java seems to be most suited for developing a top-notch mobile application. It has numerous features that affect app performance, such as Just-In-Time compilation and garbage collection. Because this programming language utilizes the resources efficiently, it's the most well-rounded tool

for mobile development purposes. One of the main features of Java as a mobile application development tool is its approach to security. As a programming language, Java has a range of essential security features that guarantee its robustness. If you combine this perk with cross-compatibility, you'll get a top-notch tool for developing a mission-critical application for your business.

Features of JAVA:

Several Java features can be attributed to the simplicity, security, and portability of the language. The following list outlines nine of these key features.

Robust: Java places emphasis on helping users achieve error-free programming. One example of a process that supports this goal is runtime checking (RTC). RTC automatically detects and alerts users to runtime errors.

Simple: Java is designed to be easy to learn. With the proper training and practice, it can also be easy to master. Its combination of automatic and structurally stable processes enables novice developers to build applications relatively easily.

Object-oriented: Everything is seen as an object in the Java programming language. Each object belongs to a class and is uniquely characterized by its identity, state, and behaviour.

Multithreaded: Java programs and applications benefit from its multithreaded nature. The multithreading process enables you to run programs separately yet execute them simultaneously. Additionally, threads share a common memory area, reducing the load on the central processing unit (CPU).

Secure: The secure nature of the Java programming language is one of its most lauded features. By default, Java provides several layers of security that enable you as a developer to create and run virus-free coding environments. Security components include Java having no explicit pointer, the separation of local and imported class packages by the class loader, and the compilation of Java programs into bytecode, to name a few.

Platform-independent: Java sets itself apart from other programming languages by being a language that, once written, can run on any platform. With Java, there is no need for you to write separate code for Mac, Linux, or Windows. Instead, Java is a software-based language. Its code is compiled, converted into bytecode, then executed on any platform of your choosing.

Portable: This feature goes hand-in-hand with Java's platform independence and is related to the ability to execute the language's bytecode on any platform without implementation.

Architecturally neutral: Java is said to be architecturally neutral because its bytecode interpreter can be employed on any platform. Code is free of dependencies and variants, and instructions from Java code are not directly executed onto the platform it is running on.

Distributed: Java employs a distributed language system that allows you to securely move and access code between different machines. This makes Java fully compatible with any programming environment. It also simultaneously enables it to support high bandwidth requirements, reduce latency, and increase output.

5.5.1.4 MYSQL

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons –

- MySQL is released under an open-source license. So you have nothing to pay to use it.
- MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages.
- MySQL uses a standard form of the well-known SQL data language.
- MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc.

- MySQL works very quickly and works well even with large data sets.
- MySQL is very friendly to PHP, the most appreciated language for web development.
- MySQL supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase this (if your operating system can handle it) to a theoretical limit of 8 million terabytes (TB).
- MySQL is customizable. The open-source GPL license allows programmers to modify the MySQL software to fit their own specific environments.

MySQL is one of many RDBMSs available in the market. Still, it is among the most popular ones — second only to Oracle Database when compared using critical parameters like search engine results, LinkedIn profiles, and frequency of mentions on online forums. In addition, the reliance of major tech giants on MySQL further solidifies its popularity. Although the database management industry is dominated by technology behemoths like Microsoft, Oracle, and IBM, free and open-source database management systems (DBMSs) such as Apache Cassandra, PostgreSQL, and MySQL remain highly competitive. It allows programmers to use SQL to create, modify, and extract data from the relational database. By normalizing data in the rows and columns of the tables, MySQL turns into a scalable yet flexible data storage system with a user-friendly interface that can manage lots of data.

MySQL also controls user access to the database as an added security measure, managing users and providing network access based on administrator rules. And it facilitates the testing of database integrity and the creation of backups.

Here are four primary reasons for the incredible popularity of MySQL.

1. **Easy To Use:**
MySQL is an easy-to-use and flexible RDBMS. Within 30 minutes of starting MySQL's simple installation process, you're able to modify source code to meet your needs. And as a free, open-source system, you don't need to spend money for this level of freedom, including upgrading to an advanced version.

2. Secure:

While choosing the right RDBMS software, the security of your data must be your priority. Fortunately, MySQL always prioritizes data security with its access privilege system and user account management. MySQL also offers host-based verification and password encryption.

3. High Performance:

A server cluster backs MySQL. Therefore, MySQL offers smooth assistance with optimum speed, whether you store massive amounts of big data or perform intensive business intelligence (BI) activities.

4. Industry Standard:

MySQL has been in the field for many years, turning it into an industry standard. It also means there are abundant resources for skilled developers. In addition, rapid developments in MySQL are possible anytime, and users can get freelance software experts for a smaller fee.

5. 24×7 Server Uptime:

MySQL guarantees 24/7 uptime. It also offers a wide array of high-availability database solutions, including master/slave replication configurations and specialized server clusters.

5.5.1.5 PHP

What is a PHP?

PHP started out as a small opensource project that evolved as more and more people found out how useful it was. Rasmus Leadoff unleashed the first version of PHP way back in 1994.

- PHP is a recursive acronym for "PHP: Hypertext Pre-processor".
- PHP is a server-side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites.
- It is integrated with a number of popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server.

- PHP is pleasingly zippy in its execution, especially when compiled as an Apache module on the Unix side. The MySQL server, once started, executes even very complex queries with huge result sets in record-setting time.
- PHP supports a large number of major protocols such as POP3, IMAP, and LDAP. PHP4 added support for Java and distributed object architectures (COM and CORBA), making n-tier development a possibility for the first time.
- PHP is forgiving: PHP language tries to be as forgiving as possible.
- PHP Syntax is C-Like.

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

Five important characteristics make PHP's practical nature possible –

1. Simplicity
2. Efficiency
3. Security
4. Flexibility
5. Familiarity

Uses of PHP:

- **It's easy to learn and use:** One of the main reasons PHP became so commonplace is that it is relatively simple to get started with. Even without extensive knowledge or experience in web development, most people could create a web page with a single PHP file in a relatively short period of time.

The syntax is simple and command functions are easy to learn, meaning the barriers to entry with PHP are lower than with many other languages

- **It's open source (and therefore free!):** This also helps developers get started with PHP - it can be installed quickly and at zero cost. There is also open access to a wide range of PHP frameworks, such as Laravel and Symfony. This feature is also appealing to companies as it helps control the costs of web development.
- **It's versatile:** One of the major benefits of PHP is that it is platform-independent, meaning it can be used on Mac OS, Windows, Linux and supports most web browsers. It also supports all the major web servers, making it easy to deploy on different systems and platforms at minimal additional cost.
- **It enjoys strong community support:** As a veteran scripting language that is widely used, PHP now has a large and loyal community base to support it. There are tons of tutorials, FAQs, and tips to help new PHP developers and to continue pushing the boundaries of what the language can achieve through regular updates.
- **It's fast and secure:** Two things that every organization wants their website or application to be are fast and secure. PHP uses its own memory and competes well on speed, especially when using the newer versions. There have been questions in the past about PHP security, though it is important to note that it is not inherently more or less secure than other programming languages. One important benefit is that because of its widespread use and community support, there are now many tools, frameworks, and best practices to help fix vulnerabilities and protect against cyberattacks.
- **It is well connected with databases:** PHP makes it easy to connect securely with almost any kind of database. This gives developers more freedom when choosing which database is best suited for the application being built.
- **It is tried and tested:** One major benefit of being around for a quarter century is that PHP code has been put to the test in all kinds of real-life environments. The

main bugs have been found and fixed, making the language more stable and trusted by developers. Moreover, many frameworks and tools have been built over time, helping to make PHP web development more secure, efficient.

- There's a lot of legacy code: OK, this isn't really a benefit of using PHP in itself, but when so many existing websites have been written with PHP it becomes an important consideration. Put simply, it is usually easier to make updates in the same language rather than try to rewrite everything in another. This helps PHP endure even when some younger developers may have a personal preference for another language. This legacy effect also means it is usually easier to find a PHP developer for your organization, though as we have written before on this blog you want to make sure they have the right skills.

5.5.1.6 POSTMAN

What is Postman?

Postman is one of the most popular software testing tools which is used for API testing. With the help of this tool, developers can easily create, test, share, and document APIs.

- Postman is a standalone software testing API (Application Programming Interface) platform to build, test, design, modify, and document APIs. It is a simple Graphic User Interface for sending and viewing HTTP requests and responses.
- While using Postman, for testing purposes, one doesn't need to write any HTTP client network code. Instead, we build test suites called collections and let Postman interact with the API.
- In this tool, nearly any functionality that any developer may need is embedded. This tool has the ability to make various types of HTTP requests like GET, POST, PUT, PATCH, and convert the API to code for languages like JavaScript and Python.

Terminologies Related to Postman:

- **API**
Application Programming Interface (API) is software that acts as an intermediary for two apps to communicate with each other. We use APIs whenever we use an application like Twitter, Facebook, sending text messages, or checking the weather over the phone
- **HTTP**
HTTP (Hypertext Transfer Protocol) is the collection of rules for the transmission of data on the World Wide Web, like graphic images, text, video, sound, and other multimedia data. The Web users implicitly make use of HTTP as soon as they open their Web browser.

Why to use postman?

1. **Accessibility-** One can use it anywhere after installing Postman into the device by simply logging in to the account.
2. **Use Collections-**Postman allows users to build collections for their API-calls. Every set can create multiple requests and subfolders. It will help to organize the test suites.
3. **Test development-** To test checkpoints, verification of successful HTTP response status shall be added to every API- calls.
4. **Automation Testing-**Tests can be performed in several repetitions or iterations by using the Collection Runner or Newman, which saves time for repeated tests.
5. **Creating Environments-** The design of multiple environments results in less replication of tests as one can use the same collection but for a different setting.
6. **Debugging-** To effectively debug the tests, the postman console helps to track what data is being retrieved.
7. **Collaboration-** You can import or export collections and environments to enhance the sharing of files. You may also use a direct connection to share the collections.

8. Continuous integration-It can support continuous integration.

5.5.1.7 XAMPP–

XAMPP is one of the widely used cross-platform web servers, which helps developers to create and test their programs on a local webserver. It was developed by the Apache Friends, and its native source code can be revised or modified by the audience. It consists of Apache HTTP Server, MariaDB, and interpreter for the different programming languages like PHP and Perl. It is available in 11 languages and supported by different platforms such as the IA-32 package of Windows & x64 package of macOS and Linux.

XAMPP is an abbreviation where X stands for Cross-Platform, A stands for Apache, M stands for *MYSQL*, and the Ps stand for PHP and Perl, respectively. It is an open-source package of web solutions that includes Apache distribution for many servers and command-line executables along with modules such as Apache server, MariaDB, PHP, and Perl.

XAMPP helps a local host or server to test its website and clients via computers and laptops before releasing it to the main server. It is a platform that furnishes a suitable environment to test and verify the working of projects based on Apache, Perl, MySQL database, and PHP through the system of the host itself. Among these technologies, Perl is a programming language used for web development, [PHP](#) is a backend scripting language, and MariaDB is the most vividly used database developed by MySQL.

XAMPP is used to symbolize the classification of solutions for different technologies. It provides a base for testing of projects based on different technologies through a personal server. XAMPP is an abbreviated form of each alphabet representing each of its major components. This collection of software contains a web server named Apache, a database management system named MariaDB and scripting/ programming languages such as PHP and Perl. X denotes Cross-platform, which means that it can work on different platforms such as Windows, Linux, and macOS.

Components of XAMPP:

1. **Cross-Platform:** Different local systems have different configurations of operating systems installed in it. The component of cross-platform has been included to increase the utility and audience for this package of Apache distributions. It supports various platforms such as packages of Windows, Linus, and MAC OS.
2. **Apache:** It is an HTTP a cross-platform web server. It is used worldwide for delivering web content. The server application has made free for installation and used for the community of developers under the aegis of Apache Software Foundation. The remote server of Apache delivers the requested files, images, and other documents to the user.
3. **MariaDB:** Originally, MySQL DBMS was a part of XAMPP, but now it has been replaced by MariaDB. It is one of the most widely used relational DBMS, developed by MySQL. It offers online services of data storage, manipulation, retrieval, arrangement, and deletion.
4. **PHP:** It is the backend scripting language primarily used for web development. PHP allows users to create dynamic websites and applications. It can be installed on every platform and supports a variety of database management systems. It was implemented using C language. PHP stands for Hypertext Processor. It is said to be derived from Personal Home Page tools, which explains its simplicity and functionality.
5. **Perl:** It is a combination of two high-level dynamic languages, namely Perl 5 and Perl 6. Perl can be applied for finding solutions for problems based on system administration, web development, and networking. Perl allows its users to program dynamic web applications. It is very flexible and robust.
6. **phpMyAdmin:** It is a tool used for dealing with MariaDB. Its version 4.0.4 is currently being used in XAMPP. Administration of DBMS is its main role.
7. **OpenSSL:** It is the open-source implementation of the Secure Socket Layer Protocol and Transport Layer Protocol. Presently version 0.9.8 is a part of XAMPP.

8. **XAMPP Control Panel:** It is a panel that helps to operate and regulate upon other components of the XAMPP. Version 3.2.1 is the most recent update. A detailed description of the control panel will be done in the next section of the tutorial.
9. **Webalizer:** It is a Web Analytics software solution used for User logs and provide details about the usage.
10. **Mercury:** It is a mail transport system, and its latest version is 4.62. It is a mail server, which helps to manage the mails across the web.
11. **Tomcat:** Version 7.0.42 is currently being used in XAMPP. It is a servlet based on JAVA to provide JAVA functionalities.
12. **FileZilla:** It is a File Transfer Protocol Server, which supports and eases the transfer operations performed on files. Its recently updated version is 0.9.41.

Advantages of XAMPP:

- It is easy to set up and use.
- XAMPP is a free and open-source cross-platform web server solution stack package for all types of operating systems like Linux and Windows.
- It has many other essential modules like phpMyAdmin, OpenSSL, Media-Wiki, WordPress, Joomla, and more.

5.5.1.8 XML:

XML (Extensible Markup Language) is used to describe data. The XML standard is a flexible way to create information formats and electronically share structured data via the public internet, as well as via corporate networks.

XML is a markup language based on Standard Generalized Markup Language (SGML) used for defining markup languages.

XML's primary function is to create formats for data that is used to encode information for documentation, database records, transactions and many other types of data. XML data may be used for creating different content types that are generated by building

dissimilar types of content -- including web, print and mobile content -- that are based on the XML data.

Like Hypertext Markup Language (HTML), which is also based on the SGML standard, XML documents are stored as American Standard Code for Information Interchange (ASCII) files and can be edited using any text editor.

XML's primary function is to provide a "simple text-based format for representing structured information," according to the World Wide Web Consortium (W3C), the standards body for the web, including for the following:

- underlying data formats for applications such as those in Microsoft Office;
- technical documentation;
- configuration options for application software;
- books;
- transactions; and
- invoices.

XML enables sharing of structured information among and between the following:

- programs and programs;
- programs and people; and
- locally and across networks.

W3C defines the XML standard and recommends its use for web content. While XML and HTML are both based on the SGML platform, W3C has also defined the XHTML and XHTML5 document formats that mirror, respectively, the HTML and HTML5 standards for web content.

How does XML work?

XML works by providing a predictable data format. XML is strict on formatting; if the formatting is off, programs that process or display the encoded data will return an error.

For an XML document to be considered well-formed -- that is, conforming to XML syntax and able to be read and understood by an XML parser -- it must be valid XML code. All XML documents consist of elements; an element acts as a container for data. The beginning and end of an element are identified by opening and closing tags, with other elements or plain data within. XML works by providing properly formatted data that can be reliably processed by programs designed to handle XML inputs.

The logical structure of an XML file requires that all data in the file be encapsulated within an XML element called the root element *or* document element. This element identifies the type of data contained in the file; in the example above, the root element is <library>.

The root element contains other elements that define the different parts of the XML document; in the example above, the root element contains <book> elements, which, in turn, consist of the two elements <title> and <author>. All XML elements must be properly terminated for an XML file to be considered well-formed.

XML enables users to define their own additional elements if needed. In the preceding example, an XML author might define new elements for publisher, date of publication, International Standard Book Number and any other relevant data. The elements can also be defined to enforce rules regarding the contents of the elements.

XML Entities:

XML elements can also contain predefined entities, which are used for special reserved XML characters. Custom entities can be defined to insert a predefined string of characters for inclusion in an XML file.

The five standard predefined XML entities are the following:

1. < -- The less than symbol (<), also known as the *open angle bracket*, is normally used in XML to indicate the start of an XML tag. This entity is used when the open angle bracket is part of the content of the XML file.

2. > -- The greater than symbol (>), also known as the *close angle bracket*, is normally used in XML to indicate the end of an XML tag. This entity is used when the close angle bracket is part of the content of the XML file.
3. & -- The ASCII ampersand symbol (&) is reserved in XML for indicating the start of an XML entity. This entity is used when an ampersand occurs within an XML element.
4. " -- The ASCII double quote character (") is used in XML element tags to identify optional attribute values of the element. For example, an <emphasis> tag might include options for emphasizing some text, such as bold, italic or underline. This entity is used when a double quote character appears in the contents of an XML element.
5. ' -- The ASCII single quote character ('), also known as an *apostrophe*, is used in XML element tags to identify option attributes of the element. For example, an <emphasis> tag might include options for emphasizing some text, such as bold, italic or underline. This entity is used when a single quote or apostrophe appears in the contents of an XML element.

XML entities take the form of &name; where the entity name begins with the ampersand symbol and ends with a semicolon. Custom entities can be single characters or complex XML elements. For example, boilerplate language for technical documentation or legal contracts can be reduced to a single entity. However, when using entities, the XML author must ensure that inserting the entity into an XML file will produce well-formed XML data.

An XML file is a plaintext file with the .xml file extension. XML files contain Unicode text, and they can be opened with any application capable of reading text files.

XML files can be edited either with a simple text editor or specialized XML editors. An XML editor may include tools for validating the XML code, including the ability to do the following:

- parse XML code and display well-formed XML;
- flag orphaned text, which is text not enclosed within a tag; and
- identify improperly formed tags.

Different types of content can be incorporated into an XML file. For example, rich media content can be incorporated into XML through tags that identify the files in which the rich media content resides.

Benefits of XML:

XML is widely used for technical documentation because it can specify structural information. This document structure can then be parsed by other programs for output.

For example, in HTML, the user can create different types of lists, including numbered lists, but there is no way to explicitly tag content as being part of a step-by-step procedure. In XML, a procedure tag can be defined to represent a list of items as being the steps of a procedure, including identifying different elements for required steps, optional steps and alternate steps.

Likewise, in HTML, a string can be tagged as one of several different heading levels to indicate a headline or title, but in XML, a string can be explicitly tagged as a title, subtitle, headline or sub headline. This enables the user to differentiate programs to process the XML content for different types of output.

5.5.2 Detail description of project setup:

5.5.2.1 Installation of Android Studio

1. Firstly, to download Android Studio click on the link given below,
https://developer.android.com/studio/?gclid=CjwKCAiA4t_iBRApEiwAn-vt-76uWkKeOmcZxTYZ-got8ljyDlBQS28wg8w9S4kLUmbHKn4Wb0DwBoCzm8QAvD_BwE

This will direct you to the official website of Android Studio.

2. Then, click on download Android Studio as shown.

3. Lastly, click on the downloaded file and packages will install, automatically.

We are done with installation for windows and now you can start making your application using Android Studio.

5.5.2.2 Android Application development for tracking nearby gym locations /Healthcenters.

To develop an Android app that help tracking nearby gym locations and buy accessories from shop and get nutritional based diet plans by the trainer, you can follow these general steps:

1. Install Android studio and JDK.
2. Design the activity diagrams in android studio.
3. Design the flow of activity diagrams.
4. Develop the backend code for app.
5. Set the connection between android studio and MySQL.
6. Check if the connection is done properly and entries are going in database.



Figure 5.5: Logo of Android Application

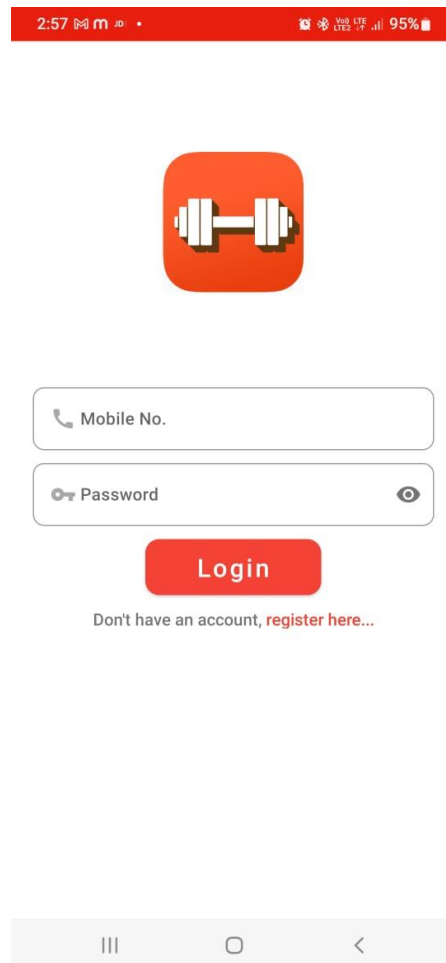


Figure 5.6: Login Page of Application

5.5.2.3 Application Modules

- **User Module**

User module have following feature

1. Manage Profile
2. Track Nearby Gym locations.
3. View Gyms
4. View Shops
5. Calculate BMI and get nutrition diet plan based on their body mass index.

Home page of User Module is shown below

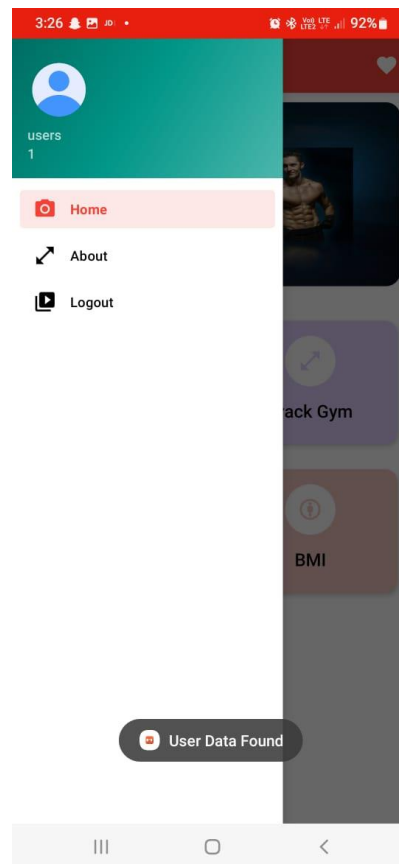


Figure 5.7: Home Page of User Module

User will be able to manage their profile, track nearby Gym locations, get nutritional diet plans based on their body mass index.

- **Admin Module**

Here are some features of Admin module

1. Manage Profile
2. Manage User
3. Manage Gym
4. Manage Trainer
5. Track Gym

6. Manage Shops

In the fitness to do application most access is given to admin. admin will able to manage total users, total shops, and total gym registered on the application.

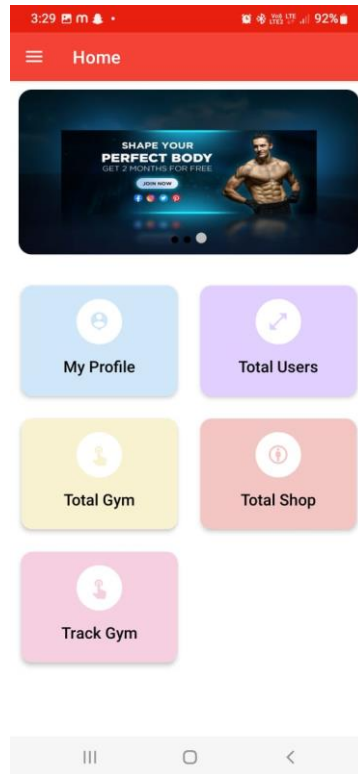


Fig 5.8. Home Page of Admin Module

- **Gym Module**

Gym Module have following features

1. Manage Profile
2. View Total Users
3. Manage Total trainer

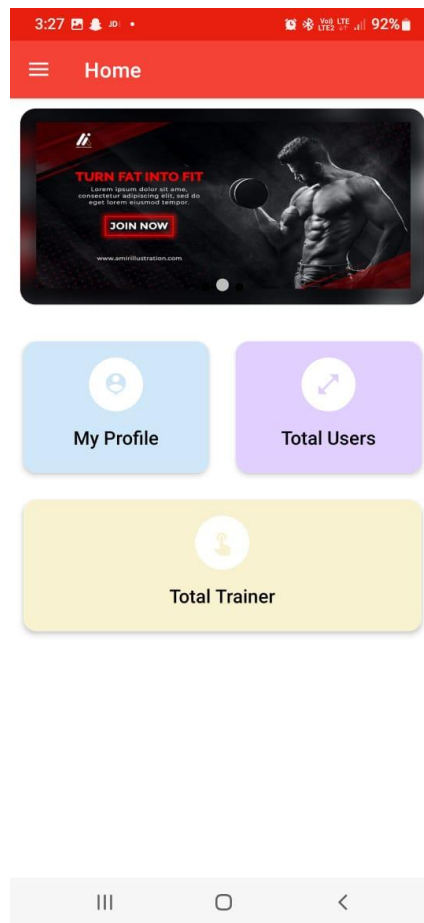


Figure 5.9: Home Page of Gym Module

Gym owners will be able to view their total users and their total trainers and also, they can edit their profile.

- **Shop Module**

Shop Module have following features

1. Manage Profile
2. Manage Product

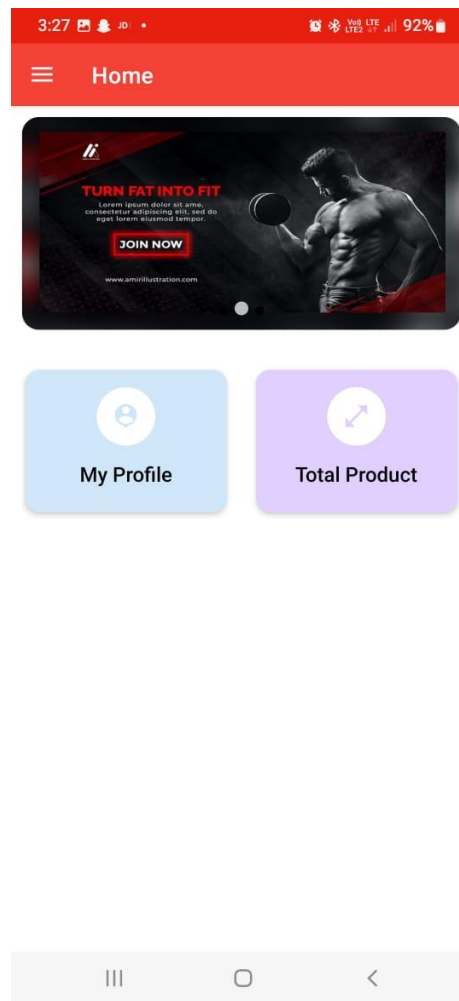


Figure 5.10: Home Page of Shop Module

Shop owner will able to manage products and their profile.

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 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 isolate 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 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 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 in case 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 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 purpose, 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 behaviour 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 behaviour 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 system is able to withstand the unexpected load or request without breakdown.
- **User Interface:** How easily system is responding 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 end user.
- **Usability:** How easy the system software is designed so that it can be put into use by naïve user.
- **Load or stress testing:** This testing define 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 and

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. Testing environment is similar to that of the real time production.
4. It checks 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 time consuming process than others.
2. The cost for the testing will be high since it covers the testing of entire software.
3. It needs 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 bug-free.
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.
5. Functional testing typically follows a predetermined set of test cases and scripts. This can make it difficult to adapt to changes in the system or application being tested or to account for new or unexpected scenarios.
6. While functional testing can help to identify issues related to functional requirements, it may not provide a complete picture of the quality or reliability of the system or application being tested. This can lead to a false sense of security and potentially missed issues.

5.6.6 Screenshots of Application:

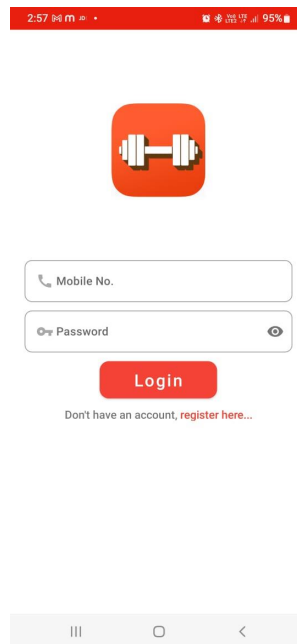


Fig: Login page

The above figure is of login page of the application Fitness to Do. In it user has to login with there credentials and if not registered then can register themselves.

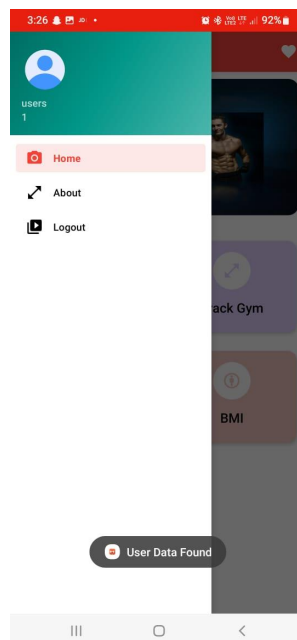


Fig: User's Homepage

The above figure is of user's dashboard where he could view all the activities he can do

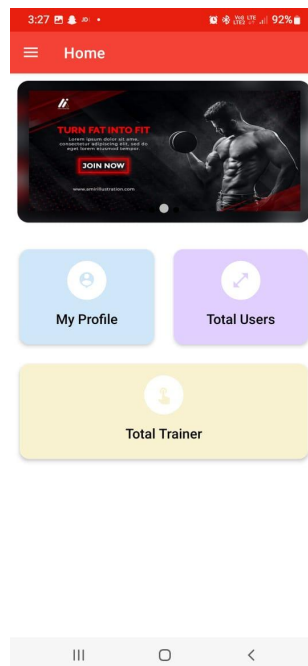


Fig: Homepage of Gym Module

The above figure is of the dashboard of Gym Module where the Gym owner could see total users enrolled in the specific gym and the trainer which are going to train users.

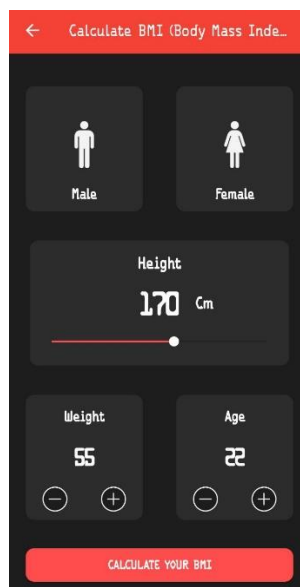


Fig: BMI Calculator

The above figure shows the BMI calculator which helps user to track their BMI index according to their weight, height, age and gender.

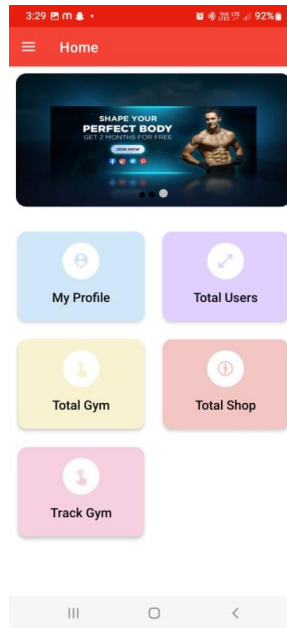


Fig: Admin’s Homepage

The above figure is of the admin dashboard where admin can manage all the modules like managing users, gyms or shops.

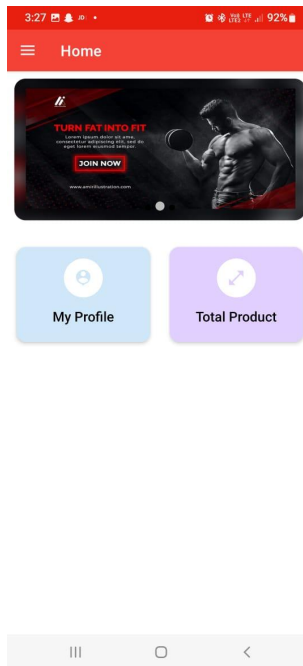


Fig: Homepage of Shop Module

The above figure is of the dashboard of Shop Module where the Shop Owner could see the total products which are available in the shop and owner can edit his profile accordingly.

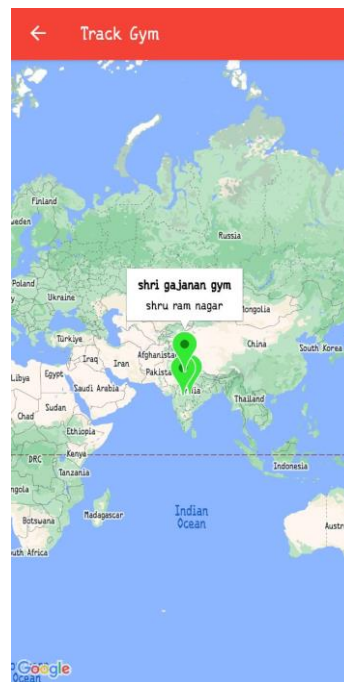


Fig: Map for tracking Nearby gyms

The above figure shows the map which is used in the app for tracking nearby gyms.

This screen is developed using the map activity in the android studio.

It includes following steps:

1. Open Android Studio and create a new project.
2. In the "Create New Project" window, select "Google Maps Activity" as the template for your project.
3. Choose a project name and package name for your app, and then click "Finish."
4. Android Studio will generate a new project with a pre-built map activity that includes a Google Map and some basic functionality.
5. To customize your map activity, you can open the "activity_maps.xml" file in the "res/layout" directory to modify the layout of the activity.
6. You can also modify the "MapsActivity.java" file in the "java/com.example.yourappname" directory to add custom functionality to your map activity.
7. Finally, you will need to add your Google Maps API key to your app's "AndroidManifest.xml" file in order to use the Google Maps API. To do this, add the following line to the "application" section of your manifest file

6. CONCLUSION

The main purpose of this project is to develop an application which will track the nearby Gym locations, provide the nutrition-based diet plans, information about the shops which will contain the gym accessories. Also, it is observed that people of young age group are more focused on their fitness but due to their busy work schedules they are not finding it easy to search for nearby gyms and shops, so the applications which we are making may help them in many ways and accordingly it will help them to find out the nearby gyms, health centres, shops which in case will save their time.

Also, the focus of developing this android base workout and nutrition management system (android app) is to help people to maintain their physique, internal health fitness. This fitness application includes the four modules namely BMI calculator calorie intake calculator BMR calculator and well-organized workout and nutrition programs for both male and female. Category based plan can be explore in a home screen which include male and female gender-based category. This will help user to improve their healthy lifestyle and provide proper systematic knowledge to young fitness lovers, those want to develop their physique with proper exercise and with proper nutrition. This app also helps the user with proper guidance of calorie requirement as per their physical by calculating their BMI and BMR. User can calculate and manage their daily meals with proper calories also can workouts properly as per their physical appearance and fitness goal. This will help user to active their fitness goal easily and properly.

FUTURE SCOPE

In the future, we will integrate more apps to our main application to make it a more sophisticated auto-help tool and to provide a wide range of facilities to the end user.

This apps will include:

- (1) Measuring visceral fat and Measuring fat percentage of the body.
- (2) Provide reminders to users about their meals and workout which help them to take meal and do workout on time. Therefore, through these reminders, the user can take care of their health and fitness.
- (3) Providing Yoga technique and skills which will help to keep user mind fit and healthy with body.

The wellbeing or wellness applications offer assistance client to live their life at fullest degree. There are numerous applications for keeping up the wellnessin genuine life. They offer assistance clients to track their day-by-day calorie burns and keep up wellness calendars or eat less charts. Downloading numerous sorts of wellness app to attain your wellbeing objectives doesn't seem a great thought, because it can drastically moderate down your smartphones. There is all in one app that let you avail all your wellness offices beneath a single roof. An all one app lets you track your workout by empowering you to form a custom timetable for workout sessions conducted by a master wellness coach. Other than this, you will be able track advance in particular lifts. Too, there is a BMI calculator that lets you figure out the perfect weight and whether you are underweight, overweight, or inside extend. Each individual needs to remain fit and sound in their lives. It may be a reality that around individual life more than an undesirable one. Now-a-days there are numerous applications, planned for portable gadgets to keep an individual fit. They offer assistance clients to preserve their physical, mental workout, and numerous other exercises. The showcase is packed with numerous wellbeing apps that make the workout plans so simple for every individual. They are the leading substitute for exercise centres and donate most extreme comes about. From these keen apps, client can effectively look adjacent exercise centres or wellbeing clubs.

USER MANUAL

The user manual for our fitness application! Our app is designed to help you achieve your fitness goals by providing you with personalized workout plans, tracking your progress, and offering a variety of features to help you stay motivated. This guide will walk you through all of the app's features and how to use them effectively.

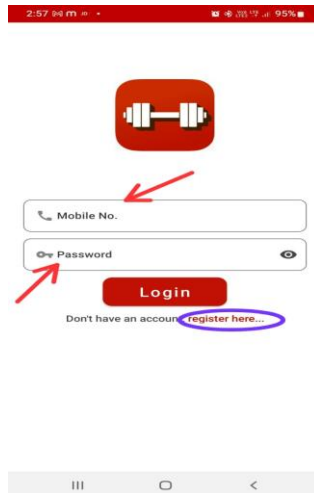


Fig: Login page

Above diagram depict home page of user module in that first user need to enter their mobile number after entering mobile number they need to enter their password if user have no account, then they can register on this application.

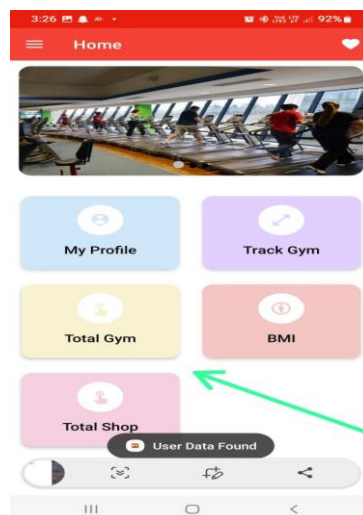


Fig: Homepage of user Module

After successful login user will be able to see the following feature

Download the app from the app store and create an account.

Enter your basic information such as height, weight, age, and fitness level.

Set your fitness goals, such as losing weight, gaining muscle, or improving cardiovascular health.

Home Screen:

Once you log in, you will be taken to the home screen. From here, you can access all of the app's features.

Tracking Progress:

Click on the "Progress" tab to track your progress.

Log your weight, body measurements, and work out details to see how you are progressing towards your goals.

Set reminders to log your progress regularly to help you stay on track.

Nutrition:

Click on the "Nutrition" tab to access nutrition information.

Set your dietary preferences and track your calorie intake and macronutrient breakdown.

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Dissemination of Work

1) Review Paper - Journal of Advanced Research in Science, Communication and Technology

“A System for Fitness and Health Care”

Authors: Shreya Kharche, Neha Saraf, Tushar Ingle, Omsing Bhonde

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Date: 25th April 2023

DOI: 10.48175/IJARST-9577

SOURCE CODE LISTING

List of XML Activities in The App

- Activity_login
- Activity_add_product
- Activity_gym_details
- Activity_forgot_password
- Activity_registration
- Activity_main
- Activity_profile
- Activity_edit_trainer
- Activity_reset_password
- Activity_shop
- Activity_gym
- Activity_user
- Activity_admin
- Activity_trainer

List of Java Classes:

- ExampleInstrumentTest
- EditTrainerActivity
- Main



expending home-cooked nourishment, 54% were working out frequently, 47% were going for steady wellbeing check-ups, and 30% were overhauling their wellness administrations utilizing progressed apps and gadgets.

Brad Millington (2014). The title of the research paper is "Smartphone Apps and the Mobile Privatization of Health and Fitness. *Critical Studies in Media Communication*."

Through a assortment of wellness and wellness apps, wellness devotees were not as it were assembly their everyday walk and body workout targets but were moreover practicing mindfulness and reflection on the go. Physical wellness is not only one of the foremost vital keys to a sound body, it is the fundamental of energetic and inventive mental action. Hence, to supply an all-in-one stage to the clients from finding adjacent exercise centres to getting legitimate count calories and vital exercise centre admments we are making this android application. In afterward times utilize of wellness applications has extended these applications must fit the budget wellness targets and needs of elients and the social expelling traditions made may elients usual to these wellness apps and the float is not advancing to go anyplace in near future.

Juliana Chen, Janet E. Cade, and Margaret AllmanFacinelli (2015). In this paper author talks about the advancement in the smartphone technology, and purpose is to evaluate the quality of best weight loss apps.

Being fit physically and reasonably is each human being's extraordinary pine for. This require has been realized by the pioneers behind the change of wellness applications. Wellness App Advertise Share Action Following Work out and weight misfortune Eat less and Nourishment As well it burrows into the reasons why these apps are favored over wellness centres. Imperative information with regard to diverse related points was collected through fundamental information from one hundred respondents.

Maria D. Molina, and S. Shyam Sundar (2020). The title of the research paper is "Can Mobile Apps Motivate Fitness Tracking? A Study of Technological Affordances and Workout Behaviours."

This Paper points to ponder that can workout apps truly propel clients towards wellness? And it is examined that creator examined the relationship between inventive affordances of BodySpace, an exceedingly situated body building and weightlifting app, and behavioural results.

III. STATEMENT OF THE PROBLEM

To understand the problem faced by the people who are continuously moving from one city to another city and to help them to track nearby gym/location/shops/Health centers.

IV. OBJECTIVES

- To Shows nearby gym locations and their facilities to the user.
- To analyse the effectiveness of fitness apps on developing fitness of a user.
- To get the information about gym equipment's from the stores.
- To study the effect of fitness application to save users time and help them with their busy schedules.
- To provides proper workout plan, nutrition plan by the dietitian as per the need of user in order to achieve a

the method. In this we have design fourmodule user, admin, gym and shop. In the proposed solution user will be able to track nearby gym location. Also get nutrition-based diet plans given by the gym trainer, user will be able calculate BMI index using this application and user will be able to generate all the information regarding shops which contain gym accessories.



Fig: User Feature Chart>User will have the following features:

- Manage Profile
- Make Payment
- View Shops/Gyms



Fig: Admin Feature ChartAdmin will have the following features:

- Manage Profile/Shops/Users/Gyms
- Able to see how many users are registered on app
- Manage Payment



Fig: Shops Feature Chart

Shops will have following feature:

- Manage Profile
- Manage Payment/Accessories/Products
- Manage User

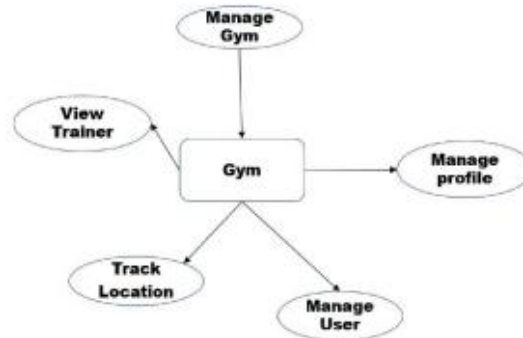
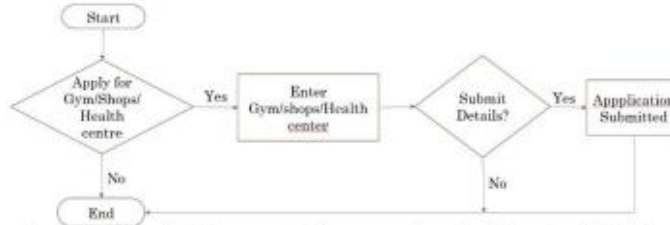


Fig: Gym Feature Chart

Gym will have following feature:

- Manage User /Profile
- Manage Gym
- Track Locations

User Apply for Gym/Shops/Health centre:



The above diagram shows the flow chart for user apply for gyms, shops, health centres. If all the credential of user are correct then user may have access the appand further can submit the application.

Admin Accept/Reject Gyms/Shops/Health centers:

Admin Login:





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The above diagram shows the flow chart for admin to accept or reject the gyms , shops, or health centres . If all the credential of admin are correct then admin may have access the app and further can manage all the profiles for gyms or shops .

VI. DATA ANALYSIS

Future wellness: the way to our wellness is through information investigation ... Fitness apps permits you to make an organized and personalized plan. Informationanalytics within the wellness industry is utilized to get it numerous things, counting: exercise centre participation rates, in-app client behaviour, exercise centre attendees' execution measurements, client inclinations. Now we will see some real time data for people having membership in gyms, Share of people that had a gym membership in India in august 2020:

Characteristics	Share of Respondents
16 to 24 years	30%
25 to 34 years	40%
35 to 44 years	35%
45 to 54 years	25%
55 years andabove	15%

Table: Share Of People in Gym Membership

The above table depicts the share of people having gym membership in India. It includes people of all age groups and shows how much amount of share they are having in gym membership. Also, it shows that more young people are interested in fitness and they are having the need for such applications as it will help them in many ways by saving their time.



Fig 7.1. Fitness App Market Share

The above chart depicts the fitness app market share. It includes Activity Tracking, Exercise & Weight Loss and Diet & Nutrition. It shows how much market share is there for all the mentioned three things, we could clearly see that Exercise & Weight Loss is having highest share in the market followed by Diet & Nutrition and Activity Tracker.

VII. CONCLUSION

The main purpose of this project is to develop an application which will track the nearby Gym locations, provide the nutrition-based diet plans, information about the shops which will contain the gym accessories. Also, it is observed that people of young age group are more focused on their fitness but due to their busy work schedules they are not finding it easy to search for nearby gyms and shops , so the applications which we are making may help them in many ways and accordingly it will help them to find out the nearby gyms, health centres, shops which in case will save their time.





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VIII. FUTURE SCOPE

The wellbeing or wellness applications offer assistance client to live their life at fullest degree. There are numerous applications for keeping up the wellness in genuine life. They offer assistance clients to track their day-by-day caloric burns and keep up wellness calendars or eat less charts. Downloading numerous sorts of wellness app to attain your wellbeing objectives doesn't seem a great thought, because it can drastically moderate down your smartphones. There is all in one app that let you avail all your wellness offices beneath a single roof. An all one app lets you track your workout by empowering you to form a custom timetable for workout sessions conducted by a master wellness coach. Other than this, you will be able track advance in particular lifts. Too, there is a BMI calculator that lets you figure out the perfect weight and whether you are underweight, overweight, or inside extend. Each individual needs to remain fit and sound in their lives. It may be a reality that a sound individual life more than an undesirable one. Now-a-days there are numerous applications, planned for portable gadgets to keep an individual fit. They offer assistance clients to preserve their physical, mental workout, and numerous other exercises. The showcase is packed with numerous wellbeing apps that make the workout plans so simple for every individual. They are the leading substitute for exercise centres and donate most extreme comes about. From these keen apps, client can effectively look adjacent exercise centres or wellbeing clubs. They give the areas and course maps of the exercise centres adjacent. A few apps too give the exercise centre rebates and other offers too.

IX. CHALLENGES

- This application is constrained for working for a particular city.
- As this application is a prototype model so reaching towards user is a major challenge.
- It may be challenging for the gym/shop owners to register on the app if they are not registered on google map.

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INFORMATION OF MEMBER



Name: Shreya Vijay Kharche
Email: kharcheshreyavijay@gmail.com
Mobile: 9112905599
Address: Ramwadi, Nandura road, Malkapur



Name: Neha Dhananjay Saraf
Email: maithali.kulkarni1@gmail.com
Mobile: 9359176312
Address: At post Shelapur



Name: Omsing Dattatraya Bhonde
Email: bhondeom2000@gmail.com
Mobile: 9607312000
Address: Chhatrapati Nagar, Dhad naka, Buldhana



Name: Tushar Chandrabhan Ingle
Email: tusharingle1409@gmail.com
Mobile: 9975478897
Address: Shri ram nagar JJ road, ward no 1, Nandura