

**A PROJECT REPORT
ON**

“PLATFORM FOR CLIENTS AND DEVELOPERS”

**Submitted to
UNIVERSITY OF MUMBAI**

**In Partial Fulfilment of the Requirement for the Award of
BACHELOR'S DEGREE IN
COMPUTER ENGINEERING**

BY

ALI KABIR	12C019
KARELE MEHRAJ RAZA MEHMOOD NARGIS	13C079
SHAH ANWAR AHMED MUNIR ALI AABIDA KHATOON	11C037

**UNDER THE GUIDANCE OF
Prof. ANSARI MUKHTAR**



**DEPARTMENT OF COMPUTER ENGINEERING
Anjuman-I-Islam's Kalsekar Technical Campus
SCHOOL OF ENGINEERING & TECHNOLOGY**

**Plot No. 2 3, Sector - 16, Near Thana Naka,
Khandagaon, New Panvel - 410206**

2017-2018

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CERTIFICATE

This is certify that the project entitled
“PLATFORM FOR CLIENTS AND DEVELOPERS”

submitted by

ALI KABIR 12CO19
KARELE MEHRAJ RAZA MEHMOOD NARGIS 13CO79
SHAH ANWAR AHMED MUNIR ALI AABIDA KHATOON 11CO37

Is a record of bonafide work carried out by them, in the partial fulfilment of the requirement for the award of Degree of Bachelor of Engineering (Computer Engineering) at *Anjuman-I-Islam's Kalsekar Technical Campus, Navi Mumbai* under the University of MUMBAI.

This work is done during year 2017-2018, under our guidance.

Date: - / /

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**ALI KABIR
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Project II Approval for Bachelor of Engineering

This project entitled **“PATFORM FOR CLIENTS AND DEVELOPERS”** by **ALI KABIR , KARELE MEHRAJ RAZA MEHMOOD NARGIS, and SHAH ANWAR AHMED MUNIR ALI AABIDA KHATOON (Roll No: 12CO19, 13CO79, and 11CO37)** is approved for the degree of **Bachelor of Engineering in Department of Computer Engineering.**

Examiners

1.

2.

Supervisors

1.

2.

Chairman

.....

Declaration

We declare that this written submission represents our ideas in our own words and where others ideas or words have been included, we've adequately cited and referenced the original sources. We also declare that we've adhered to all principles of academic honesty and integrity and haven't misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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ABSTRACT

Platform for Clients and Developers

Accompanied by the rapid growth of Information Technology Engineering, android mobiles are now used widely in a variety of fields. However, most applications are designed for normal persons and are designed to make people's life easier. Clients Developers On Cloud enables ubiquitous access of data and information by college clients and developers. Using this service developers have the facility to dynamically avail clients of varied branches with documents, notes, information, program codes, data files, audios, videos, and notification related to subject matter regarding project development at any time and place. The application has two sections majorly, one being the developers end and other is Clients end; both having their own separate utilities and responsibilities. Developers can remotely access the application and download and upload all types of files whereas Clients can also download and upload the all types of files from the application by having a ubiquitous access of data and information. Push Notification helps clients to be aware of notices regarding project development related activities, circulars and all the sudden events and important information to be shared with all the clients of the colleges. Forum has been implements in the application for doubts and discussion between developers and clients where a Clients can raise a doubt about the subjects related project development and developers can reply to it thus removing any miscommunication between developers and clients.

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B.E. (Computer Engineering)

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Keywords And Glossary

Keywords

Project Repositories, Digital Material, Interest Matching Engine, Educational Resources, Cloud, Push Notification, Forum, And Moodle.

Glossary

A.

Access Control:

The rules and deployment mechanisms which control physical and logical access to information systems. Acceptance: Formal agreement that a Process, Plan, or other Deliverable is complete, accurate, Reliable and meets its specified Requirements.

Authorisation:

The power granted by management to specified individuals allowing them to approve transactions, procedures, or total systems.

Authentication: A process that establishes origin of information or determines an entity's identity.

B.

Backup:

Copying data to protect against loss of integrity or availability of the original.

C.

Cloud:

Cloud computing is an information technology paradigm, a model for enabling ubiquitous access to shared pools of configurable resources, which can be rapidly provisioned with minimal management effort, often over the Internet.

D.

Data-sharing:

Data-sharing is allowing data to be used in an institute.

F.

Forum:

An Internet forum, or message board, is an online discussion site where people can hold conversations in the form of posted messages.

I.

Identity:

A unique name that is used to identify a user, person or role.

M.**Moodle:**

"Modular Object-Oriented Dynamic Learning Environment" Moodle is a free and open-source software learning management system written in PHP and distributed under the GNU General Public License.

P.**Project:**

A temporary endeavour undertaken to create a unique product, service or result.

Push Notification:

Notification push technology, or server push, is a style of Internet-based communication where the request for a given transaction is initiated by the publisher or central server.

S.**Server:**

A computer that provides some service for other computers connected to it via a network.

U.**User:**

A person who uses an IT Service or application on a day-to-day basis.

Contents

Acknowledgement	iii
Project Approval for Bachelor of Engineering	iv
Declaration	v
Abstract	vi
Table of Contents	vii
1 Introduction	1
1.1 Purpose	1
1.2 Project Scope	2
1.3 Project Goals and Objectives	2
1.3.1 Goals	2
1.3.2 Objectives	2
1.4 Organisation of Report	3
2 Literature Survey	4
2.1 Institutional Repository Digital Object Metadata Enhancement Researching	4
2.1.1 Advantages of Paper	4
2.1.2 Disadvantages of Paper	4
2.1.3 How to overcome the problems mentioned in Paper	5
2.2 Educational Repositories	5
2.2.1 Advantages of Paper	5
2.2.2 Disadvantages of Paper	5
2.2.3 How to overcome the problems mentioned in Paper	6
2.3 The Study On Constructing Institutional Repository Of University	6
2.3.1 Advantages of Paper	6
2.3.2 Disadvantages of Paper	6
2.3.3 How to overcome the problems mentioned in Paper	6
2.4 Planning and Implementation of Institutional Repository	7

2.4.1 Advantages of Paper	7
2.4.2 Disadvantages of Paper	7
2.4.3 How to overcome the problems mentioned in Paper	7
2.5 Technical Review	8
2.5.1 Advantages of Technology	8
2.5.2 Reasons to use this Technology	9
3 Project Planning	10
3.1 Members and Capabilities	10
3.2 Roles and Responsibilities	10
3.3 Assumptions and Constraints	10
3.3.1 Assumptions	10
3.3.2 Constraints	11
3.4 Project Management Approach	11
3.5 Ground Rules for the Project	11
3.6 Project Budget	11
3.7 Project Timeline	15
4 Software Requirements Specification	16
4.1 Overall Description	16
4.1.1 Product Perspective	17
4.1.2 Product Features	17
4.1.3 User Classes and Characteristics	17
4.1.4 Operating Environment	18
4.1.5 Software Requirements	18
4.1.6 Supportive Operating Systems	18
4.1.7 Hardware Requirements	19
4.1.8 Recommended Devices	20
4.1.9 Design and Implementation Constraints	21
4.2 System Features	21
System Feature	22
Description and Priority	22
Stimulus/Response Sequences	23
Functional Requirements	23

5 System Design	26
5.1 System Requirements Definition	26
5.1.1 Functional requirements	26
Use-case Diagram	27
Data-flow Diagram	28
Data-flow Diagram (Level 0)	30
Data-flow Diagram (Level 1)	30
Data-flow Diagram (Level 2)	31
System requirements (non-functional requirements)	31
Algorithm to optimize non-recursive flattening algorithm	32
Database Schema/ E-R Diagram.....	34
5.2 System Architecture Design	35
5.3 Sub-system Development	36
5.3.1 Description of the module designed for the Developers upload: ..	37
5.3.2 Description of module designed for the Clients download:	38
5.3.3 Description of module designed for the Push Notification:	38
5.3.4 Description of module designed for the Forums:	38
5.3.5 Description of module designed for the Offline Files:	39
5.4 Systems Integration	39
5.4.1 Class Diagram	40
5.4.2 Sequence Diagram	41
5.4.3 Activity Diagram	42
5.4.4 Component Diagram	43
5.4.5 Deployment Diagram	44
6 Implementation	45
6.1 Module 1 : Main Page	45
6.2 Module 2 : All Details Of Project	49
6.3 Module 3 : Add Project	52
6.4 Module 4: Chat	58
7 System Testing	67
7.1 Testing Process:	67
7.2 Test Cases and Test Results	68

7.2.1 Unit Testing:	68
7.2.2 Sample of a Test Case	69
7.3 Software Quality Attributes	70
8 Screenshots of Project	71
8.1 Home Screen	71
8.2 Login Section	72
8.3 Chat	73
8.4 Send message	74
8.5 Project list	75
8.6 Add Project	76
8.7 Stored account	77
9 Conclusion and Future Scope	78
9.1 Conclusion	78
9.2 Future Scope	78
References	79

List of Figures

Figure 3.1: Project Timeline	15
Figure 5.1: Use-case Diagram	27
Figure 5.2: Data-flow Diagram (Level 0)	30
Figure 5.3: Data-flow Diagram (Level 1)	30
Figure 5.4: Data-flow Diagram (Level 2)	31
Figure 5.5: Database Schema/ E-R Diagram	34
Figure 5.6: System Architecture Design	36
Figure 5.7: Class Diagram	40
Figure 5.8: Sequence Diagram	41
Figure 5.9: Activity Diagram	42
Figure 5.10: Component Diagram	43
Figure 5.11: Deployment Diagram	44
Figure 6.1: Main Page	46
Figure 6.2: Detail Of Projects	50
Figure 6.3: Add Contact	53
Figure 6.4: Chat Felid	59
Figure 8.1: Home Screen shot	71
Figure 8.2: Login Section Screen shot	72
Figure 8.3: Chat Screen shot	73
Figure 8.4: Send Message Screen shot	74
Figure 8.5: Project list Screen shot	75
Figure 8.6: Add Project Screen shot	76
Figure 8.7: Stored account Screen shot	77

List of Tables

Table 3.1: Table of Capabilities	10
Table 3.2: Table of Responsibilities	10
Table 7.1: Test Cases and Test Results	68

Chapter 1

Introduction

PLATFORM FOR CLIENTS AND DEVELOPERS

Accompanied by the rapid growth of Information Technology Engineering, android mobiles are now used widely in a variety of fields. However, most applications are designed for normal persons and are designed to make people's life easier. Clients Developers On Cloud enables ubiquitous access of data and information by college clients and developers. Using this service developers have the facility to dynamically avail clients of varied branches with documents, notes, information, program codes, data files, audios, videos, and notification related to subject matter regarding project development at any time and place. The application has two sections majorly, one being the developers end and other is Clients end; both having their own separate utilities and responsibilities. Developers can remotely access the application and download and upload all types of files whereas Clients can also download and upload the all types of files from the application by having a ubiquitous access of data and information. Android Push Notifications helps clients to be aware of notices regarding project development related activities, circulars and all the sudden events and important information to be shared with all the clients of the colleges. Forum has been implements in the application for doubts and discussion between developers and clients where a Clients can raise a doubt about the subjects related project development and developer can reply to it thus removing any miscommunication between developers and clients.

1.1 Purpose

- A. This project involves the development of an application which can be categorised into two sections.
- B. The first section mainly helps the developers to download and upload all kinds of files like documents, instant camera images/videos while the second module will help the clients to download and upload the all kinds of files.
- C. Apart from this push notification will help clients to receive the notices of any sudden events and important information regarding project development at any time and place.
- D. Apart from this push notification will help clients to receive the notices of any sudden events and important information regarding project development at any time and place.

- E. The second module involves the development of an app that has push notifications which is implemented using Google cloud messaging integrated in push-bots a third party application software.
- F. Forum which is held for doubts and discussion is open source php scripts implemented with all its features in web view of the android.

1.2 Project Scope

- A. In future this project can be expanded by adding the code authentication module.
- B. This module checks the authentication of the project which is be uploaded by the clients.
- C. This module ensures the institute that the project is genuine and should be upload on the server Code authentication module consist of the environment to execute the code and check its authenticity.
- D. For this we have to create a web application, java, android environment to test the software on this web application.

1.3 Project Goals and Objectives

1.3.1 Goals

- A. Seamless Communitisation of projects.
- B. Tracks of projects can be maintained.
- C. Stand alone Platform to separately maintain track of the data and timeline of the overall project construction to the clients as well as the developers.
- D. Supports maximum file format.

1.3.2 Objectives

- A. To give developers the facility of file sharing from remote location using the application.
- B. To give clients the facility of downloading and uploading the files from remote location using the application.
- C. Push Notification giving the authority to admin for dynamically sending notices to Clients and developers of sudden events.
- D. Also giving the developers the facility of uploading instant camera image/video.

- E. Forums for having a profound doubts and discussion.

1.4 Organisation of Report

- A. In **Chapter 1**, we have considered Project overview under which we have explained various important terminologies like introduction of the project, motivation (what exactly motivates us to create travel guide application),goals of this project.
- B. In **Chapter 2**, We have discussed about various papers that we have referred for our project, we have mentioned the description, pros and cons, and how to overcome the problems of each paper. Four papers have been referred before the development of this project.
- C. In **Chapter 3**, We have done with the project planning in which every members' capabilities and responsibilities have been detailed. Assumptions and constraints have been discussed and project management approach has been given and also the ground rules for the project has been detailed.
- D. In **Chapter 4**, We have discussed about the requirement analysis, under which we have discussed about platform requirement(supporting OS for the software), Software requirement and hardware requirement along with feasibility study.
- E. In **Chapter 5**, We can see the system design and its architecture, various diagrams can be seen in this chapter which represent the software, diagrams included are System architecture, class diagram, sequence diagram, component diagram and deployment diagram.
- F. In **Chapter 6**, We discussed about the implementation details of the system. This part contains details of the implementation of various modules. In short we describe how the system works.
- G. In **Chapter 7**, We have shown the test cases and results along with analytical discussion. This part contains the results of the output of our project.
- H. In **Chapter 8**, We have shown various screenshots of the project.
- I. In **Chapter 9**,We have concluded the whole project and future scope along with the limitations. Followed by references and appendix.

Chapter 2

Literature Survey

2.1 Institutional Repository Digital Object Metadata Enhancement Rearchitecting

We present work undertaken at our institutional repository to enhance metadata and reorganise digital objects according to new information architecture, in an effort to minimise administrative object management and processing, and improve object discovery and use. This work was partly motivated by the launch of a new discovery platform at our institution, which aggregates metadata and full text from our four open access repositories into a cohesive, consistent, and enhanced searching and browsing experience. The platform provides digital object identifier (DOI) assignment, metadata access via various formats, and an open meta-data and full text application program interface (API) for researchers, among other features. Functionality of these platform features relies heavily on accurate object representation and metadata. This work facilitates and improves the discovery and engagement of the diverse digital objects available from our institution, so they can be used and analyse in new, flexible, and innovative ways by a myriad of communities and disciplines.

2.1.1 Advantages of Paper

- A. Minimise administrative object management and processing, and improve object discovery and use.
- B. The platform DOI assignment, metadata access via various formats, and API for researchers.

2.1.2 Disadvantages of Paper

- A. This Repository is lack of an authority system, including the balance of metadata consistency and accuracy.
- B. No evaluation of OC user feedback received since launch, with the goal to prioritise new features, abilities, and enhancements in the next development cycle.

2.1.3 How to overcome the problems mentioned in Paper

- A. There Should be authority system which balances the metadata consistency and accuracy.
- B. There Should be authority system which balances the metadata consistency and accuracy.

2.2 Educational Repositories

Educational repositories of Digital Educational Material and Learning Objects allow teachers and students to store and retrieve educational resources, to be used in virtual teaching and learning environments as well as in face to face educational spaces. They are also an important means of disseminating and evaluating the quality of educational resources produced by teachers. The quality of these resources largely relies on guidelines and policies issued by educational institutions and supplied to their teachers, so that these resources can be created with an adequate level of quality and deployed in different learning management systems. The objective of this study is to explore to what extent Ecuadorian universities make use of educational repositories of Digital Educational Material, specialised repositories of Learning Objects and the way in which they have evolved over the last five years. The study also helps to identify barriers and factors that hinder their use. It is expected that the conclusions drawn from this analysis will permit the design of strategies aimed to promote the creation and use of quality digital educational materials.

2.2.1 Advantages of Paper

- A. Retrieve educational resources, to be used in virtual teaching and learning environments as well as in face to face educational spaces.
- B. Promote the creation and use of quality digital educational materials.

2.2.2 Disadvantages of Paper

- A. Lack of collection of information about the standard of metadata used by universities.
- B. There is no collection of information on licensing of the DEM (Digital Education Material) from.
- C. No analysed assessment models for the determination of the quality of the Learning object (LO).

2.2.3 How to overcome the problems mentioned in Paper

- A. Collection of the study material should be done at university level.
- B. Licensed Digital Education Material should be collected.
- C. Analyse assessment models for the determination of the quality of the Learning object (LO).

2.3 The Study On Constructing Institutional Repository Of University

By the study of the early development and actual situation of the institutional repository as well as the specific situation in our country's universities, the article comes up with the significance of constructing the institutional repository, including academic information can be stored for a long, expand the scope of the impact of university research and promotion of university research and teaching development. What's more, there have some problems which exist and need to be considered during the process of constructing. Aiming at these problems which include data collection, choice of the constructing platform, it provides some solutions, introduces several well known software and the basic method of constructing the institutional repository from analysis to design and finally to achieve the system.

2.3.1 Advantages of Paper

- A. Aiming at these problems which include data collection, choice of the constructing platform, it provides some solutions, introduces several well known software.
- B. The basic method of constructing the institutional repository from analysis to design and finally to achieve the system.

2.3.2 Disadvantages of Paper

- A. This Digital Repository does not preserve the projects of the students.
- B. Uploading scholarly information unlimited, without the audit or rough audit, makes the repository become crude and at will on contents.

2.3.3 How to overcome the problems mentioned in Paper

- A. A Section of Project Submission should be added so that student can upload their projects.

-
- B. Every Digital education material should be audited and authorised.

2.4 Planning and Implementation of Institutional Repository

Institutional Repositories (IR) are developed primarily for collecting, preserving and disseminating the intellectual output of an institution. This knowledge assists in sharing and learning of an institution. For the successful set up of an Institutional Repository, strategic planning is required with a predetermined goal and scope as well. This paper is a case study of setting up a digital Institutional Repository at Maharashtra Education Society's Institute of Management and Career Courses [MES's IMCC], Pune an Indian Management Institute using the open source software D-space. The basic objective of this paper is to provide a road-map for setting up an institutional repository in an academic institution. The paper also discusses the role of librarian in setting up a digital Institutional Repository, problems faced and major milestones to cover in the venture.

2.4.1 Advantages of Paper

- A. IR are developed primarily for collecting, preserving and disseminating the intellectual output of an institution.
- B. Knowledge assists in sharing and learning of an institution.
- C. to provide a road-map for setting up an institutional repository in an academic institution.

2.4.2 Disadvantages of Paper

- A. There is no communication between student or Users in this digital repository.
- B. There is no direct registration of the project.
- C. There is no validation of the project.

2.4.3 How to overcome the problems mentioned in Paper

- A. There Should be authority system which balances the meta-data consistency and accuracy.
- B. There should be OC user feedback with new feature, abilities.

2.5 Technical Review

Mobile Application Development For Android

- A. We'll start with the operating system that holds the largest market share and has the most mobile apps – both developed as in the stores.
- B. Let's take a quick look at the features of this first OS: Android.
- C. Basic features according to Google, that is, Android's creator.
- D. The technical features that define and configure the aforementioned operating system are:
 - a. It's an open-source operating system which means that you can adapt it to match your needs and it also means that there are plenty more developers and that there is much more documentation available for professionals.
 - b. Its core is based on the Linux Kernel.
 - c. It's adaptable to many different resolutions and kinds of screens.
 - d. Its ability to adapt to the endless number of different terminals on the market is excellent.
 - e. It makes use of SQLite for data storage.
 - f. It includes a web browser based on WebKit.
 - g. It supports HTML, HTML5 and Adobe Flash Player, amongst others.
 - h. It includes a device emulator and tools for memory debugging and software performance analysing.
 - i. It also includes Google Talk for video calls in its Honeycomb version.
 - j. It's capable of genuinely multitasking between applications.

2.5.1 Advantages of Technology

- A. Android Is More Customisable Can change almost anything.
- B. In Android, any new publication can be done easily and without any review process.
- C. Use a Different Messaging App for SMS.
- D. Android Offers an Open Platform.

- E. Easy access to the Android App Market.
- F. Cost Effective.
- G. Upcoming versions have a support to save RAW images.
- H. Built in Beta Testing and staged rollout.
- I. Native integration with Google cloud storage and 15GB free, \$2/mo for 100GB, 1TB for \$10.
- J. Apps available for Amazon Photos, OneDrive and Dropbox.

2.5.2 Reasons to use this Technology

- A. Return On Investment.
- B. Booming Job Prospects.
- C. Android is Open Source.
- D. Target a larger demographic.
- E. Easy Integration.
- F. Multiple Channels.
- G. Easy to adopt.
- H. Android is a very popular platform is a massive user base.
- I. Can develop on any OS.
- J. Really easy to get set up and coding.
- K. Java is a fairly simple language to learn and the IDEs for Java are easier to use those for Objective C.
- L. Documentation is structured and easy to find.
- M. Releasing an app is extremely streamlined thanks to Google.
- N. Massive User Base
- O. Increasing adoption, especially in developing countries.
- P. Ease of making the app publicly available.
- Q. Android's review process for apps is fairly simple and it takes lesser time than iOS, for an app to get approved for publishing on the play store.

Chapter 3

Project Planning

3.1 Members and Capabilities

Table 3.1: Table of Capabilities

Sr. No.	Name of Member	Capabilities
1	Ali Kabir	UI Design & System Testing
2	Karele Mehraj	Database
3	Shah Anwar	Modules Integration

3.2 Roles and Responsibilities

Table 3.2: Table of Responsibilities

Sr. No.	Name of Member	Role	Responsibilities
1	Ali Kabir	Team Leader	UI Design & System Testing
2	Karele Mehraj	Team Member	Database
3	Shah Anwar	Team Member	Modules Integration

3.3 Assumptions and Constraints

3.3.1 Assumptions

- A. The team member should know the android coding.
- B. To develop a system better available in the market.
- C. No significant changes in technology to change our system.

3.3.2 Constraints

- A. The project should be completed before the deadline.
- B. The module which is to be added should be known in advance.
- C. The user should be able to understand how the system works.

3.4 Project Management Approach

- A. We have use Agile methodology for the development of this project.
- B. The Agile Project Management Process is a value cent-ere methods of project management that allows projects to get processed in small phases or cycles.
- C. The methodology is one that is extremely flexible and projects that exhibit dynamic traits would benefit from this process as you would find that project managers working in this environment treat milestones the goal being to continuously adept to abrupt changes from our project guide feedback.

3.5 Ground Rules for the Project

- A. We treat each other with respect.
- B. We intend to develop personal relationships to enhance trust and open communication.
- C. We value constructive feedback. We will avoid being defensive and give feedback in a constructive manner.
- D. As team members, we will pitch in to help where necessary to help solve problems and catchup on behind schedule work.
- E. Additional meetings can be scheduled to discuss critical issues or tabled items upon discussion and agreement with the team leader.
- F. One person talks at a time; there are no side discussions
- G. When we pose an issue or a problem, we will also try to present a solution.

3.6 Project Budget

The budget for this project is very low as most of the tools we have use are open source. Following is the budget for the project:-

A. Operating System:**a. Apple macOS High Sierra**

- I. macOS High Sierra (version 10.13) is the fourteenth major release of macOS, Apple Inc.'s desktop operating system for Macintosh computers.
- II. The successor to macOS Sierra, it was announced at the WWDC 2017 on June 5, 2017.
- III. The name "High Sierra" refers to the High Sierra region in California.
- IV. As with Snow Leopard, Mountain Lion and El Capitan, the name also alludes to its status as a refinement of its predecessor, focused on performance improvements and technical updates rather than user features.
- V. Among the apps with notable changes are Photos and Safari.

b. Linux Mint

- I. Linux Mint is a community-driven Linux distribution based on Debian and Ubuntu that strives to be a "modern, elegant and comfortable operating system which is both powerful and easy to use."
- II. Linux Mint provides full out-of-the-box multimedia support by including some proprietary software and comes bundled with a variety of free and open-source applications.
- III. The project was conceived by Clément Lefèbvre and is being actively developed by the Linux Mint Team and community.

c. Microsoft Windows10 Pro

- I. Windows 10 is a personal computer operating system developed and released by Microsoft, as part of the Windows NT family of operating systems.
- II. It was released on July 29, 2015.
- III. It is the first version of Windows that receives ongoing feature updates. Devices in enterprise environments can receive these updates at a slower pace, or use long-term support milestones that only receive critical updates, such as security patches, over their ten-year lifespan of extended support.
- IV. Windows 10 introduces what Microsoft described as "universal apps"; expanding on Metro-style apps, these apps can be designed to run across multiple Microsoft product families with nearly identical code—including PCs, tablets, smartphones, embedded systems, Xbox One, Surface Hub and Mixed Reality.

- V. The Windows user interface was revised to handle transitions between a mouse-oriented interface and a touchscreen optimised interface based on available input devices—particularly on 2-in-1 PCs; both interfaces include an updated Start menu which incorporates elements of Windows 7's traditional Start menu with the tiles of Windows 8.
- VI. The first release of Windows 10 also introduces a virtual desktop system, a window and desktop management feature called Task View, the Microsoft Edge web browser, support for fingerprint and face recognition login, new security features for enterprise environments, and DirectX 12 and WDDM 2.0 to improve the operating system's graphics capabilities for games.
- VII. Windows 10 received mostly positive reviews upon its original release in July 2015; critics praised Microsoft's decision to provide a desktop-oriented interface in line with previous versions of Windows, contrasting the tablet-oriented approach of 8, although Windows 10's touch-oriented user interface mode was panned for containing regressions upon the touch-oriented interface of Windows 8.
- VIII. Critics also praised the improvements to Windows 10's bundled software over Windows 8.1, Xbox Live integration, as well as the functionality and capabilities of Cortana personal assistant and the replacement of Internet Explorer with Microsoft Edge.
- IX. However, media outlets have been critical of changes to operating system behaviours, including mandatory update installation, privacy concerns over data collection performed by the OS for Microsoft and its partners, and the adware-like tactics used to promote the operating system on its release.
- X. Microsoft aimed to have Windows 10 installed on at least one billion devices in the two to three years following its release.
- XI. Up to August 2016, Windows 10 usage was increasing, with it then plateauing, while eventually in 2018, it became more popular than Windows 7 (however that is still more used in most countries and Asia and Africa), and thus the single most used Windows version overall (at 46.07%, thus the other more used overall), though not on some continents as measured by web traffic.
- XII. As of November 2017, the operating system is running on more than 600 million devices and has an estimated usage share of 32% on traditional PCs and 15% across all platforms (PC, mobile, tablet, and console).

B. IDE:**a. Android Studio**

- i. Android Studio is the official integrated development environment (IDE) for Google's.
- ii. Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development.
- iii. It is available for download on Microsoft Windows, Apple macOS and Linux based operating systems.
- iv. It is a replacement for the Eclipse Android Development Tools (ADT) as primary IDE for native Android application development.

C. API:**a. Google API**

- I. Google APIs is a set of application programming interfaces (APIs) developed by Google which allow communication with Google Services and their integration to other services.
- II. Examples of these include Search, Gmail, Translate or Google Maps.
- III. Third-party apps can use these APIs to take advantage of or extend the functionality of the existing services.
- IV. The APIs provide functionality like analytics, machine learning as a service (the Prediction API) or access to user data (when permission to read the data is given).
- V. Another important example is an embedded Google map on a website, which can be achieved using the Static maps API, Places API] or Google Earth API.

b. Web Server API

- I. A web API is an application programming interface (API) for either a web server or a web browser.
- II. It is a web development term is usually limited to what is client-side accessible to web applications (and any web frameworks they might employ) and thus usually does not include web server and web browser implementation details such as web server SAPIs or web browser engine APIs unless publicly accessible by a remote web application.

3.7 Project Timeline

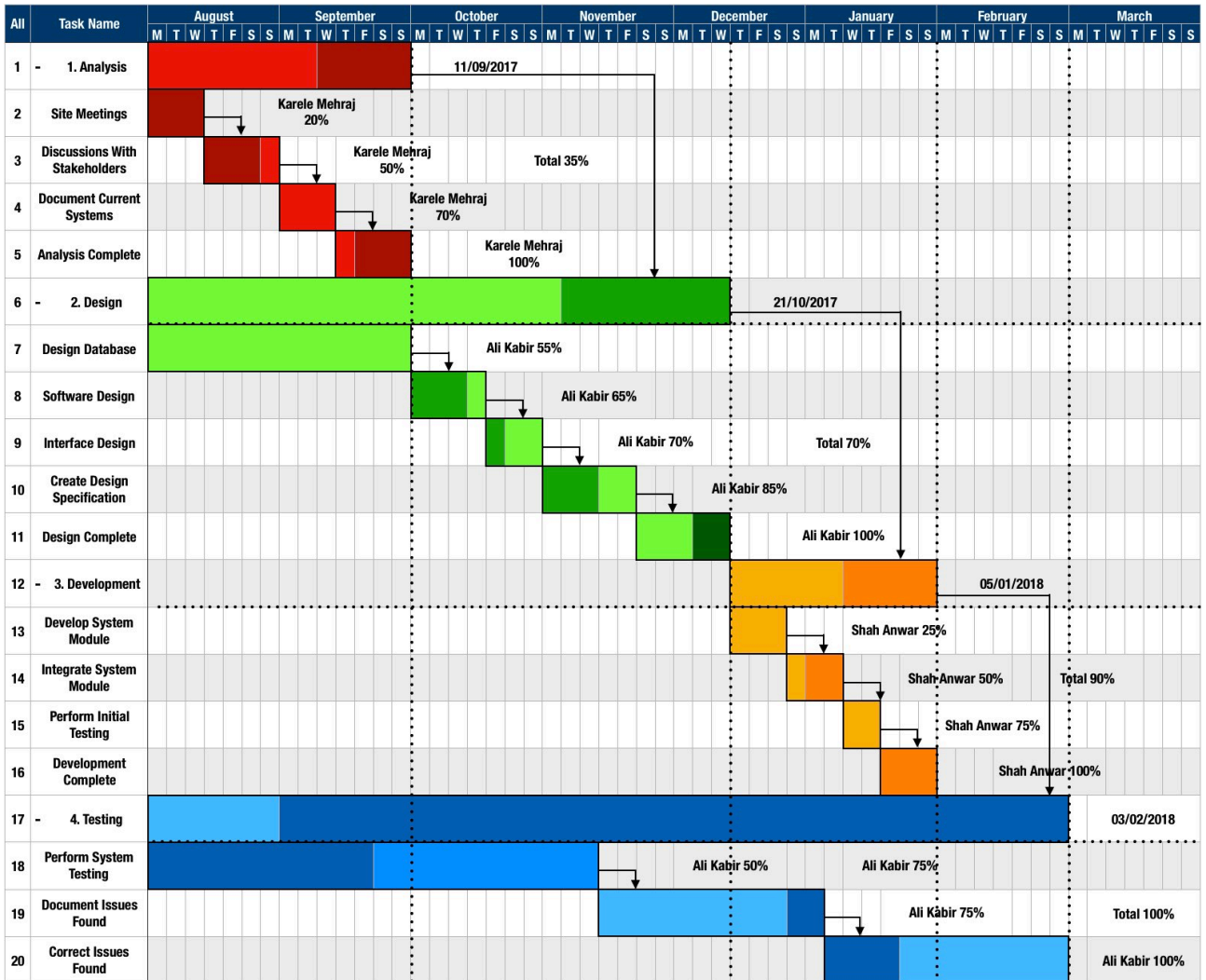


Figure 3.1: Project Timeline

Chapter 4

Software Requirements Specification

4.1 Overall Description

- A. Platform for Clients and Developers is a repository tool to give clients and developers an easy and efficient way of handling resources.
- B. There might be occurrences when a developer has the required any informations like presentations and documents or any kind of files for clients for a specific project development but the developer is not available at college and may be at a different location.
- C. In a situation like this common sense suggests using email, telephonic call, message, or Whatapp.
- D. But that is a tedious process wherein the class representatives have to forward all of it to the clients after receiving them from the developers.
- E. Our application strives to give a simple solution.
- F. The developer can easily login using his/her credentials and download and upload the all kinds of information file from anywhere using cloud services.
- G. What comes next is the Client part. The Client in a similar fashion can access all of it from anywhere using his/her own mobile carrier services.
- H. Neither of them need to be physically present in college for this to happen.
- I. The notification system adds onto the list of features.
- J. As soon as a circular is made it will be uploaded onto the application and every user will receive a push notification.
- K. This ensures a more direct way of communication between the college members and authorities.

-
- L. Forum is an open source bulletin board software that can be used to ask doubts and discussion for developer and clients.

4.1.1 Product Perspective

- A. This project involves the development of two sections developer and the Client part which can be categorised into two modules.
- B. The first module involves the development of an app that concerns with developer giving them the facility to download and upload any type of files like documents through their external or internal storage or instant camera or video.
- C. The second module involves the development of an app that concerns with Client giving them the facility to download all the files which are uploaded to server and vice versa.
- D. As soon as the Client download the file the file gets stored in the offline files so that a Client can view the file without using cellular data or WiFi internet or data connections.
- E. Push Notification will send the messages through Google cloud messaging to all the registered devices using the application thus informing clients of events, informations, and notices of college and important project development related notices.

4.1.2 Product Features

- A. To give developers the facility of file sharing from remote location using the application.
- B. To give clients the facility of downloading and uploading the files from remote location using the application.
- C. Push Notification giving the authority to admin for dynamically sending notices to Clint and developers of sudden events.
- D. Also giving the developers the facility of uploading instant camera image/video.
- E. Forums for having a profound doubts and discussion.

4.1.3 User Classes and Characteristics

- A. This project involves the development of an application which can be categorised into two sections.
- B. The first section mainly helps the developer to download and upload all kinds of files like documents, instant camera images/videos while the second module will help the clients to download and upload the all kinds of files.

- C. Apart from this push notification will help clients to receive the notices of any sudden events and important information regarding project development at any time and place.
- D. The first module involves the development of an app that has the upload and download feature which is implemented on android studio with a web server where all the data is uploaded and downloaded.
- E. The second module involves the development of an app that has push notifications which is implemented using Google cloud messaging integrated in pushbots a third party application software.
- F. Forum which is held for doubts and discussion is open source php scripts implemented with all its features in web view of the android.

4.1.4 Operating Environment

- A. Google Android Platform.
- B. Android Smartphone with Google android OS.

4.1.5 Software Requirements

The Software Requirements in this project for **implementation**:

- A. Android Studio.
- B. Java SE7 Software Development Kit.
- C. Apache.
- D. MySQL.
- E. PhpMyAdmin.
- F. ADT plug-in for Android.
- G. Sublime, Brackets, and Atom.
- H. Apple Safari, Microsoft Edge or Internet Explorer, Mozilla FireFox, and Google Chrome

4.1.6 Supportive Operating Systems

- A. The supported **Computer** Operating Systems platforms for **implementation**:
 - a. For **Apple Macintosh Computer: macOS X El Capitan** or above.
 - b. For **PC's: Microsoft Windows 7** or above, and **Linux or Ubuntu** (any flavour).

- B. The supported **Smartphone** Operating Systems platform for **Deployment**:
- a. For **Android Smartphones: Google Android4.0 (v4.4 Kit-Kat)** or above.

4.1.7 Hardware Requirements

- A. The **Computer** Hardware Requirements for **implementation**:

a. **For Apple Macintosh Computer:**

- i. **Memory:** 8GB of 1866 MHz or more LPDDR3 or above onboard memory.
- ii. **Storage:** 256GB or more of PCIe-based onboard SSD.
- iii. **Processor:** Intel 6th-generation (Skylake) or above Core m, and Core i-series.
- iv. **Processor Speed:** 1.2GHz or more.
- v. **Display:** HD, FHD, 2K, 4KUHD, 5K Retina display (LED-backlit with IPS technology having millions to 1billion of colours).

b. **For PC's:**

- i. **Main Memory (RAM):** 3GB or more.
- ii. **Hard Disk (Drive):** 128GB or more
- iii. **Processor:** Intel Pentium P1, P2, P3, P4, Core 2 Duo, Core i3, i5, i7, and AMD.
- iv. **Processor Speed:** 1.86GHz or more.
- v. **Display:** 1280*800 or more (LCD-backlit with TFT technology).

- B. The **Smartphone** Hardware Requirements for **Deployment**:

a. **For Android Smartphones:**

- i. **Main Memory (RAM):** 2GB or more.
- ii. **Hard Disk (Drive):** 100MB or more.
- iii. **Processor:** Intel Atom and AMD, ARM dual core, Qualcomm Snapdragon, Samsung Exynos, and Nvidia.
- iv. **Processor Speed:** 1.4GHz or more.
- v. **Display:** HD, FHD, 2K, (LED-backlit with IPS technology or OLED having millions of colours).

4.1.8 Recommended Devices

A. Recommended Computer:

a. Apple Macintosh Computer running macOS High Sierra:

- i. MacBook (Retina, 12-inch, Early 2017).
- ii. MacBook Pro (Retina, 13-inch, Mid 2016).
- iii. MacBook Pro with Touch Bar (Retina, 15-inch, Late 2017).
- iv. iMac 5K (Retina, 27-inch, Late 2015).
- v. iMac 4K (Retina, 21-inch, Mid 2015).
- vi. MacBook Air (13-inch, Mid 2012).

b. PC running Microsoft Windows10 or Linux Mint or Ubuntu :

- i. Dell XPS15.
- ii. Dell XPS13.
- iii. HP Spectre.
- iv. HP Spectre x360.
- v. Microsoft Surface Book.
- vi. Microsoft Surface Laptop.
- vii. Microsoft Surface Pro.
- viii. Razor Blade Pro.
- ix. Microsoft Surface Studio.

B. Recommended Smartphone:

a. Android Smartphone running Google android7.0 (v7.0Nougat):

- i. Samsung Note 8.
- ii. Nokia 8 Sirocco.
- iii. Samsung Galaxy S9+.

-
- iv. OnePlus 6.
 - v. Google Pixel XL2.
 - vi. LG V30.
 - vii. LG G6.
 - viii. Redmi MI mix 2s.
 - ix. Redmi Note 4.

4.1.9 Design and Implementation Constraints

- A. Clients & Developers Repository is a tool to give clients and developers an easy and efficient way of handling resources.
- B. There might be occurrences when a developer has the required any informations like presentations and documents or any kind of files for clients for a specific project development but the developer is not available at college and may be at a different location.
- C. In a situation like this common sense suggests using email, telephonic call, message, or WhatsApp.
- D. But that is a tedious process wherein the class representatives have to forward all of it to the clients after receiving them from the developers.
- E. Our application strives to give a simple solution.
- F. The developer can easily login using his/her credentials and download and upload the all kinds of information file from anywhere using cloud services.
- G. What comes next is the Client part and the Client in a similar fashion can access all of it from anywhere using his/her own mobile carrier services.
- H. Neither of them need to be physically present in college for this to happen.
- I. The notification system adds onto the list of features.
- J. As soon as a circular is made it will be uploaded onto the application and every user will receive a push notification.
- K. This ensures a more direct way of communication between the college members and authorities.
- L. Forum is an open source bulletin board software that can be used to ask doubts and discussion for developer and clients.

4.2 System Features

- A. This project involves the development of an application which can be categorised into two sections.

-
- a. The first section mainly helps the developer to download and upload all kinds of files like documents, instant camera images/videos.
 - b. The second section will help the clients to download and upload the all kinds of files.
- B. Apart from this push notification will help clients to receive the notices of any sudden events and important information regarding project development at any time and place.
- C. Forum which is held for doubts and discussion is open source php scripts implemented with all its features in web view of the android.

System Feature

- A. Users can share files from remote location.
- B. User can download and upload files from remote location.
- C. Users can upload instant camera image/video.
- D. User can receive notices of sudden events.
- E. Users can have doubts and discussion.

Description and Priority

- A. **Users can share files from remote location:** Clients & Developers On Cloud enables ubiquitous access of data and information by college clients and developers.
- B. **User can download and upload files from remote location:** Developer can remotely access the application and download and upload all types of files whereas Client can also download and upload the all types of files from the application by having a ubiquitous access of data and information.
- C. **Users can upload instant camera image/video:** Using this service developers have the facility to dynamically avail clients of varied branches with documents, notes, information, program codes, data files, audios, instant camera image/video, and notification related to subject matter regarding project development at any time and place.
- D. **User can receive notices of sudden events:** Push Notification helps clients to be aware of notices regarding project development related activities, circulars and all the sudden events and important information to be shared with all the clients of the colleges.
- E. **Users can have doubts and discussion:** Forum has been implements in the application for doubts and discussion between developer and clients where a Client

can raise a doubt about the subjects related project development and developer can reply to it thus removing any miscommunication between developer and clients.

Stimulus/Response Sequences

- A. The Administrator logs into the database server and updates the record of allowed users list.
- B. Later Developer user 1 will sign up with the credentials given to him/her.
- C. Database will cross-verify with the credentials entered and allow him/her to create the account.
- D. After the successful sign up/login developer will have options to upload files and Client can download those files of their followed developers.
- E. Once everything is done, the user logs out of the server.

Functional Requirements

- A. The user should be able to handle the system.
- B. After the successful sign up/login by entering credentials, the users should have an options to upload and download files
- C. The application should be able to effectively share all type of information files like documents, images and videos for project development.
- D. Whenever the smart phone is switched on or the mobile internet is on it should be able to receive push notifications.
- E. Should effectively take the inputs given by the user on the forum in terms of doubts and any important notice to be given.

4.3 External Interface Requirement

4.3.1 User Interfaces

- A. In todays digital world smartphone is a very basic yet natural and comfortable way to interact, communicate, share information with different people, accessing internet, and day-to-day activities by sampling using specific application to do their all sorts of work from anywhere to everywhere in the world at any time.
- B. This project application can be used in giving a ubiquitous access to the developers and clients to communicate with each other in a proficient way.
- C. By using this application clients and developer can upload, download, and view information offline.

- D. Also a college developers can implement this application to make use of the cloud services, give an instant access to clients and notify them about the circulars and important notices regarding project development.

4.3.2 Hardware Interfaces

- A. In this System mobile or smartphones are used as hardware for communicating purpose.
- B. Firstly in our smartphones we have to install application after installing we have to first login into the system.
- C. After login, system is ready to share and communicate over the available clients and developers.
- D. For sending or uploading and receiving or downloading smartphone is used as a hardware communication channel .

4.3.3 Software Interfaces

- A. Software interface of our application strives to give a simple solution.
- B. The developer can easily login using his/her credentials and download and upload the all kinds of information file from anywhere using cloud services.
- C. The Client in a similar fashion can access all of it from anywhere using his/her own mobile carrier services.
- D. As soon as a circular is made it will be uploaded onto the application and every user will receive a push notification.
- E. Forum is an open source bulletin board software that can be used to ask doubts and discussion for developer and clients.

4.3.4 Communications Interfaces

- A. The major communication for location purposes will be done by google API, the data is accessed by the Google by using the Google API's.
- B. The interface between the android SR algorithm and the system will be done by using http protocol.

4.4 Nonfunctional Requirements

4.4.1 Performance Requirements

- A. The system shall be able to process 100 chats transactions per second in peak load.
- B. The system shall be able to process 1000 notifications transactions per second in peak load
- C. In standard workload, the CPU usage shall be less than 50%, leaving 50% for background jobs.
- D. Processing of a simple information file of upload shall take less than 20 seconds for 95% of the cases.
- E. Processing of a simple information file of download shall take less than 10 seconds for 75% of the cases.
- F. Scrolling one page up or down in a 200 page document shall take at most 1 second.

4.4.2 Safety Requirements

- A. If there is any damage to the large amount of the data in the database than the whole system will go down.
- B. The database should be periodically maintained and have to keep upon it.
- C. The data which is updated by the user should be committed in the database.

4.4.3 Security Requirements

- A. The major security requirements for the system will be the safeguarding of the user data from any kind of exploit.
- B. In order to protect the user data the data is not stored in local databases we will be storing in the cloud for better security.

Chapter 5

System Design

5.1 System Requirements Definition

- A. System requirement definitions specify what the system should do, its functionality and its essential and desirable system properties.
- B. SRS is the official statement of what the system developers should implement.
- C. The techniques applied to elicit and collect information in order to create system specifications and requirement definitions involve consultations, interviews, requirements workshop with customers and end users.
- D. The objective of the requirements definition phase is to derive the two types of requirement.
- E. Software Requirement Specification consists of the functional and nonfunctional requirements for the application being developed.
- F. It briefs about the Hardware requirements for the smart phone as well as a computer.
- G. It also contains information regarding the software requirements.

5.1.1 Functional requirements

- A. Functional requirements indicate the functionality provided by the system.
- B. The developed application must be able to effectively share any type of informations that is all kinds of files like documents, images and videos for project development.
- C. The android phones should have android version of 4.0 for efficient use of the application.
- D. The application must be a continuously running app so that any time the smart phone is switched on or the mobile internet is on it should receive push notifications.

- E. The application developed to remove the miscommunication between developer and clients should effectively take the inputs given by the user on the forum in terms of doubts and any important notice to be given.

Use-case Diagram

- A. To model a system, the most important aspect is to capture the dynamic behaviour.
- B. Dynamic behaviour means the behaviour of the system when it is running/operating.
- C. Only static behaviour is not sufficient to model a system rather dynamic behaviour is more important than static behaviour.

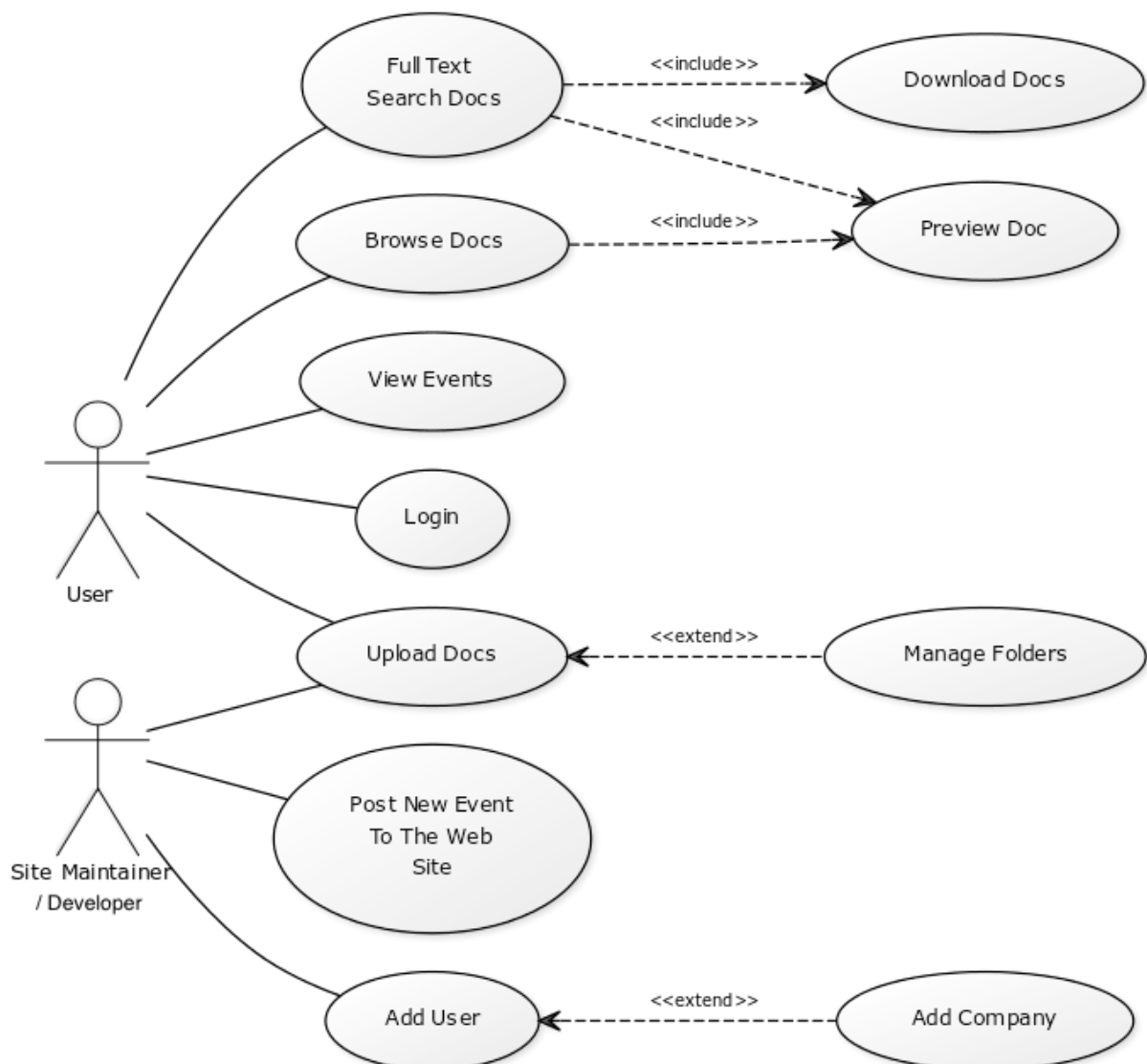


Figure 5.1: Use-case Diagram

- A. In UML, there are five diagrams available to model the dynamic nature and use case diagram is one of them.

-
- B. Now as we have to discuss that the use case diagram is dynamic in nature, there should be some internal or external factors for making the interaction.
 - C. These internal and external agents are known as actors.
 - D. Use case diagrams consists of actors, use cases and their relationships.
 - E. The diagram is used to model the system/subsystem of an application.
 - F. A single use case diagram captures a particular functionality of a system.
 - G. Hence to model the entire system, a number of use case diagrams are used.
 - H. In the given use-case diagram there are two actor, that is Users/Clients and State Maintainers/Developers/Administrators (Guide).
 - I. Student can view the project, upload the project, Search for the project which is done by the previous year users this will help users to decide their topics.
 - J. Admin will validate the Project which are uploaded by the users and update the project if necessary.

Data-flow Diagram

- A. Data flow diagram is graphical representation of flow of data in an information system.
- B. It is capable of depicting incoming data flow, outgoing data flow and stored data.
- C. The DFD does not mention anything about how data flows through the system.
- D. There is a prominent difference between DFD and Flowchart.
- E. The flowchart depicts flow of control in program modules.
- F. DFDs depict flow of data in the system at various levels.
- G. DFD does not contain any control or branch elements.
- H. Data Flow Diagrams are of two **types** either Logical or Physical.
 - a. **Logical DFD:** This type of DFD concentrates on the system process, and flow of data in the system. For example in a Banking software system, how data is moved between different entities.
 - b. **Physical DFD:** This type of DFD shows how the data flow is actually implemented in the system. It is more specific and close to the implementation.
- I. DFD can represent Source, destination, storage and flow of data using the following set of **components:**

-
- a. **Entities:** Entities are source and destination of information data. Entities are represented by a rectangles with their respective names.
 - b. **Process:** Activities and action taken on the data are represented by Circle or Round-edged rectangles.
 - c. **Data Storage:** There are two variants of data storage - it can either be represented as a rectangle with absence of both smaller sides or as an open-sided rectangle with only one side missing.
 - d. **Data Flow:** Movement of data is shown by pointed arrows. Data movement is shown from the base of arrow as its source towards head of the arrow as destination.

J. Levels of DFD

- a. **Level 0:** Highest abstraction level DFD is known as Level 0 DFD, which depicts the entire information system as one diagram concealing all the underlying details. Level 0 DFDs are also known as context level DFDs.
- b. **Level 1:** The Level 0 DFD is broken down into more specific, Level 1 DFD. Level 1 DFD depicts basic modules in the system and flow of data among various modules. Level 1 DFD also mentions basic processes and sources of information.
- c. **Level 2:** At this level, DFD shows how data flows inside the modules mentioned in Level 1. Higher level DFDs can be transformed into more specific lower level DFDs with deeper level of understanding unless the desired level of specification is achieved.

Data-flow Diagram (Level 0)

Highest abstraction level DFD is known as Level 0 DFD, which depicts the entire information system as one diagram concealing all the underlying details. Level 0 DFDs are also known as context level DFDs.

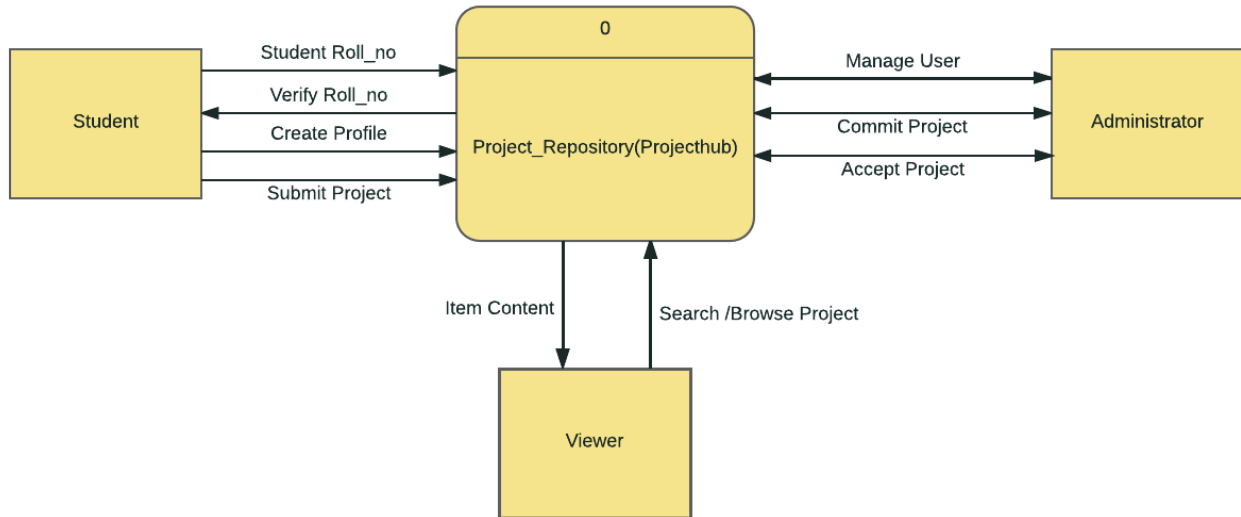


Figure 5.2: Data-flow Diagram (Level 0)

Data-flow Diagram (Level 1)

The Level 0 DFD is broken down into more specific, Level 1 DFD. Level 1 DFD depicts basic modules in the system and flow of data among various modules. Level 1 DFD also mentions basic processes and sources of information.

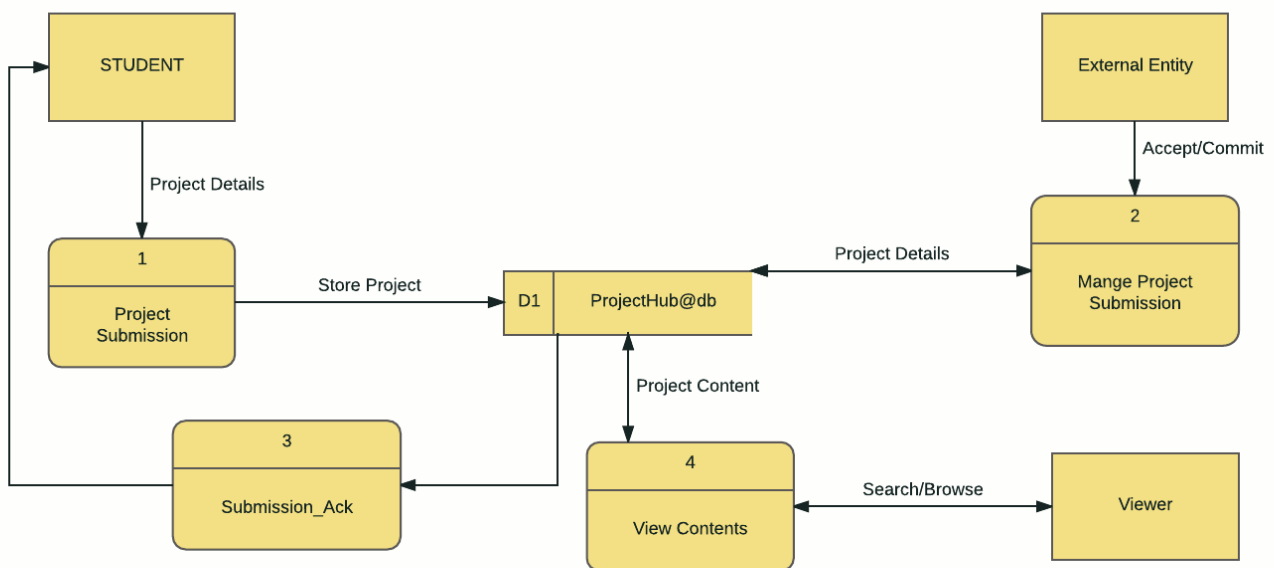


Figure 5.3: Data-flow Diagram (Level 1)

Data-flow Diagram (Level 2)

At this level, DFD shows how data flows inside the modules mentioned in Level 1. Higher level DFDs can be transformed into more specific lower level DFDs with deeper level of understanding unless the desired level of specification is achieved.

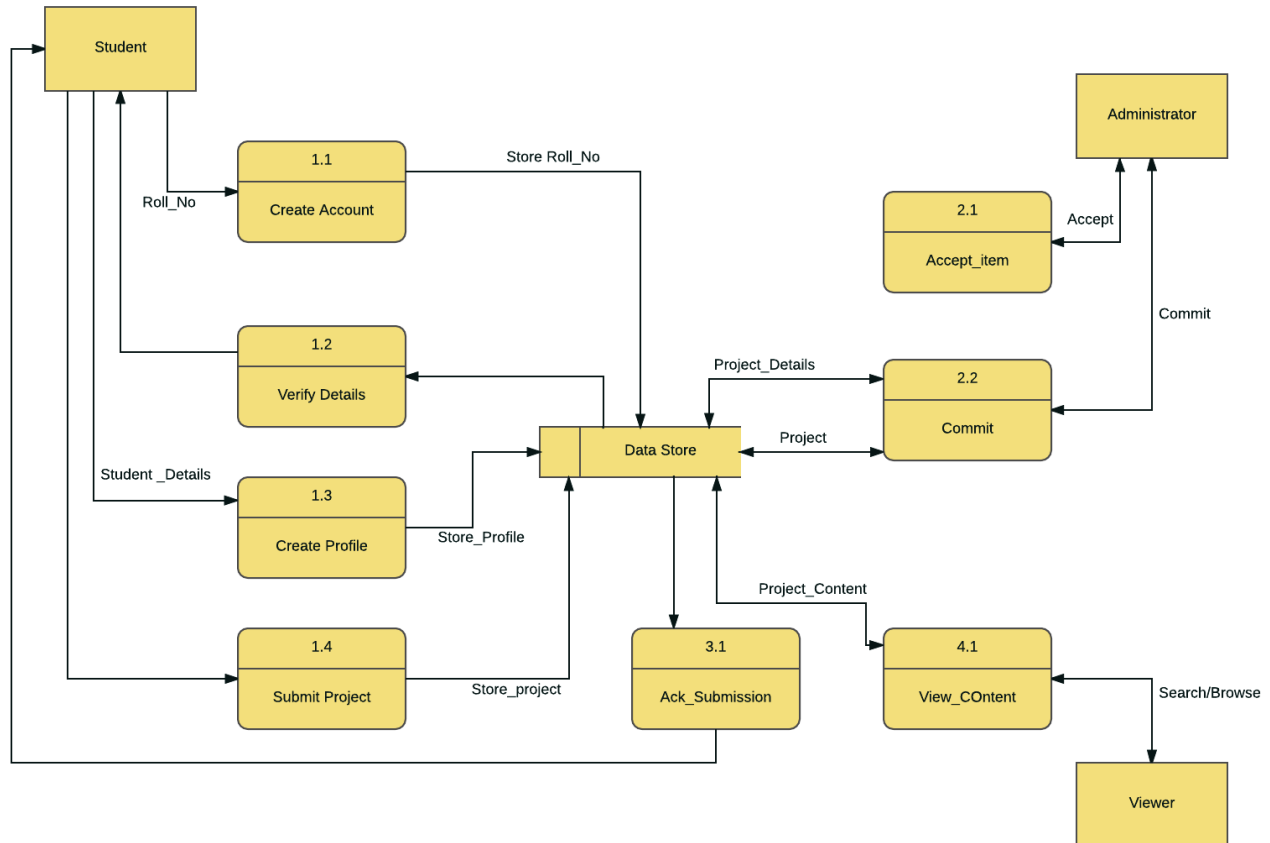


Figure 5.4: Data-flow Diagram (Level 2)

System requirements (non-functional requirements)

Non-functional requirements are conditions under which the system must be able to function and the quality the system must have. It indicates the criteria that can be used to judge the operation of the system, rather than the specified behaviour.

- A. **User Constraint:** The user must have carrier charges to upload /download or to receive notification and using forum.
- B. **Performance Constraint:** The performance deteriorates if the RAM specification is less than what is mentioned in the system requirement.
- C. **Reliability:** The application must work consistently even if multiple users are using it simultaneously.
- D. **Flexibility:** The application must be flexible enough to incorporate some additional features into it.

- E. **Accuracy:** The application must correctly upload file in whichever directory he/she wants to upload.

Algorithm to optimize non-recursive flattening algorithm

- A. The algorithm so far is a non-recursive loop that finds the deepest object and retains all the fields in the last object/loop.
- B. If there are deeper objects then it repeats this process.
- C. If not then it takes the lowest object's fields and all previously stored fields, concatenates them together, and appends them as a row to be returned.

```
1. function stackIt(data) {
2.   var totalData = [];
3.   var stack = [{
4.     v: data,
5.     parent_fields: []
6.   }];
7.   var stackLen = stack.length;
8.   var pushing = 0,
9.     totalFields = 0;
10.  var data_fields, array_field, cl, v, current_fields, temp, arr_len, row, parentFields;
11.  while (stackLen > 0) {
12.    cl = stack.pop();
13.    if (cl === undefined)
14.      break;
15.    v = cl.v;
16.    parentFields = cl.parent_fields.slice(0);
17.    data_fields = parentFields.slice(0);
18.    array_field = null;
19.    current_fields = [];
20.    for (var field in v) {
21.      temp = v[field];
22.      current_fields.push(temp);
23.      if (typeof(temp) === 'object' && temp !== null && array_field === null)
24.        array_field = field;
25.      if (typeof(temp) !== "object")
26.        data_fields.push(temp)
27.    }
28.    if (array_field !== null) {
29.      for (var i = 0, arr_len = v[array_field].length; i < arr_len; i++) {
30.        if ('errors' in v[array_field][i])
31.          continue;
32.        stack.push({
33.          v: v[array_field][i],
34.          parent_fields: data_fields
35.        });

```

```
36.     }
37.     }
38.     else {
39.         row = [];
40. below
41.     data_fields = parentFields.slice(0);
42.     if (pushing == 0) {
43.         pushing = 1;
44.         totalFields = data_fields.length + current_fields.length;
45.     }
46.     row = data_fields.splice(0);
47.     row = row.concat(current_fields);
48.     if (row.length != totalFields) {
49.         console.log("End Stack");
50.         return totalData;
51.     } else
52.         totalData.push(row);
53.     }
54. }
55. console.log("End Stack with empty stack");
56. return totalData;
57. }
```


Database Schema/ E-R Diagram

- A. An entity–relationship model (ER diagram for short) describes interrelated things of interest in a specific domain of knowledge.
- B. A basic ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between instances of those entity types.
- C. In software engineering, an ER model is commonly formed to represent things that a business needs to remember in order to perform business processes.
- D. Consequently, the ER model becomes an abstract data model, that defines a data or information structure which can be implemented in a database, typically a relational database.
- E. Entity–relationship modelling was developed for database design by Peter Chen and published in a 1976 paper.
- F. However, variants of the idea existed previously.
- G. Some ER models show super and subtype entities connected by generalisation specialisation relationships, and an ER model can be used also in the specification of domain specific ontologies.

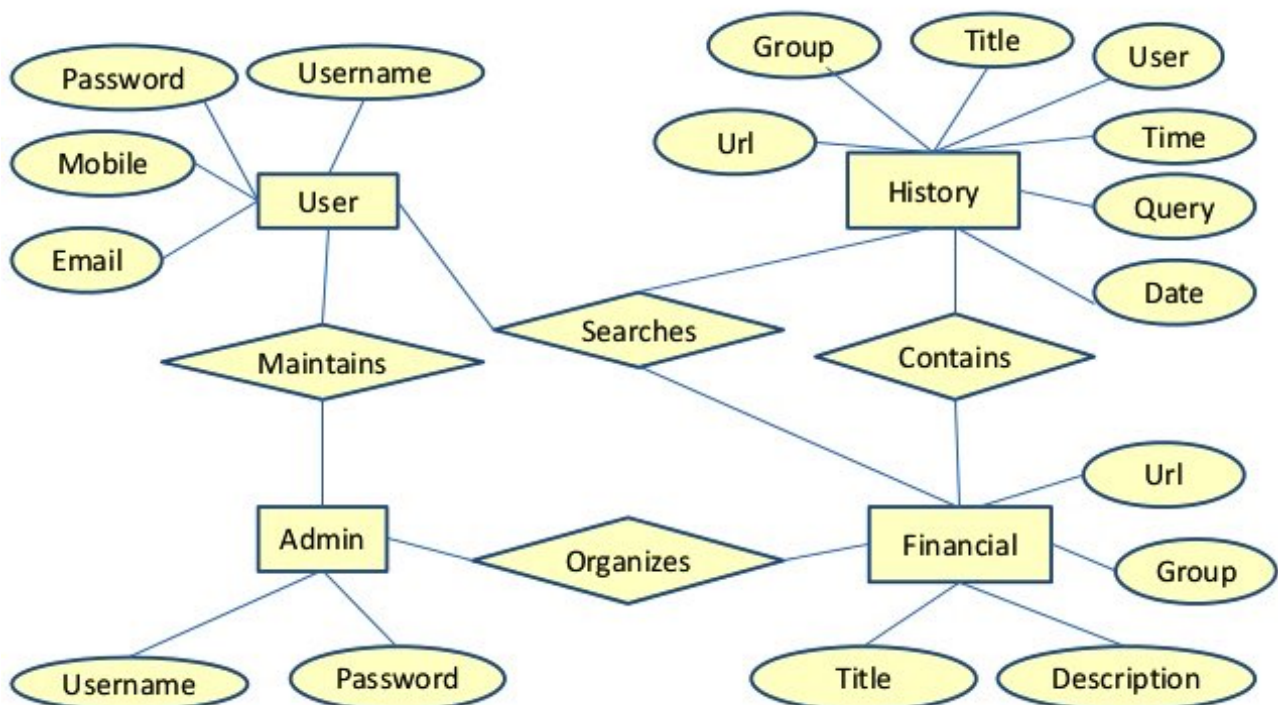


Figure 5.5: Database Schema/ E-R Diagram

5.2 System Architecture Design

- A. Any real-world system is used by different users.
- B. The users can be developers, testers, business people, analysts, and many more.
- C. Hence, before designing a system, the architecture is made with different perspectives in mind.
- D. The most important part is to visualise the system from the perspective of different viewers.
- E. The better we understand the better we can build the system.
- F. UML plays an important role in defining different perspectives of a system are:
 - a. Design
 - b. Implementation
 - c. Process
 - d. Deployment
- G. The centre is the **Use Case** view which connects all these four.
- H. A **Use Case** represents the functionality of the system.
- I. Hence, other perspectives are connected with use case.
- J. **Design** of a system consists of classes, interfaces, and collaboration.
- K. UML provides class diagram, object diagram to support this.
- L. **Implementation** defines the components assembled together to make a complete physical system.
- M. UML component diagram is used to support the implementation perspective.
- N. **Process** defines the flow of the system.
- O. Hence, the same elements as used in Design are also used to support this perspective.
- P. **Deployment** represents the physical nodes of the system that forms the hardware.
- Q. UML deployment diagram is used to support this perspective.

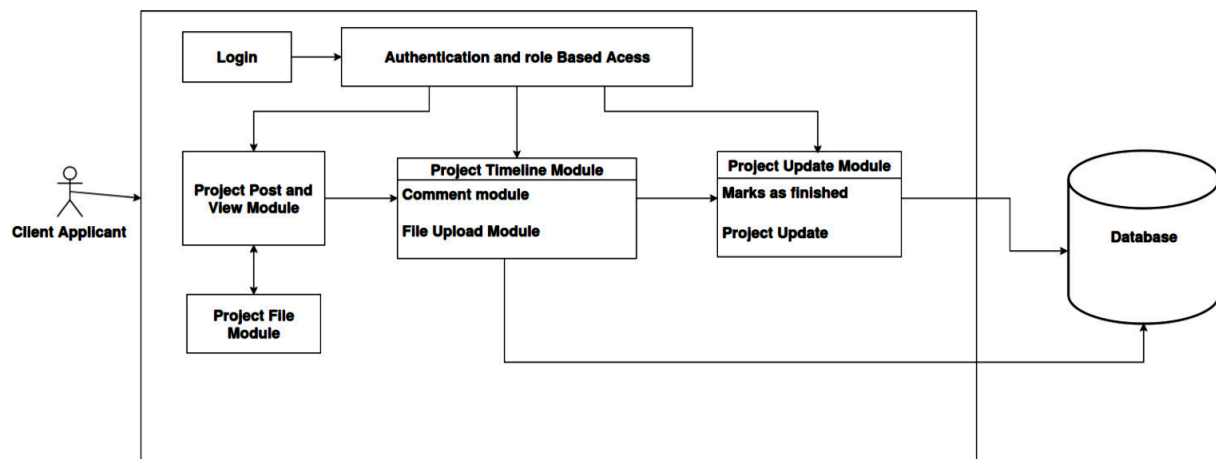


Figure 5.6: System Architecture Design

5.3 Sub-system Development

A. Authentication And Role Based Access:

This module consists of authentication and authorisation services provided by the application to the different type of user. The users have also been categorised into two different types that is, clients and developers according to their privileges. This module is subdivided into two categories.

- a. **Authentication:** Authentication is a process in which the credentials provided are compared to those on file in a database of authorised users' information on a local operating system or within an authentication server.
- b. **Role-Based Access Control (RBAC):** Role-based access control (RBAC) is a method of regulating access to computer or network resources based on the roles of individual users within an enterprise. In this context, access is the ability of an individual user to perform a specific task, such as view, create, or modify a file. Roles are defined according to job competency, authority, and responsibility within the enterprise.

B. Project Post and View Module

Clients can post project related information like a piece of writing, image, or other item of content published online via application and which can be viewed by viewed by developers or vice-versa.

C. Project Time-line Module

Time-lines are useful to document any type of development, providing an easy-to-understand history or presentation of a chronological sequence of events along a drawn line that enables a viewer to understand temporal relationships and helping viewers to understand past and ongoing trends. The tools are also useful for management or

development tasks. In project development or management, for example, a time-line illustrates milestones, deadlines and other significant dates and events over the life-cycle of the project, clearly tying goals to specific dates. Annotations to the time-line can document actual progress. This module is subdivided into two modules.

- a. **Comment Module:** Enables users to comment on published content. When enabled, the application comment module creates a discussion board for each application node. Users can post comments to discuss a forum topic, project post, story, collaborative book page, etc.
- b. **File Upload Module:** This module enables the clients and developers to upload all kinds of file like documents, instant camera images/videos, program code, and notes, etc.

D. Project Update Module

Cloud-based file syncing and sharing services implement automated file transfers by updating files from a dedicated sharing directory on each user's networked devices. Files placed in this folder also are typically accessible through a website and mobile app, and can be easily shared with other users for viewing or collaboration. Such services have become popular via consumer-oriented file hosting services such as Drop-box and Google Drive. This module is subdivided into two categories.

- a. **Marks as Finished:** When developers has completed the task that is, project development, then he/she must mark the task as complete so that he/she can track his/her project deliverable to clients. To do this, just select to open the required task and then click the Mark as complete button in the upper-right corner. Now this task is moved to the closed category and to view all the closed task, just filter the Closed category and fetch the results.
- b. **Project Update:** Stand alone Platform to separately maintain track of the data and time-line of the overall project development or construction to the clients as well as the developers are updated.

E. Project File Module

A file created in GP-Pro EX is called a "Project File". The project file merges information from created screens, display unit and model, device/PLC drivers, fonts and other settings. Once you transfer a project file to a display unit, it displays the screen interface and communicates with the device/PLC so you can run operations.

5.3.1 Description of the module designed for the Developers upload:

- A. The idea of this module is to effectively give the developers to upload documents by having a ubiquitous access to the application.
- B. Developers can upload instant camera images and videos from the application.

- C. They can also upload the files which are there in their mobile device storage area which includes pdfs, ppts and kind of document files.
- D. When the developers clicks on the capture button mobile's rear camera gets opened and the developers can click the pictures of any documents and send it to their clients.
- E. When developers clicks on record then the rear camera gets opened and developers can send a video recording to their clients.
- F. When developers clicks on storage it will open storage access framework where a developers can select the required documents.

5.3.2 Description of module designed for the Clients download:

- A. The idea of this module is to give clients the access to download the files which are there in the server uploaded by the developers.
- B. Clients can download the files, and as they click on a particular file it will give an option of download this to offline files.
- C. Clients can view the downloaded files in the internal or external storage of the device.
- D. They can also view the downloaded files in the application's feature of offline files which will be discussed later.

5.3.3 Description of module designed for the Push Notification:

- A. The idea of this module is to make clients and developers aware of sudden notices and events, or any important information to be shared among all the college members.
- B. The administrator sends messages through pushbots, a third party application which integrates Google cloud messaging and sends the messages to all the registered devices.
- C. All the devices which have the application installed and if their cellular data is on then they will receive the notifications.
- D. In case if the user misses out on any notification all the notifications can be viewed in collected notifications.

5.3.4 Description of module designed for the Forums:

- A. The idea of the module is to have a profound doubts and discussion for developers and clients on a common platform.
- B. We are using an open source PHP scripts which is implemented in web view of the application.

- C. All the features of the forum are implemented in web view.
- D. We have used phpBB3 which is available as version 3.1.8, is the latest release of PHP BB3 online discussion forum systems.
- E. Clients can write doubts and developers can solve their doubts on their convenience.
- F. All the clients and developers have their Log In ID's and passwords and the moderator has the privileges of giving restricted access to some users and also deleting the conversation or posts if inappropriate.
- G. Moderator can even block the users if he/she behaves in an unethical way.
- H. There is also a dictionary in forum which has an feature called "bad words" in which the words that are present cannot be posted.

5.3.5 Description of module designed for the Offline Files:

- A. The idea of the module is to view all the downloaded files offline.
- B. The main motive is to give clients access to the information from wherever and whenever.
- C. If the clients losses his data from the external or internal storage then the files which he has downloaded will be available in the application.
- D. Offline files will create a same directory as the files in the server for efficiency.

5.4 Systems Integration

This project involves the development of two sections developer and the Client part which can be categorised into two modules along with Push Notification.

- A. The first module involves the development of an app that concerns with developer giving them the facility to download and upload any type of files like documents through their external or internal storage or instant camera or video.
- B. The second module involves the development of an app that concerns with Client giving them the facility to download all the files which are uploaded to server and vice versa, that is, as soon as the Client download the file the file gets stored in the offline files so that a Client can view the file without using cellular data or WiFi internet or data connections.
- C. Push Notification will send the messages through Google cloud messaging to all the registered devices using the application thus informing clients of events, informations, and notices of college and important project development related notices.

5.4.1 Class Diagram

- A. Class diagram is a static diagram.
- B. It represents the static view of an application.
- C. Class diagram is not only used for visualising, describing, and documenting different aspects of a system but also for constructing executable code of the software application.
- D. Class diagram describes the attributes and operations of a class and also the constraints imposed on the system.
- E. The class diagrams are widely used in the modelling of object oriented systems because they are the only UML diagrams, which can be mapped directly with object oriented languages.
- F. Class diagram shows a collection of classes, interfaces, associations, collaborations, and constraints.
- G. It is also known as a structural diagram.

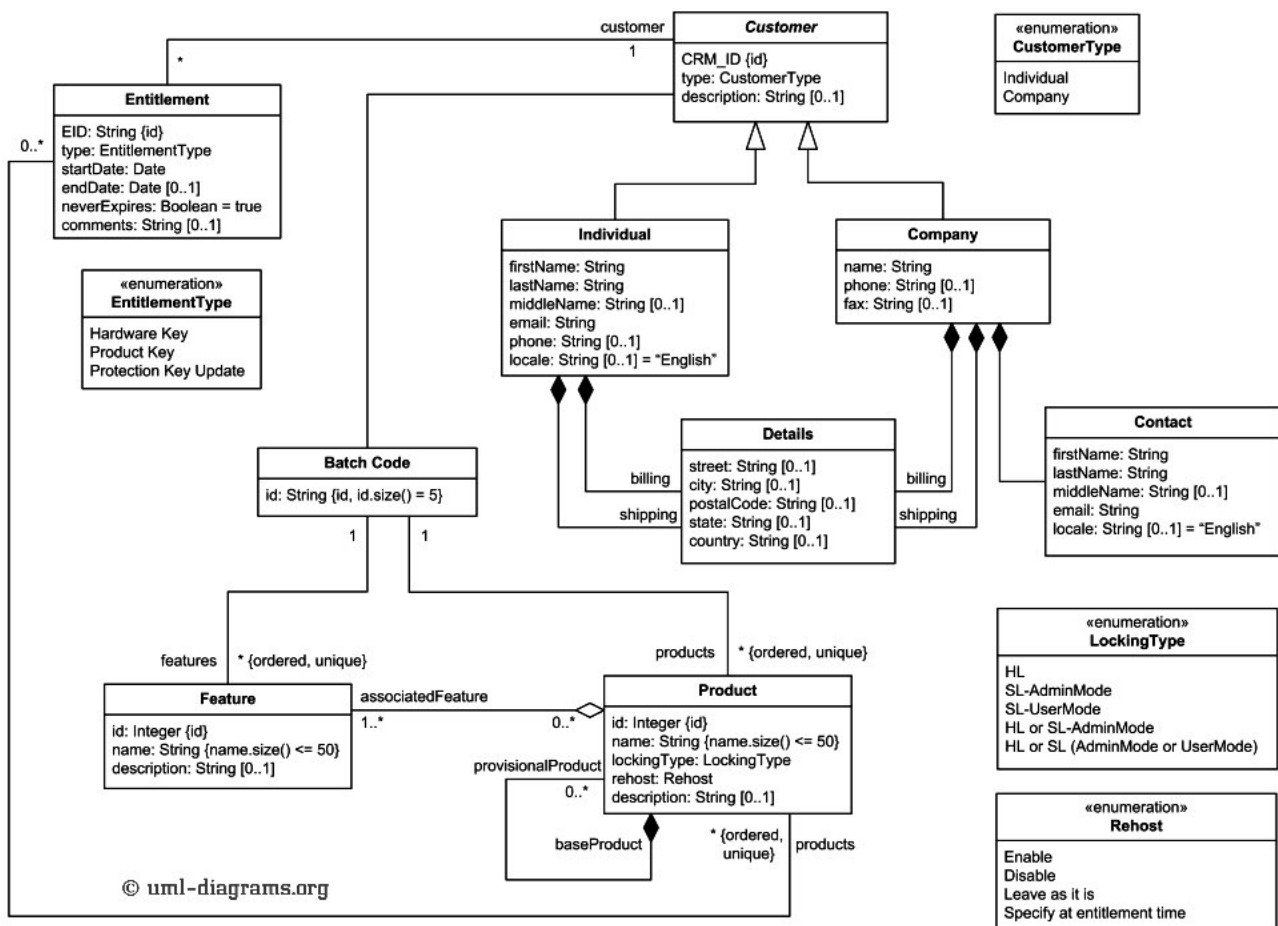


Figure 5.7: Class Diagram

5.4.2 Sequence Diagram

- A. UML sequence diagrams are used to represent or model the flow of messages, events and actions between the objects or components of a system.
- B. Time is represented in the vertical direction showing the sequence of interactions of the header elements, which are displayed horizontally at the top of the diagram.
- C. Sequence Diagrams are used primarily to design, document and validate the architecture, interfaces and logic of the system by describing the sequence of actions that need to be performed to complete a task or scenario.
- D. UML sequence diagrams are useful design tools because they provide a dynamic view of the system behaviour which can be difficult to extract from static diagrams or specifications.
- E. Although UML sequence diagrams are typically used to describe object oriented software systems, they are also extremely useful as system engineering tools to design system architectures, in business process engineering as process flow diagrams, as message sequence charts and call flows for telecom/wireless system design, and for protocol stack design and analysis.

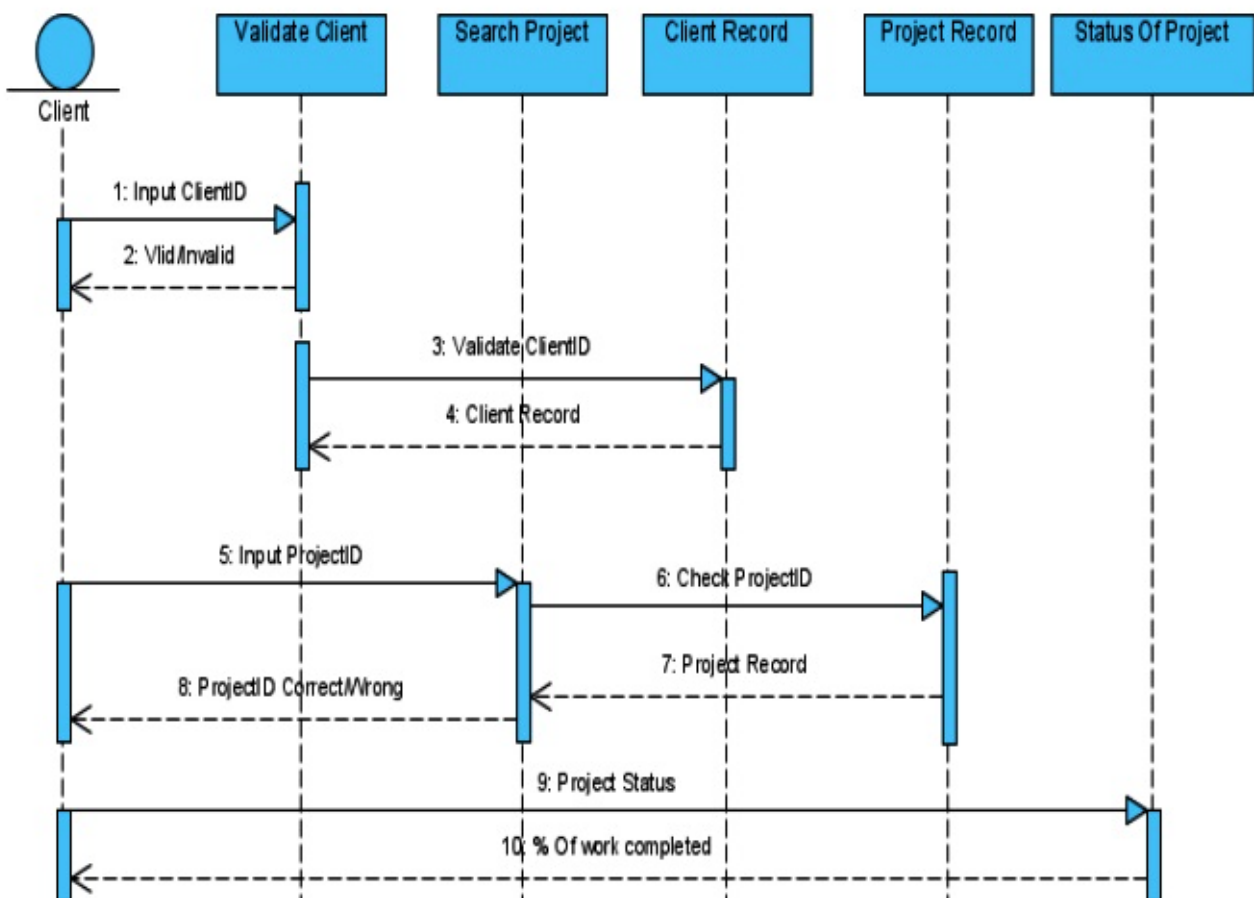


Figure 5.8: Sequence Diagram

5.4.3 Activity Diagram

- Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency.
- In the Unified Modelling Language, activity diagrams are intended to model both computational and organisational processes (i.e., workflows), as well as the data flows intersecting with the related activities.
- Although activity diagrams primarily show the overall flow of control, they can also include elements showing the flow of data between activities through one or more data stores.

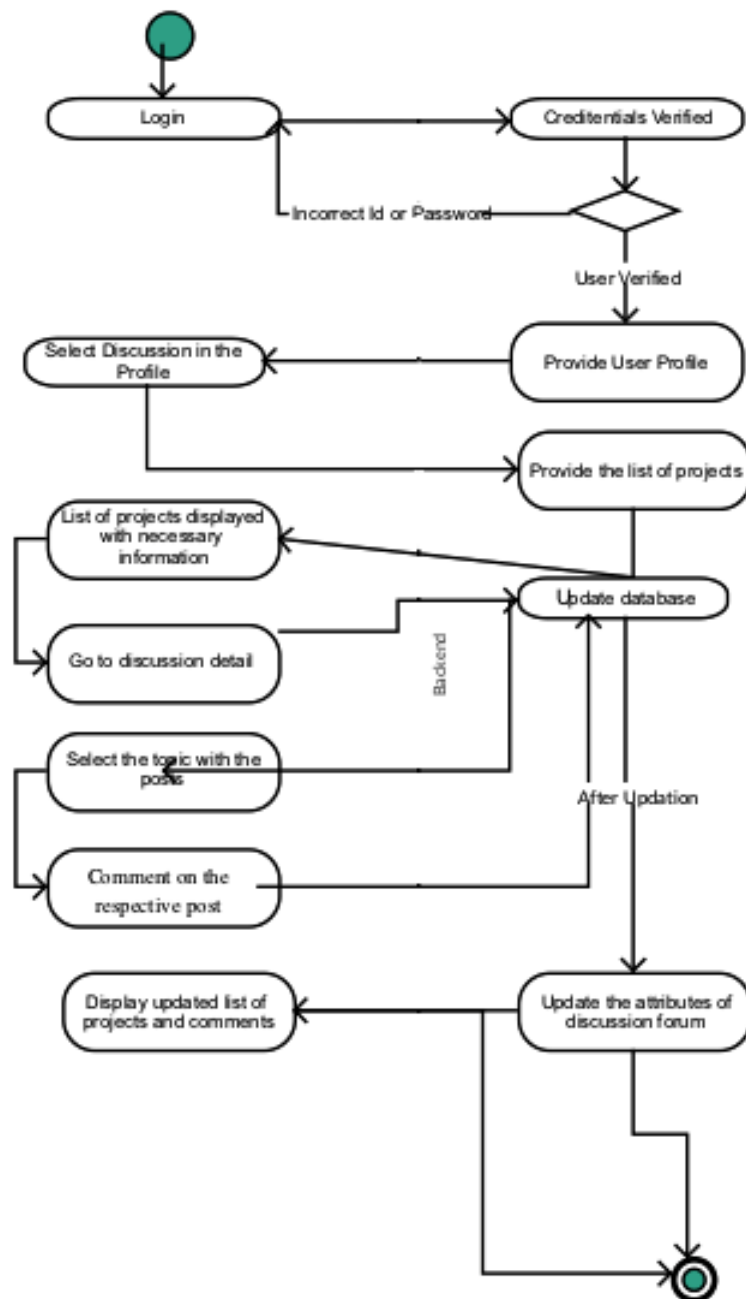


Figure 5.9: Activity Diagram

5.4.4 Component Diagram

- A. Component diagrams are different in terms of nature and behaviour.
- B. Component diagrams are used to model the physical aspects of a system.
- C. Now the question is, what are these physical aspects?
- D. Physical aspects are the elements such as executables, libraries, files, documents, etc which reside in a node.
- E. Component diagrams are used to visualise the organisation and relationships among components in a system.
- F. These diagrams are also used to make executable systems.

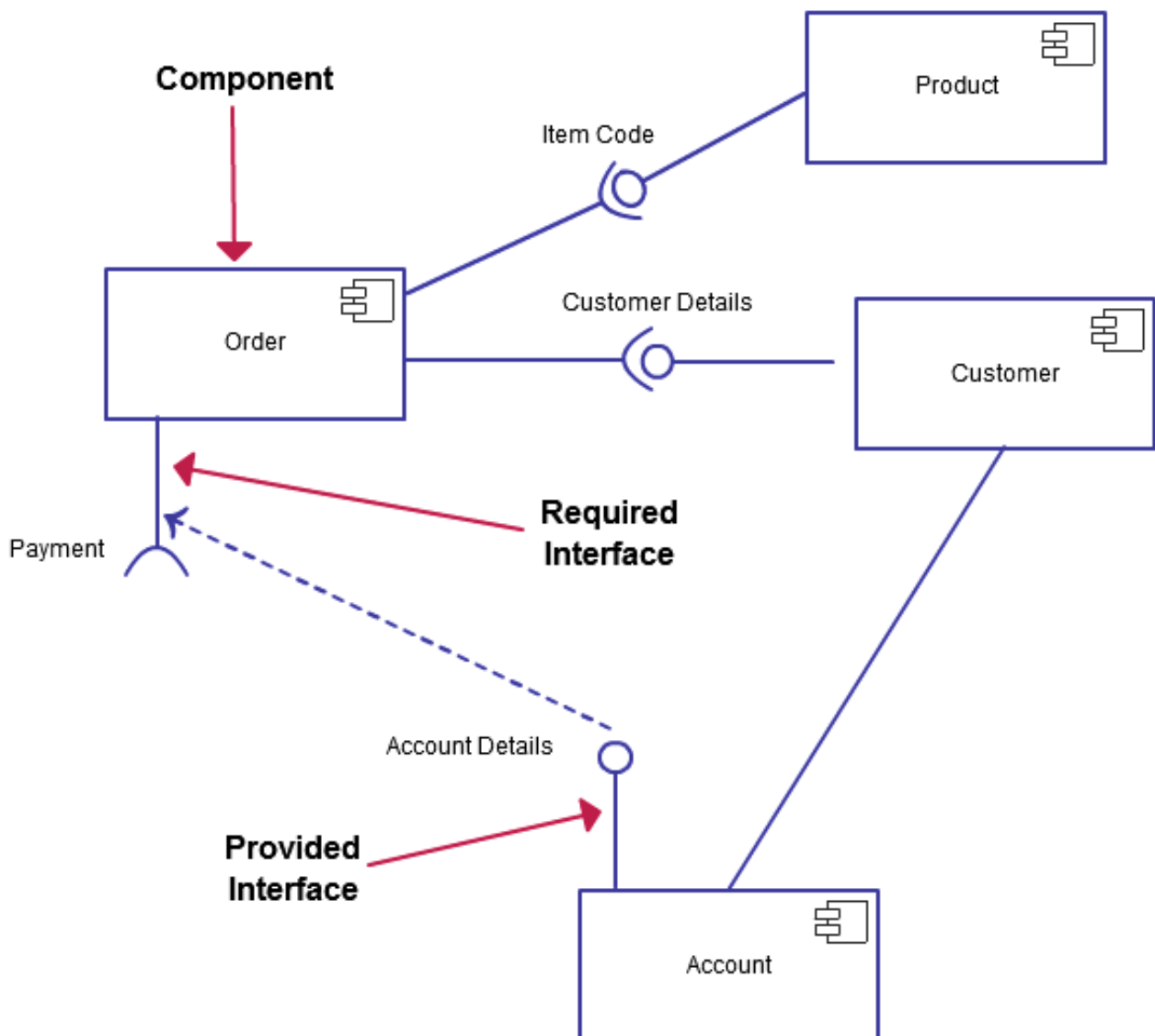


Figure 5.10: Component Diagram

5.4.5 Deployment Diagram

- A. Deployment diagrams are used to visualise the topology of the physical components of a system, where the software components are deployed.
- B. Deployment diagrams are used to describe the static deployment view of a system.
- C. Deployment diagrams consist of nodes and their relationships.

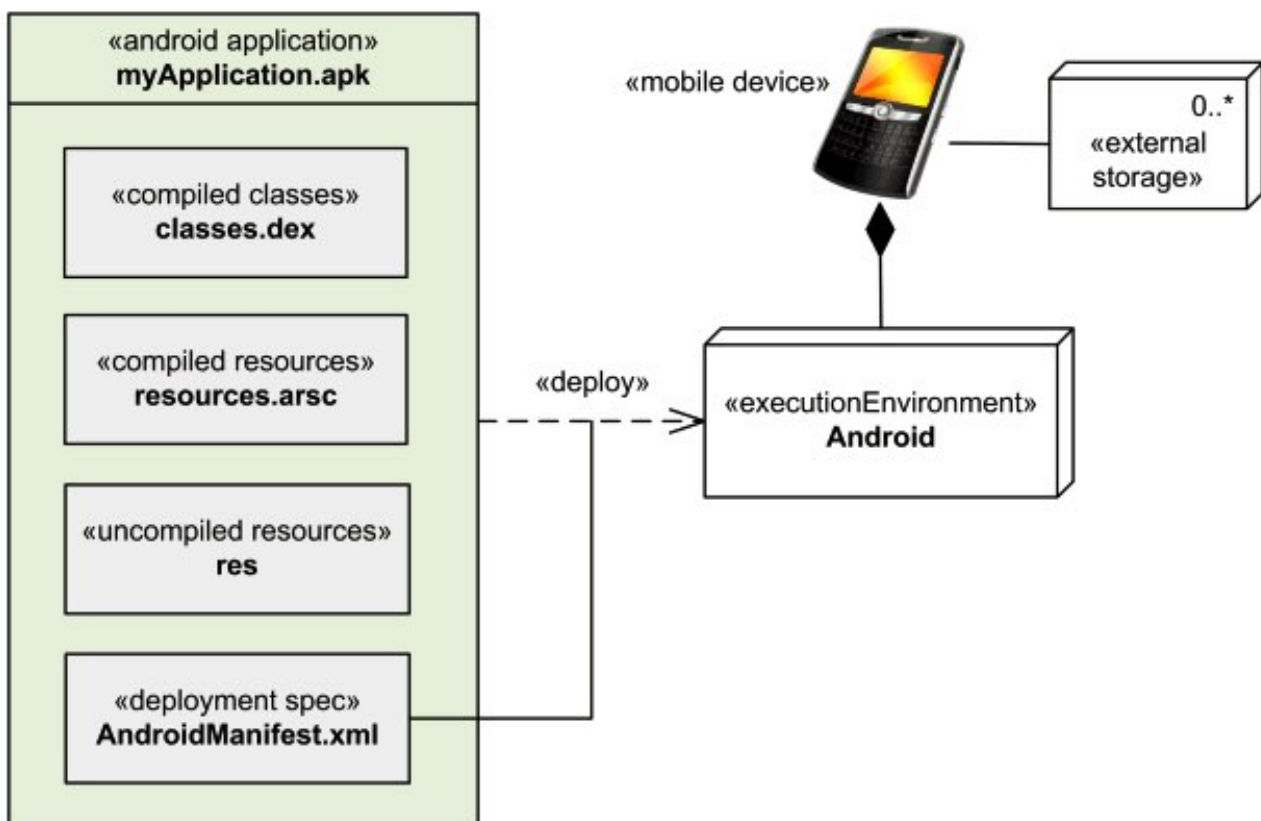


Figure 5.11: Deployment Diagram

Chapter 6

Implementation

6.1 Module 1 : Main Page

- A. This module consist of feature such as create Log In ID with Username and Password.
- B. All the Clients and developers have their Log In ID's and passwords and the moderator has the privileges of giving restricted access to some users and also deleting the conversation or posts if inappropriate.
- C. The developers can easily Log In using his/her credentials and download and upload the all kinds of information file from anywhere using cloud services.
- D. What comes next is the clients part.
- E. The clients in a similar fashion can access all of it from anywhere using his/her own mobile carrier services.
- F. Neither of them need to be physically present in college for this to happen.
- G. This module consists of authentication and authorisation services provided by the application to the different type of user.
- H. The users have also been categorised into two different types that is, clients and developers according to their privileges.
- I. Authentication is a process in which the credentials provided are compared to those on file in a database of authorised users' information on a local operating system or within an authentication server.
- J. Role-based access control (RBAC) is a method of regulating access to computer or network resources based on the roles of individual users within an enterprise. In this context, access is the ability of an individual user to perform a specific task, such as view, create, or modify a file.
- K. Roles are defined according to job competency, authority, and responsibility within the enterprise.

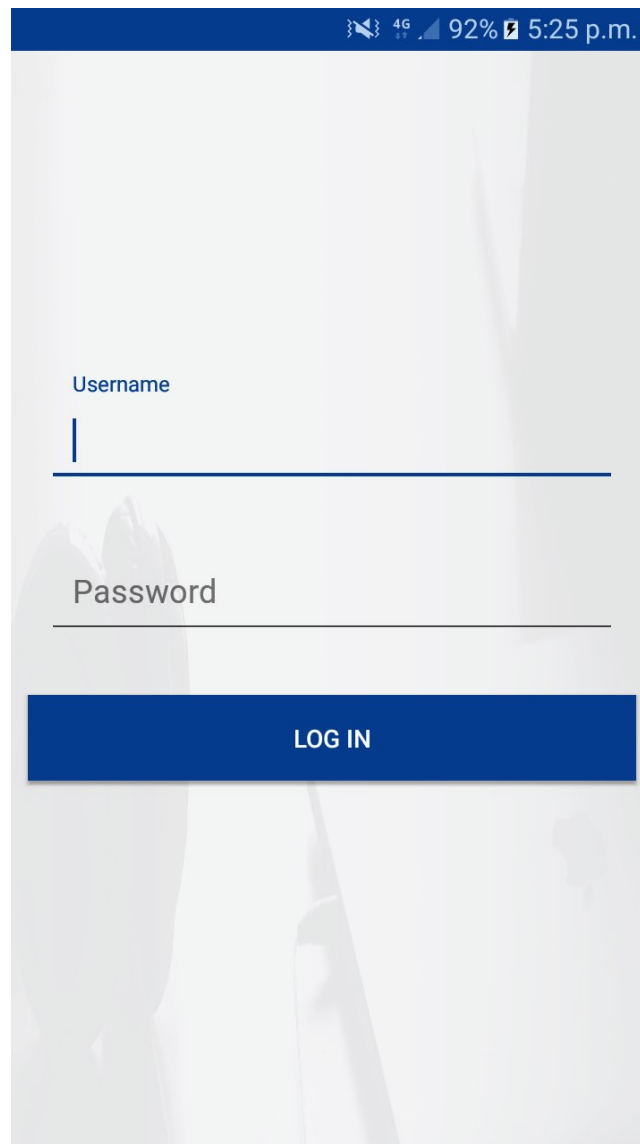


Figure 6.1: Main Page

```
1 package com.example.wayneenterprise.ghach;
2 import android.app.Activity;
3 import android.app.ProgressDialog;
4 import android.content.Intent;
5 import android.os.AsyncTask;
6 import android.os.Bundle;
7 import android.support.annotation.Nullable;
8 import android.view.View;
9 import android.widget.Button;
```

```
10 import android.widget.EditText;
11 import android.widget.Toast;
12 import java.util.HashMap;
13 public class Login extends Activity {
14     UserManager session;
15     Button loginbtn;
16     String username
17     EditText usernameet
18     @Override
19     protected void onCreate(@Nullable Bundle savedInstanceState) {
20         super.onCreate(savedInstanceState);
21         setContentView(R.layout.login);
22         session = new UserManager(getApplicationContext());
23         Toast.makeText(getApplicationContext()
24             "User Login Status: " + session.isUserLoggedIn()
25             Toast.LENGTH_LONG).show();
26         loginbtn = (Button) findViewById(R.id.loginbtn);
27         usernameet = (EditText) findViewById(R.id.usernameet);
28         passwordet = (EditText) findViewById(R.id.passwordet);
29         loginbtn.setOnClickListener(new View.OnClickListener() {
30             @Override
31             public void onClick(View view) {
32                 loginuser();
33             }
34         });
35     }
36     private void loginuser() {
37         final String username = usernameet.getText().toString();
38         final String password = passwordet.getText().toString();
39         class Loginuser extends AsyncTask < Void
40             ProgressDialog loading;
```

```
41     @Override
42     protected void onPreExecute() {
43         super.onPreExecute();
44         loading = ProgressDialog.show(Login.this
45     }
46     @Override
47     protected void onPostExecute(String s) {
48         super.onPostExecute(s);
49         loading.dismiss();
50         if (s.equalsIgnoreCase("Success")) {
51             Toast.makeText(getBaseContext()
52                 session.createUserLoginSession(username
53                 Intent i = new Intent(getBaseContext()
54                 i.addFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
55                 i.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
56                 startActivity(i);
57                 finish();
58             } else {
59                 Toast.makeText(Login.this
60             }
61         }
62     @Override
63     protected String doInBackground(Void...v) {
64         HashMap < String
65         params.put(Config.username
66         params.put(Config.password
67         RequestHandler rh = new RequestHandler();
68         String res = rh.sendPostRequest(Config.URL_LOGIN
69         return res;
70     }
71 }
```

```
72     Loginuser ae = new Loginuser();
73     ae.execute();
74 }
75 }
```

6.2 Module 2 : All Details Of Project

- A. After login into the page user can check the details of previous projects as well as clients along with developers information.
- B. This module consists of Online files, Project Post View and Project time line along with Push Notification.
- C. In Project Post View Module the clients can post project related information like a piece of writing, image, or other item of content published online via application and which can be viewed by developers or vice-versa.
- D. Time-lines are useful to document any type of development, providing an easy-to-understand history or presentation of a chronological sequence of events along a drawn line that enables a viewer to understand temporal relationships and helping viewers to understand past and ongoing trends.
- E. The tools are also useful in project management or development tasks, for example, a time-line illustrates milestones, deadlines and other significant dates and events over the life-cycle of the project, clearly tying goals to specific dates and annotations to the time-line can document actual progress.
- F. The idea of Push Notification is to make clients and developers aware of sudden notices and events, or any important information to be shared among all the college members.
- G. The administrator sends messages through Push-bots, a third party application which integrates Google cloud messaging and sends the messages to all the registered devices.
- H. All the devices which have the application installed and if their cellular data is on then they will receive the notifications.
- I. In case if the user misses out on any notification all the notifications can be viewed in collected notifications.
- A. The idea of the Offline Files is to view all the downloaded files offline and the main motive is to give clients access to the information from wherever and whenever.

- B. If the clients losses his data from the external or internal storage then the files which he has downloaded will be available in the application and offline files will create a same directory as the files in the server for efficiency.

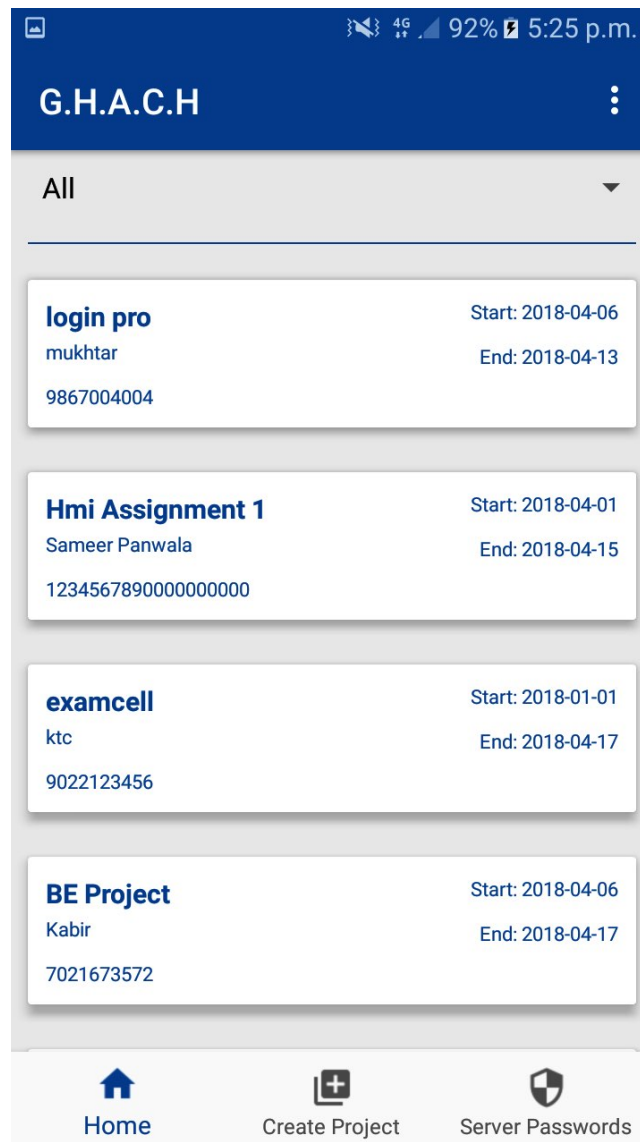


Figure 6.2: Detail Of Projects

```
1 package com.example.wayneenterprise.ghach
2 import android.graphics.Bitmap
3 import android.graphics.BitmapFactory
4 import org.json.JSONArray
5 import org.json.JSONException
6 import org.json.JSONObject
7 import java.io.IOException
```

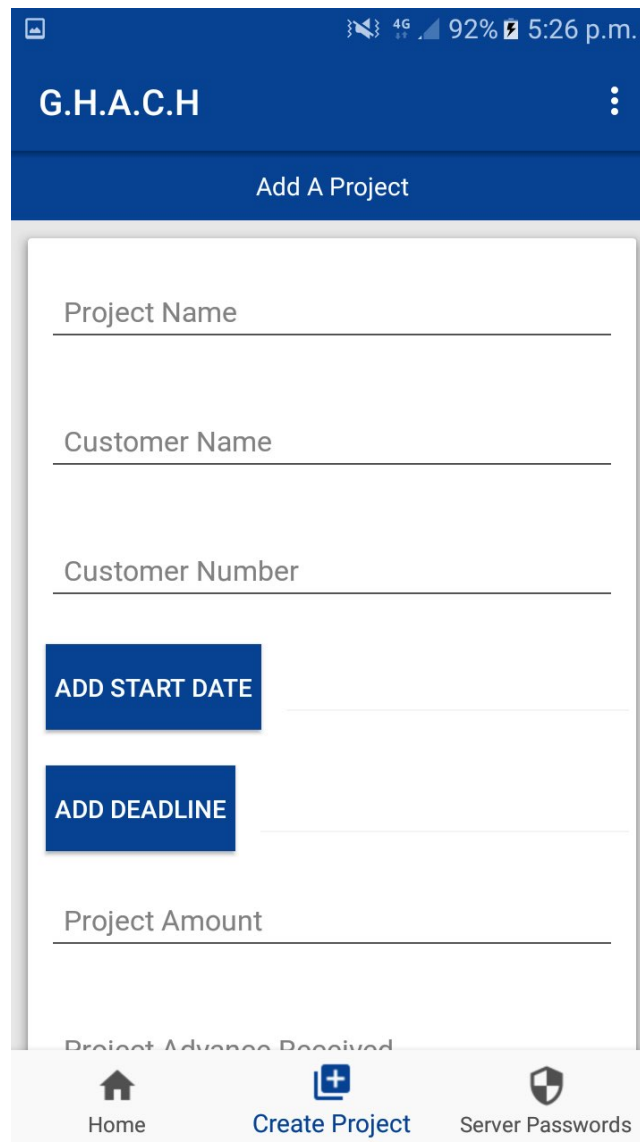
```
8 import java.net.MalformedURLException
9 import java.net.URL
10 public class GetAllImages {
11     public static String[] imageURLs
12     public static Bitmap[] bitmaps
13     public static final String JSON_ARRAY = "result"
14     public static final String IMAGE_URL = "url"
15     private String json
16     private JSONArray urls
17     URL url = null
18     public GetAllImages(String json) {
19         this.json = json
20         try {
21             JSONObject jsonObject = new JSONObject(json)
22             urls = jsonObject.getJSONArray(JSON_ARRAY)
23         } catch (JSONException e) {
24             e.printStackTrace()
25         }
26     }
27     private Bitmap getImage(JSONObject jo) {
28         Bitmap image = null
29         try {
30             url = new URL(jo.getString(IMAGE_URL))
31             image =
32             BitmapFactory.decodeStream(url.openConnection().getInputStream())
33         } catch (MalformedURLException e) {
34             e.printStackTrace()
35         } catch (IOException e) {
36             e.printStackTrace()
37         } catch (JSONException e) {
38             e.printStackTrace()
39         }
40     }
41 }
```

```
39     return image
40 }
41 public void getAllImages() throws JSONException {
42     bitmaps = new Bitmap[urls.length()]
43     imageURLs = new String[urls.length()]
44 for (int i = 0
45     imageURLs[i] = urls.getJSONObject(i).getString(IMAGE_URL)
46     JSONObject jsonObject = urls.getJSONObject(i)
47     bitmaps[i] = getImage(jsonObject)
48 }
49 }
50 }
```

6.3 Module 3 : Add Project

- A. User can create a new Project from create project module and its consist of two fields such as: number field and project field which user has to fill these information in a fields to send a new message.
- B. The idea of this module is to effectively give the developers to upload documents instant camera images and videos by having a ubiquitous access to the application.
- C. They can also upload the files which are there in their mobile device storage area which includes pdfs, ppts and kind of document files.
- D. When the developers clicks on the capture button mobile's rear camera gets opened and the developers can click the pictures of any documents and send it to their clients.
- E. When developers clicks on record then the rear camera gets opened and developers can send a video recording to their clients.
- F. When developers clicks on storage it will open storage access framework where a developers can select the required documents.
- G. The idea of this module is to give clients the access to download the files which are there in the server uploaded by the developers.
- H. Clients can download the files, and as they click on a particular file it will give an option of download this to offline files.
- I. Clients can view the downloaded files in the internal or external storage of the device.

- J. They can also view the downloaded files in the application's feature of offline files which will be discussed later.



The screenshot displays the 'G.H.A.C.H' mobile application interface. At the top, there is a blue header with the text 'G.H.A.C.H' and a three-dot menu icon. Below the header is a blue button labeled 'Add A Project'. The main content area contains a form with the following fields: 'Project Name', 'Customer Name', 'Customer Number', 'ADD START DATE' (a blue button), 'ADD DEADLINE' (a blue button), and 'Project Amount'. At the bottom of the screen, there is a navigation bar with three icons: a home icon labeled 'Home', a plus icon labeled 'Create Project', and a shield icon labeled 'Server Passwords'.

Figure 6.3: Add Contact

```
1 package com.example.wayneenterprise.ghach;  
2 import android.app.DatePickerDialog;  
3 import android.app.ProgressDialog;  
4 import android.content.Context;  
5 import android.os.AsyncTask;  
6 import android.os.Bundle;  
7 import android.support.v4.app.Fragment;
```

```
8 import android.view.LayoutInflater;
9 import android.view.View;
10 import android.view.ViewGroup;
11 import android.widget.Button;
12 import android.widget.DatePicker;
13 import android.widget.EditText;
14 import android.widget.Spinner;
15 import android.widget.Toast;
16 import java.util.Calendar;
17 import java.util.HashMap;
18 public class AddProjectFragment extends Fragment {
19     Button getstartdate, getenddate, addproj;
20     Context context;
21     int mYear, mMonth, mDay;
22     EditText startdateet, enddateet, projnameet, custnameet, custnumberet,
amountet, advanceet;
23     Spinner status;
24     String projname, custname, custnumber, amount, advance, startdate, enddate,
statusval;
25     int startday, endday, startmonth, endmonth, startyear, endyear;
26     @Override
27     public View onCreateView(LayoutInflater inflater,
28         ViewGroup container, Bundle savedInstanceState) {
29         View view = inflater.inflate(
30             R.layout.projectfragment, container, false);
31         projnameet = (EditText) view.findViewById(R.id.pname);
32         custnameet = (EditText) view.findViewById(R.id.cnam);
33         custnumberet = (EditText) view.findViewById(R.id.cnum);
34         amountet = (EditText) view.findViewById(R.id.amt);
35         advanceet = (EditText) view.findViewById(R.id.adv);
36         status = (Spinner) view.findViewById(R.id.statusspinneradd);
37         getstartdate = (Button) view.findViewById(R.id.getstartdate);
38         getenddate = (Button) view.findViewById(R.id.getenddate);
```

```
39     startdateet = (EditText) view.findViewById(R.id.startdateet);
40     enddateet = (EditText) view.findViewById(R.id.enddateet);
41     addproj = (Button) view.findViewById(R.id.addproj);
42     addproj.setOnClickListener(new View.OnClickListener() {
43         @Override
44         public void onClick(View view) {
45             if (startyear > endyear || (startyear <= endyear && startmonth ==
46 endmonth && startday > endday)) {
47                 Toast.makeText(getActivity(), "Start Date Cant Be Smaller Than End
48 Date", Toast.LENGTH_LONG).show();
49             } else {
50                 if (projnameet.getText().toString().equals("") ||
51 custnameet.getText().toString().equals("") ||
52 custnumberet.getText().toString().equals("") ||
53 amountet.getText().toString().equals("") || advanceet.getText().toString().equals("") ||
54 startdateet.getText().toString().equals("") || enddateet.getText().toString().equals(""))
55 {
56                 Toast.makeText(getActivity(), "Please fill all the fields",
57 Toast.LENGTH_LONG).show();
58             } else {
59                 AddProject();
60             }
61         }
62     });
63     getstartdate.setOnClickListener(new View.OnClickListener() {
64         @Override
65         public void onClick(View view) {
66             final Calendar c = Calendar.getInstance();
67             mYear = c.get(Calendar.YEAR);
68             mMonth = c.get(Calendar.MONTH);
69             mDay = c.get(Calendar.DAY_OF_MONTH);
70             DatePickerDialog datePickerDialog = new DatePickerDialog(getActivity(),
71                 new DatePickerDialog.OnDateSetListener() {
72                     @Override
73                     public void onDateSet(DatePicker view, int year,
```

```
67         int monthOfYear, int dayOfMonth) {
68             startdateet.setText(year + "-" + (monthOfYear + 1) + "-" +
dayOfMonth);
69             startday = dayOfMonth;
70             startmonth = monthOfYear;
71             startyear = year;
72         }
73     }, mYear, mMonth, mDay);
74     datePickerDialog.show();
75 }
76 });
77     getenddate.setOnClickListener(new View.OnClickListener() {
78         @Override
79         public void onClick(View view) {
80             final Calendar c = Calendar.getInstance();
81             mYear = c.get(Calendar.YEAR);
82             mMonth = c.get(Calendar.MONTH);
83             mDay = c.get(Calendar.DAY_OF_MONTH);
84             DatePickerDialog datePickerDialog = new DatePickerDialog(getActivity(),
85                 new DatePickerDialog.OnDateSetListener() {
86                 @Override
87                 public void onDateSet(DatePicker view, int year,
88                     int monthOfYear, int dayOfMonth) {
89                     enddateet.setText(year + "-" + (monthOfYear + 1) + "-" +
dayOfMonth);
90                     endday = dayOfMonth;
91                     endmonth = monthOfYear;
92                     endyear = year;
93                 }
94                 }, mYear, mMonth, mDay);
95             datePickerDialog.show();
96         }
97     });
```

```
98     return view;
99 }
100 private void AddProject() {
101     try {
102         projname = projnameet.getText().toString();
103         custname = custnameet.getText().toString();
104         custnumber = custnumberet.getText().toString();
105         amount = amountet.getText().toString();
106         advance = amountet.getText().toString();
107         startdate = startdateet.getText().toString();
108         enddate = enddateet.getText().toString();
109         statusval = status.getSelectedItemAt().toString();
110         class UpdateData extends AsyncTask < Void, Void, String > {
111             ProgressDialog loading;
112             @Override
113             protected void onPreExecute() {
114                 super.onPreExecute();
115                 loading = ProgressDialog.show(getActivity(), "Adding Project...",
116 "Wait...", false, false);
117             }
118             @Override
119             protected void onPostExecute(String s) {
120                 super.onPostExecute(s);
121                 loading.dismiss();
122                 projnameet.setText("");
123                 custnameet.setText("");
124                 custnumberet.setText("");
125                 amountet.setText("");
126                 advanceet.setText("");
127                 startdateet.setText("");
128                 enddateet.setText("");
129                 Toast.makeText(getActivity(), s, Toast.LENGTH_LONG).show();
130             }
131         }
132         UpdateData updateData = new UpdateData();
133         updateData.execute();
134     }
135 }
```



```
129     }
130     @Override
131     protected String doInBackground(Void...v) {
132         HashMap < String, String > params = new HashMap < > ();
133         params.put(Config.projname, projname);
134         params.put(Config.custname, custname);
135         params.put(Config.custnumber, custnumber);
136         params.put(Config.amount, amount);
137         params.put(Config.advance, advance);
138         params.put(Config.startdate, startdate);
139         params.put(Config.enddate, enddate);
140         params.put(Config.statusval, statusval);
141         RequestHandler rh = new RequestHandler();
142         String res = rh.sendPostRequest(Config.URL_INSERT_PROJECT,
143 params);
144         return res;
145     }
146     }
147     UpdateData ud = new UpdateData();
148     ud.execute();
149     } catch (NumberFormatException e) {}
150 }
```

6.4 Module 4: Chat

- A. This module consist of two features namely Create Message and Read Message and user can perform both of the above operations.
- B. It display list of messages, content of messages, date and time and sender along with receivers informations.
- C. The idea of the module is to designed a Forums to have a profound doubts and discussion for developers and clients on a common platform.

- D. We are using an open source PHP scripts which is implemented in web view of the application and all the features of the forum are implemented in web view.
- E. We have used phpBB3 which is available as version 3.1.8, is the latest release of PHP BB3 online discussion forum systems.
- F. Clients can write doubts and developers can solve their doubts on their convenience.
- G. All the clients and developers have their Log In ID's and passwords and the moderator has the privileges of giving restricted access to some users and also deleting the conversation or posts if inappropriate.
- H. Moderator can even block the users if he/she behaves in an unethical way.
- I. There is also a dictionary in forum which has a feature called "bad words" in which the words that are present cannot be posted.

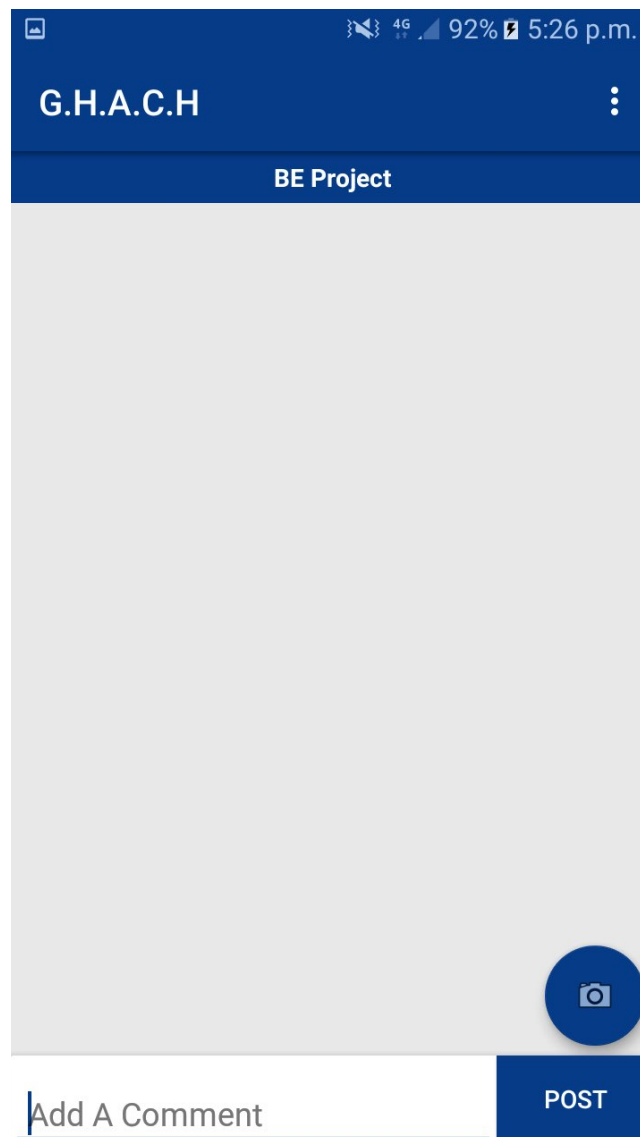


Figure 6.4: Chat Felid

```
1 package com.example.wayneenterprise.ghach;
2 import android.app.DatePickerDialog;
3 import android.app.ProgressDialog;
4 import android.content.Intent;
5 import android.os.AsyncTask;
6 import android.os.Bundle;
7 import android.support.annotation.Nullable;
8 import android.support.v7.app.AppCompatActivity;
9 import android.view.View;
10 import android.widget.Button;
11 import android.widget.DatePicker;
12 import android.widget.EditText;
13 import android.widget.Spinner;
14 import android.widget.Toast;
15 import org.json.JSONArray;
16 import org.json.JSONException;
17 import org.json.JSONObject;
18 import java.util.ArrayList;
19 import java.util.Calendar;
20 import java.util.HashMap;
21 public class Update extends AppCompatActivity {
22     private String JSON_STRING;
23     ArrayList < HashMap < String, String >> list;
24     String projname, custname, custnumber, amount, advance, startdate, enddate,
    statusval;
25     EditText startdateet, enddateet, projnameet, custnameet, custnumberet,
    amountet, advanceet;
26     Spinner status;
27     Button getstartdate, getenddate, updateproj;
28     int startday, endday, startmonth, endmonth, startyear, endyear;
29     int mYear, mMonth, mDay;
30     String j;
31     @Override
```

```
32  protected void onCreate(@Nullable Bundle savedInstanceState) {
33      super.onCreate(savedInstanceState);
34      setContentView(R.layout.update);
35      getJSON();
36      Intent iin = getIntent();
37      Bundle b = iin.getExtras();
38      if (b != null) {
39          j = (String) b.get("projectname");
40      }
41      projnameet = (EditText) findViewById(R.id.pname);
42      custnameet = (EditText) findViewById(R.id.cnam);
43      custnumberet = (EditText) findViewById(R.id.cnum);
44      amountet = (EditText) findViewById(R.id.amt);
45      advanceet = (EditText) findViewById(R.id.adv);
46      status = (Spinner) findViewById(R.id.statusspinneradd);
47      getstartdate = (Button) findViewById(R.id.getstartdate);
48      getenddate = (Button) findViewById(R.id.getenddate);
49      startdateet = (EditText) findViewById(R.id.startdateet);
50      enddateet = (EditText) findViewById(R.id.enddateet);
51      updateproj = (Button) findViewById(R.id.updateproj);
52      getstartdate.setOnClickListener(new View.OnClickListener() {
53          @Override
54          public void onClick(View view) {
55              final Calendar c = Calendar.getInstance();
56              mYear = c.get(Calendar.YEAR);
57              mMonth = c.get(Calendar.MONTH);
58              mDay = c.get(Calendar.DAY_OF_MONTH);
59              DatePickerDialog datePickerDialog = new DatePickerDialog(Update.this,
60                  new DatePickerDialog.OnDateSetListener() {
61                      @Override
62                      public void onDateSet(DatePicker view, int year,
```

```
63         int monthOfYear, int dayOfMonth) {
64             startdateet.setText(year + "-" + (monthOfYear + 1) + "-" +
dayOfMonth);
65             startday = dayOfMonth;
66             startmonth = monthOfYear;
67             startyear = year;
68         }
69     }, mYear, mMonth, mDay);
70     datePickerDialog.show();
71 }
72 });
73 getenddate.setOnClickListener(new View.OnClickListener() {
74     @Override
75     public void onClick(View view) {
76         final Calendar c = Calendar.getInstance();
77         mYear = c.get(Calendar.YEAR);
78         mMonth = c.get(Calendar.MONTH);
79         mDay = c.get(Calendar.DAY_OF_MONTH);
80         DatePickerDialog datePickerDialog = new DatePickerDialog(Update.this,
81             new DatePickerDialog.OnDateSetListener() {
82                 @Override
83                 public void onDateSet(DatePicker view, int year,
84                     int monthOfYear, int dayOfMonth) {
85                     enddateet.setText(year + "-" + (monthOfYear + 1) + "-" +
dayOfMonth);
86                     endday = dayOfMonth;
87                     endmonth = monthOfYear;
88                     endyear = year;
89                 }
90             }, mYear, mMonth, mDay);
91         datePickerDialog.show();
92     }
93 });
```

```
94     updateproj.setOnClickListener(new View.OnClickListener() {
95         @Override
96         public void onClick(View view) {
97             if (startyear > endyear || (startyear <= endyear && startmonth >
98 endmonth) || (startyear <= endyear && startmonth <= endmonth && startday >
99 endday)) {
100                 Toast.makeText(getBaseContext(), "Start Date Cant Be Smaller Than
101 End Date", Toast.LENGTH_LONG).show();
102             } else {
103                 if (projnameet.equals("") || custnameet.equals("") ||
104 custnumberet.equals("") || amountet.equals("") || advanceet.equals("") ||
105 startdateet.equals("") || enddateet.equals("")) {
106                     Toast.makeText(getBaseContext(), "Please fill all the fields",
107 Toast.LENGTH_LONG).show();
108                 } else {
109                     UpdateProject();
110                 }
111             }
112         }
113     });
114 }
115 private void UpdateProject() {
116     try {
117         projname = projnameet.getText().toString();
118         custname = custnameet.getText().toString();
119         custnumber = custnumberet.getText().toString();
120         amount = amountet.getText().toString();
121         advance = amountet.getText().toString();
122         startdate = startdateet.getText().toString();
123         enddate = enddateet.getText().toString();
124         statusval = status.getSelectedItemId().toString();
125         class UpdateData extends AsyncTask < Void, Void, String > {
126             ProgressDialog loading;
127             @Override
128             protected void onPreExecute() {
```

```
123         super.onPreExecute();
124         loading = ProgressDialog.show(Update.this, "Adding Project...",
"Wait...", false, false);
125     }
126     @Override
127     protected void onPostExecute(String s) {
128         super.onPostExecute(s);
129         loading.dismiss();
130         Intent i = new Intent(getBaseContext(), HomeActivity.class);
131         startActivity(i);
132         Toast.makeText(getBaseContext(), s, Toast.LENGTH_LONG).show();
133     }
134     @Override
135     protected String doInBackground(Void...v) {
136         HashMap < String, String > params = new HashMap < > ();
137         params.put(Config.projname, projname);
138         params.put(Config.custname, custname);
139         params.put(Config.custnumber, custnumber);
140         params.put(Config.amount, amount);
141         params.put(Config.advance, advance);
142         params.put(Config.startdate, startdate);
143         params.put(Config.enddate, enddate);
144         params.put(Config.statusval, statusval);
145         params.put(Config.psess, j);
146         RequestHandler rh = new RequestHandler();
147         String res = rh.sendPostRequest(Config.URL_UPDATE_PROJECT,
params);
148         return res;
149     }
150 }
151 UpdateData ud = new UpdateData();
152 ud.execute();
153 } catch (NumberFormatException e) {}
```

```
154     }
155     private void showValues() {
156         JSONObject jsonObject = null;
157         list = new ArrayList < HashMap < String, String >> ();
158         try {
159             jsonObject = new JSONObject(JSON_STRING);
160             JSONArray result = jsonObject.getJSONArray(Config.TAG_JSON_ARRAY);
161             for (int i = 0; i < result.length(); i++) {
162                 JSONObject jo = result.getJSONObject(i);
163                 projname = jo.getString(Config.projectname);
164                 custname = jo.getString(Config.custname);
165                 custnumber = jo.getString(Config.custnumber);
166                 amount = jo.getString(Config.amount);
167                 advance = jo.getString(Config.advance);
168                 startdate = jo.getString(Config.startdate);
169                 enddate = jo.getString(Config.enddate);
170                 statusval = jo.getString(Config.statusval);
171                 projnameet.setText(projname);
172                 custnameet.setText(custname);
173                 custnumberet.setText(custnumber);
174                 amountet.setText(amount);
175                 advanceet.setText(advance);
176                 startdateet.setText(startdate);
177                 enddateet.setText(enddate);
178                 if (statusval.equals("Incomplete")) {
179                     status.setSelection(0);
180                 } else if (statusval.equals("Complete")) {
181                     status.setSelection(1);
182                 } else if (statusval.equals("Didnt Start")) {
183                     status.setSelection(2);
184                 }
185             }
186         }
187     }
188 }
```



```
185     }
186   } catch (JSONException e) {
187     e.printStackTrace();
188   }
189 }
190 private void getJSON() {
191   class GetJSON extends AsyncTask < Void, Void, String > {
192     ProgressDialog loading;
193     @Override
194     protected void onPreExecute() {
195       super.onPreExecute();
196       loading = ProgressDialog.show(Update.this, "Fetching Data", "Wait...",
false, false);
197     }
198     @Override
199     protected void onPostExecute(String s) {
200       super.onPostExecute(s);
201       loading.dismiss();
202       JSON_STRING = s;
203       showValues();
204     }
205     @Override
206     protected String doInBackground(Void...params) {
207       RequestHandler rh = new RequestHandler();
208       String s = rh.sendGetRequest("https://ghach.000webhostapp.com/
updateproject.php?projectname=" + j);
209       return s;
210     }
211   }
212   GetJSON gj = new GetJSON();
213   gj.execute();
214 }
215 }
```

Chapter 7

System Testing

- A. Software testing is a process used to identify the correctness, completeness and quality of the developed computer software.
- B. Testing as a process is questioning a product in order to evaluate it, where the questions are things the tester tries to do with the product, and the product answers with its behaviour in reaction to probing of the tester.
- C. The testing phase is performed after coding to detect all the errors and provide quality assurance and ensure reliability of the software.
- D. Testing is vital to the success of the system.
- E. The System is tested in every environment, we have done unit testing and make them integrated together for integration testing.
- F. We have done Beta testing by the person apart from our group.
- G. During testing, the software to be tested is evaluated to determine if the system is performing as expected.
- H. Clearly, the success of testing in revealing errors depends critically on the test cases.

7.1 Testing Process:

- A. Testing performs a very critical role for quality assurance and for ensuring the reliability of the software.
- B. Testing can be performed in various levels:
 - a. Unit Testing.
 - b. Integration Testing.

7.2 Test Cases and Test Results

Table 7.1: Test Cases and Test Results

Test ID	Test Case Title	Test Condition	System Behavior	Expected Result
T01	Testing Operations	Is Able to implement folder creation and file deletion?	Unable to implement folder creation and file deletion	Unable to implement folder creation and file deletion
T02	Testing Resource accesibility	Is Resources of the application can only be accessed by the authorized personnel?	Resources of the application can only be accessed by the authorized personnel.	Resources of the application can be accessed by both clients and developers.
T03	Testing Security and equal access	Is Security and equal access in forums can be an issue with respect to client developer interaction?	Unequal access Restricted access and limited access to clients developer interaction in forums	Unequal access Restricted access and limited access to clients developer interaction in forums
T04	Testing contact Information	Is it displaying whole information?	Display only contact name	Display contact number with name

7.2.1 Unit Testing:

Problem:

Unable to implement folder creation and file deletion.

Solution:

The main hurdle of service user cannot create or delete folders or file. The solution is the admin can create folders. The folders are created as follows in each branch there are two semesters and in semesters there are subjects followed by section. The subjects remain same for a long period of time and also the folder creation is a rare occurrence as once an admin creates the folder there is no need to change it for a long period of time. Also if the student wishes to view any documents of pervious semester he can use it, that's the reason of not implementing the deleting files option.

Problem:

Resources of the application can only be accessed by the authorised personnel.

Solution:

As the main goal of our application is to help the student teacher interaction through file sharing, we have to use many of the system features like the uploading, downloading, push notification , etc. There is no authentication required at the student end so that all the resources can be easily accessed. But uploading to the cloud has been restricted to the teachers with proper login credentials only thereby removing any chances of a third party being able to share files of his own wish.

Problem:

Security and equal access in forums can be an issue with respect to student teacher interaction.

Solution:

Presence of a moderator makes the posts subject to scrutiny which thereby reduces any form of disregard when it comes to statements on the forums. Moreover student access or for that matter number of persons registering on the forum can be restricted since people registering and using the forum to post can be provided with unique credentials which might be provided by special authorised personnel. The forum has a dictionary including a list of “bad words” which substantially reduces the chances of misuse of language.

7.2.2 Sample of a Test Case

Title:

Contact information – Display contact information.

Description:

When user selects a contact from list, it has to show a contact name and number on message page.

Precondition:

Open to a contact module and select contact.

Assumption:

Our system must be installed in the user mobile phone .

Test Steps:

A. Go to menu.

- B. Select a contact.
- C. Select any contact in contact list.
- D. Now it will display a contact information on message list.

Expected Result:

A page displaying the contact of a user with its name for making it more convenient.

Actual Result:

When user select a contacts from a contact list ,application shifts to another page where it displays a contact of a recipient expected Contact is to display a contact of a recipient with name and number but it displays a contact information with only name.

7.3 Software Quality Attributes

Availability:

The system should not be down, whenever the user use the system the specific data should be available to the user.

Correctness:

As per the user search the correct data should be shown to the user like at time for searching the near by place the system should show only the places around the user.

Maintainability:

The administrators of the system will maintain the system with effective updates though on air update if needed.

Extensibility:

The system is capable to be modified by changing some modules or by adding some features to the existing system.

Chapter 8

Screenshots of Project

8.1 Home Screen

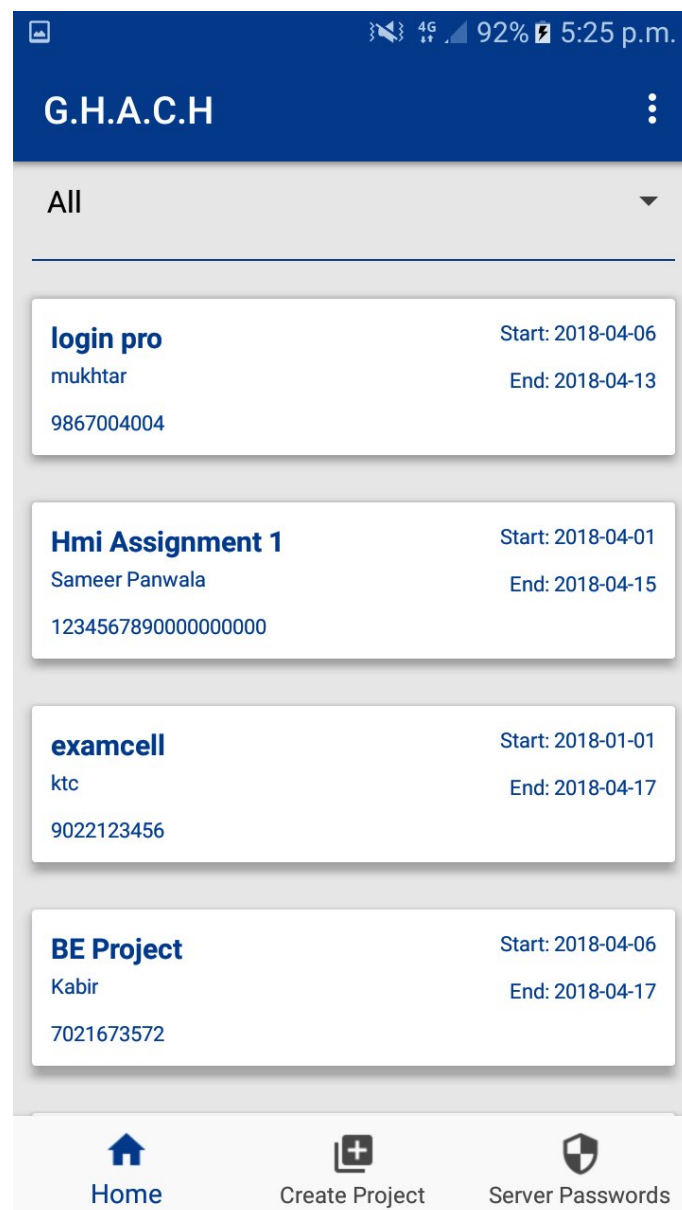


Figure 8.1: Home Screen shot

8.2 Login Section

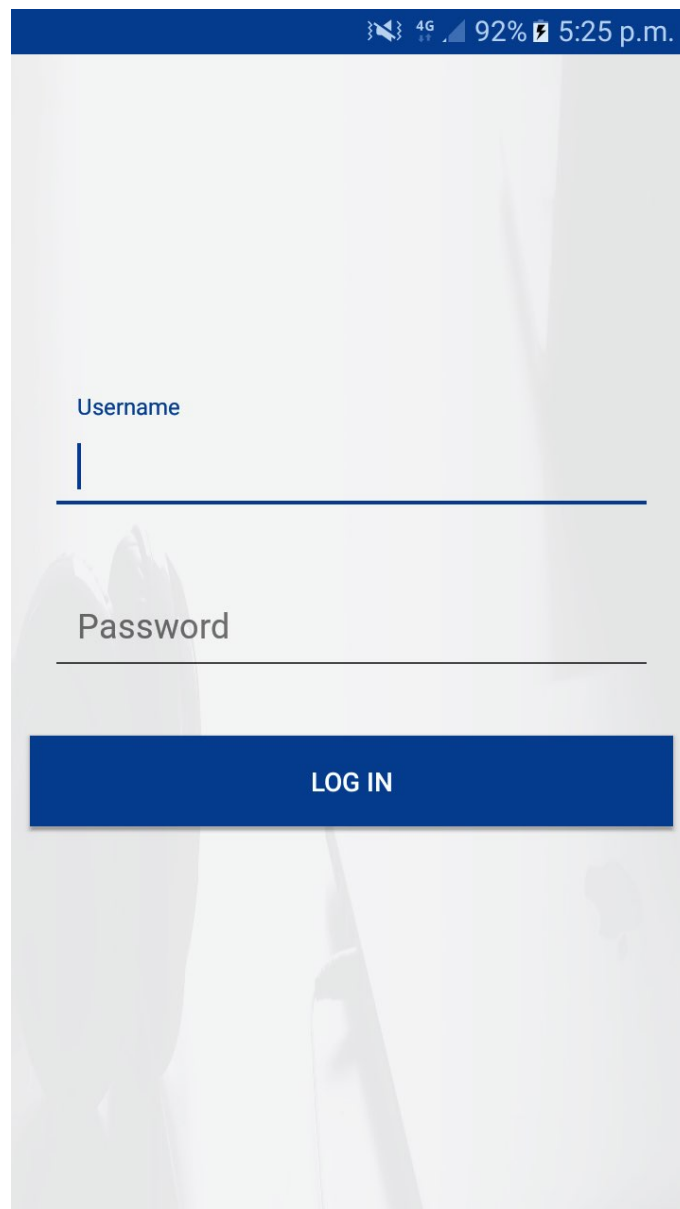


Figure 8.2: Login Section Screen shot

8.3 Chat

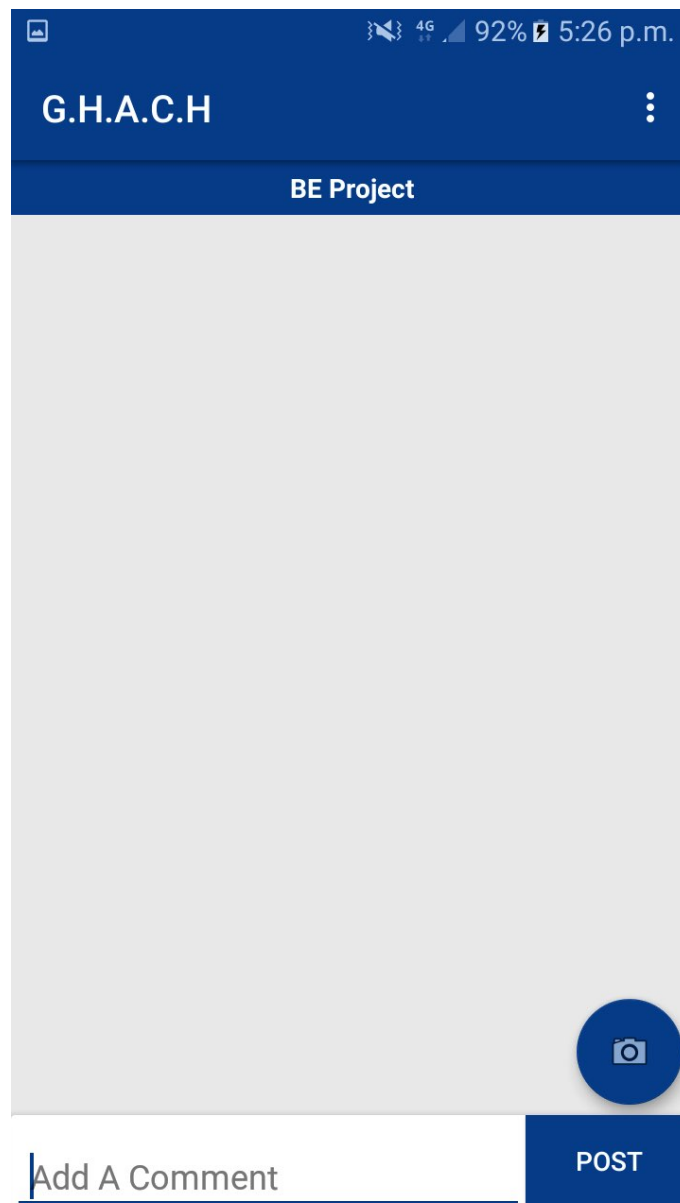


Figure 8.3: Chat Screen shot

8.4 Send message



Figure 8.4: Send Message Screen shot

8.5 Project list

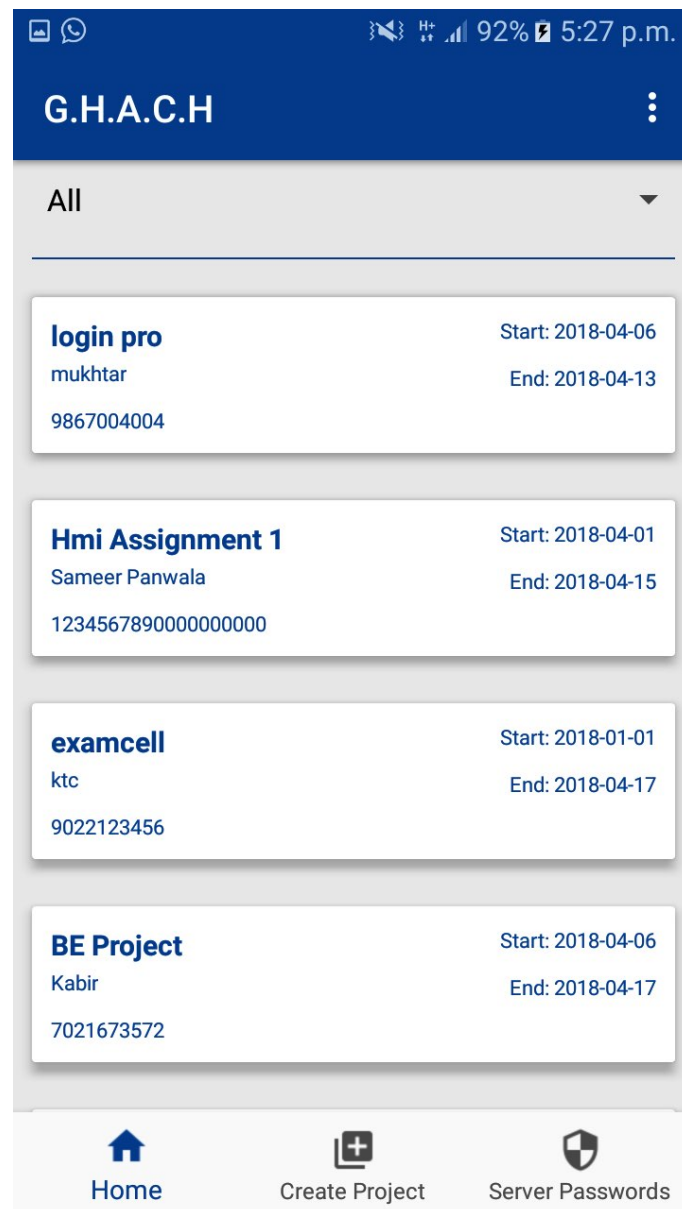


Figure 8.5: Project list Screen shot

8.6 Add Project

The screenshot displays the 'Add Project' interface of the G.H.A.C.H application. The top status bar shows 4G connectivity, 92% battery, and the time 5:26 p.m. The app's header is blue with the text 'G.H.A.C.H' and a vertical ellipsis menu icon. Below the header is a blue bar with the text 'Add A Project'. The main content area contains several input fields: 'Customer Number', 'ADD START DATE', 'ADD DEADLINE', 'Project Amount', and 'Project Advance Received'. A dropdown menu is set to 'Incomplete'. At the bottom is a large blue button labeled 'ADD PROJECT'. The bottom navigation bar includes icons for 'Home', 'Create Project', and 'Server Passwords'.

Figure 8.6: Add Project Screen shot

8.7 Stored account

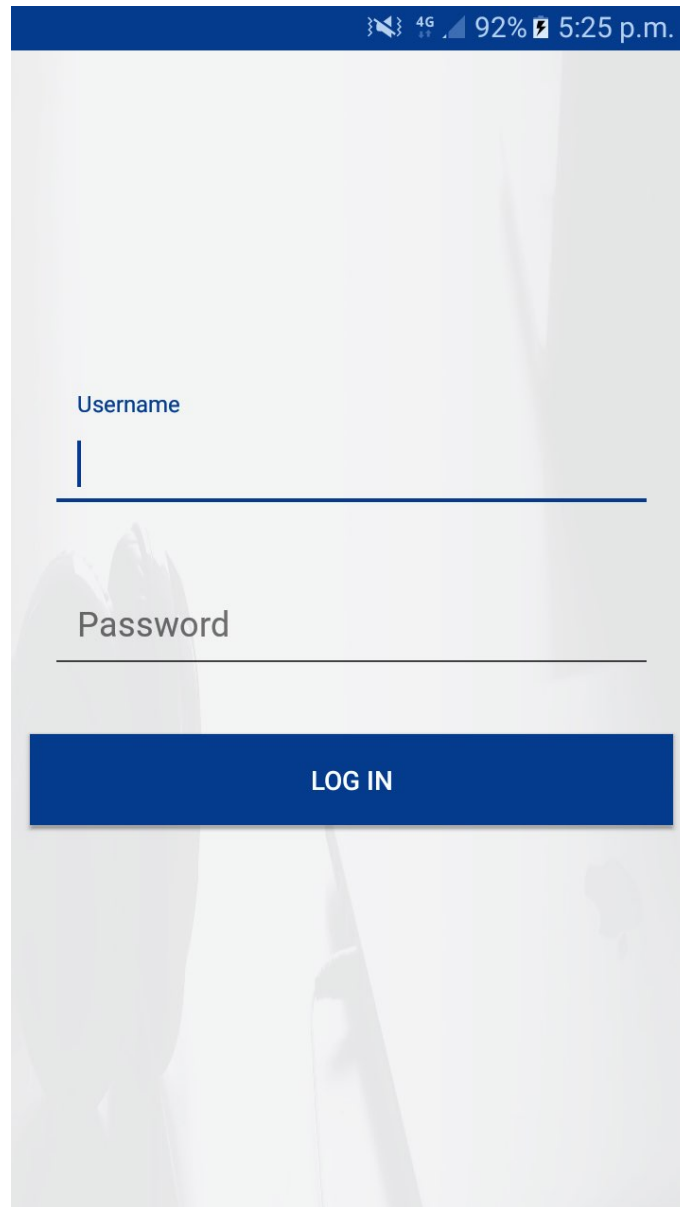


Figure 8.7: Stored account Screen shot

Chapter 9

Conclusion and Future Scope

9.1 Conclusion

Platform for Clients and Developers is a Repository tool to give clients and developers an easy and efficient way of handling resources. Their might be occurrences when a developers has the required any information like presentations and documents or any kind of files for clients for a specific project development but the developers is not available at college and may be at a different location. In a situation like this common sense suggests using email, telephonic call, message, or WhatsApp. But that is a tedious process wherein the class representatives have to forward all of it to the clients after receiving them from the developers. Our application strives to give a simple solution. The developers can easily login using his/her credentials and download and upload the all kinds of information file from anywhere using cloud services. What comes next is the Clients part. The Clients in a similar fashion can access all of it from anywhere using his/her own mobile carrier services. Neither of them need to be physically present in college for this to happen. The notification system adds onto the list of features. As soon as a circular is made it will be uploaded onto the application and every user will receive a push notification. This ensures a more direct way of communication between the college members and authorities. Forum is an open source bulletin board software that can be used to ask doubts and discussions for developers and clients.

9.2 Future Scope

- A. Payment Gateway
- B. In future the system can be extended at university level on internet.
- C. In future version controlling feature can be added to the project.
- D. Video Calling
- E. Feedback System
- F. We can expand this project for pharmacy, architecture department of AIKTC.

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