

UNICON

A PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree of

Master of Science

in

Software Engineering (5 Year Integrated Programme)



School of Computing Science and Engineering
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April - 2016



School of Computing Science and Engineering

DECLARATION

I hereby declare that the project entitled **UNICON** submitted by me to the School of Computing Science and Engineering, VIT Chennai, 600 127 in partial fulfillment of the requirements of the award of the degree of **Master of Science** in **Software Engineering (5 year Integrated Programme)** is a bona-fide record of the work carried out by me under the supervision of **Rabindra Kumar Singh**. I further declare that the work reported in this project, has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma of this institute or of any other institute or University.

Place: Chennai

Date:

Signature of Candidate
(Vamsi Krishna Chokkapu)



School of Computing Science and Engineering

CERTIFICATE

This is to certify that the report entitled **UNICON** is prepared and submitted by **Vamsi Krishna Chokkapu (Reg. No. 11MSE1027)** to VIT Chennai, in partial fulfillment of the requirement for the award of the degree of **Master of Science in Software Engineering (5 year Integrated Programme)** is a bona-fide record carried out under my guidance. The project fulfills the requirements as per the regulations of this University and in my opinion meets the necessary standards for submission. The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma and the same is certified.

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Acknowledgment

This project consumed huge amount of work, research and dedication. Still, implementation would not have been possible if I did not have the support of my teachers and friends. Therefore I would like to extend my sincere gratitude to all of them.

First of all I am thankful to my guide, Prof.Rabindra kumar Singh for his constant support and motivation. He not only helped me understand the underlying concepts better, but also provided the expertise, and technical support in the implementation.

I am also grateful to my program manager, Dr.N.Maheswari, for her support and guidance throughout the project. She conducted regular meetings with us and clarified our doubts whenever we needed help. She has been a constant motivation.

I am also thankful to our dean, Dr.L.Jagannathan, for supporting this project throughout. I would like to thank him for guiding this Major project through this course.

Nevertheless, I am grateful to all the teaching and non-teaching staff for their help which lead to the successful completion of the project.

Last but not the least, I express my gratitude towards my family and friends for their kind co-operation and encouragement which helped me in completion of this project..

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Abstract

With the advancement of technology, the power of computing and connectivity is very much owned in our hands by a Mobile device. The power of processing and accessibility are being ruled by these mobile environments. Making much use of its aspects, UNICON abbreviated for University Connect is a mobile environment application that acts as an Interactive Environment among various users within a university or college. It supports multiple Interactive enhancement Capabilities between students, Faculty and the management. UNICON comprises a purely mobile environment based set of tools and resources that are used by faculty members to supplement the classroom experience. It provides the tools, resources and techniques essential for peer to peer interaction as well as student-instructor communication and independent learning. Keeping the accessibility options of the people the system supports a minimal interactive functionality for the ease of access. This system enables dynamical interaction with the people. Providing Individual access space, the system has its own secure access mechanisms integrated with social platforms. Focusing on the current systems, the proposed system provides a better end to end solution on the interaction environment. Taking the scalability and accessibility into account the system very much focuses on these robust aspects to take on the issues that the existing applications face. Keeping the infrastructural needs in mind the system is secure and simple. Using a less device space, the system makes the servers do the job for data integrity and scalability. Multiple course registrations, comments, group discussions, comments to posts etc., are quite the functionality that make the UNICON different from other E-Learning management systems. As our main aim is to deliver a generic application that is accessible to everyone, anywhere, anytime, considering the physical difficulties and environment limitations the architecture of the app is designed to serve various purposes within the university network without compromising the very basic needs upon which the application is being built.

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Chapter 1

Introduction

1.1 General

Mobile Application, also called as Mobile App, is a general term referring to programs developed to run on mobile devices such as smart phones and tablets. The environment typically associated with each mobile device is called mobile operating system such as Windows, Android, IOS etc.; these mobile applications can be downloaded and installed through various sources. The term App is shortened form of the term Application Software. With the advancement of technology the computational power within a computer has been made available within a smart phone letting users adapt to mobile technologies very easily. As a result most the software that was available in the computers had to be made available because of the adaptive nature of mobile technologies. With the penetration of technology in various fields the mobile apps are being made available for many fields. This has made our day to day activities available with the push of a button or swipe of a thumb. Owing to these advancements the development and deployment of mobile scaled applications is seemingly becoming popular. The mobile environment provides the necessary resources for these mobile apps to perform well. Thus any service that is available on computer can be made available within the mobile environment in the form of application. These mobile applications are similar to working of computer applications but are limited by the resources available within the mobile device. But with the availability of cloud computing some of the resources can be extended beyond capability of mobile devices. These mobile applications serve handy purposes as they are available anywhere anytime without much hassle. Owing recent trends the computational capacity within the mobile

environment is surpassing that of computers. With the global rise of computational devices these mobile environments are being embedded into various other devices where in these mobile apps play a greater and widespread role in the fore coming era of technology.

1.2 Motivation

Our Interaction with generic software environments is continuously evolving. In a university level these software environments are common now days in the form of learning management systems or in the form interactive applications. Applications like Moodle, Capterra, and Litmos etc. are general software applications that can be customized as per the university and environment needs? But all these existing applications provide a general solution to the problem of learning management where as they might lack some of the concrete features. Our study with the existing systems shows that the need for applications that support a learning management system without compromising the principles of dedicated network for social interaction within the university and common implications like portability, Accessibility etc., is increasing. Keeping in mind the issues that arise within a university even with the adoption of features of a learning management system, there is better scope for applications that adopt to socialization and connectivity without compromising the foundation principles of learning management system. Keeping these things in consideration, we designed an idea that could solve the very basic issues that need to be definitely addressed at a university level. Thus the Application UNI-CON abbreviation for University Connection is the application that we hope would solve the fundamental issues that are addressed.

1.3 Problem Statement

There are many learning management applications that can be customized as per individual university needs but they are left blank at addressing many issues that universities face. Some of them are universal connectivity, accessibility anytime anywhere, socialization, Compatibility, Interaction etc., Applications that address all these needs are very few that too with limited accessibility. Some of them are available with some tagged price. In our current project we implement our idea of one such application that addresses most of these problems. We record the initial level observations that need to be readdressed. Our main objective is to

develop a generic application that could address all these needs dynamically to the maximum extent.

1.4 Related Works

There are several research papers and existing works that predate to 2010. Upon examining the works of various companies and research scholars we formed the base for our idea to be implemented. In one of the research papers The Frame Work Design of Mobile Learning Management System by J.Hemabala, the author described the educational opportunities of teaching in a real time wireless classroom using mobile devices. Conventional classroom learning has certain weaknesses. The author clearly presented an institutional survey from two hundred undergraduate students on the problems faced in conventional classrooms generally. The main purpose of her research is to enhance the conventional classroom teaching and learning approach, and the author contribution to this research study is to overcome the learning difficulties faced by students in International Journal of Computer and Information Technology (ISSN: 2279 0764) Volume 01 Issue 02, November 2012 www.ijcit.com 180 conventional classroom through the use of mobile devices in wireless classrooms. The survey was conducted with two hundred undergraduate students on the use of mobile devices in a wireless classroom from universities in Malaysia. The questionnaire were distributed to find the weaknesses of conventional learning and the type of mobile learning applications that they would like to use in a classroom using a mobile device, and the five point Likert scale can be used for each question. From the survey results, specific mobile learning applications are being developed for students and instructors. These applications could be used on a Pocket PCs, notebook computers and mobile phones. The author also provided a variety of instructional application such as classroom, chat room, collaborative text editor, synchronization of power point slides, accessing on the courseware on a mobile device, sending and receiving feedback, and emails and accessing to remote computing resources. The author describes the architecture of GroupNet and demonstrates its functionality in the specific area of mobile learning. GroupNet uses handheld devices as the main hardware and GroupNet architecture consists of four layers. The function of the GroupNet kernel is the activity control, online status, files sharing, message passing and session recording. GroupNet concept is designed to support group tasks, thus the GroupNet application are also designed and implemented according to the nature of group tasks. GroupNet concept proposed in this study is more fo-

cused onto the design of mobile learning management system (m-LMS) which can better support mobile learning for a small group of learners with effective social interaction within proximity.

We also studied some of the existing applications that are a breakthrough in Mobile learning management systems. Moodle is the pioneer in learning management systems. In the recent years Moodle also developed mobile app to substantiate the support for the computer based mobile learning management system. This is similar to GroupNet. In Moodle 2.1, we start to see device type theme settings and the ability to set a mobile and tablet themes to cater for the different devices. This approach meant that access from these devices will not be hindered due to screen size or resolutions. Moodle would use the appropriate theme for accessibility without the need to install a separate app. Recognizing the need to cater for mobile access with the increasing number of smart phones and tablets sold, Moodle HQ launched the first official app in September 2011. This is different to the device targeted theming mentioned above.

A number of web-services were developed in Moodle 2.0. In Moodle 2.1, we see further expansion to these web-services leading to support and integration of My Moodle app, HQs first app. Moodle Mobile App is a Moodle client based on HTML5 that connects to your existing Moodle server. The focus here is on making content available offline and access to Moodles internal messaging system. As with My Moodle, it lets you upload files to your Private File area. Given the right permission on your device, it will access the Photo album to select an existing photo to upload, take live shots using the built-in camera app and record audio. You can access all the courses that you are sign up to as a student, check out the contents and interact with other course participants in these courses. Several such implementations and research papers focused on the framework to be enabled so as to make these applications that support mobile learning management systems work great. Some of the studies show that these existent learning management systems are lacking in many aspects that are required by the students as well as the faculty. A recent survey by the educational society of America shows that students are more interested and willing in adopting such application over traditional methods as these applications are making the content sharing very easy. Besides ease of accessibility and availability these application also enhance the concept of knowledge sharing. Even with Moodle and other learning management systems available knowledge sharing and content management tend to be particularly very easier than traditional methods. With the latest advancements

in these applications and the universal adaptability these Mobile based learning systems are gaining much prominence now a days.

1.5 Challenges

While developing the system so as to overcome obvious errors and backtracks from the existing system certain challenges have been faced and overcome in due course. The mobile environment being limited by the constraints like screen size, page traveling in case of multiple pages in an application, limited resource, limitations of Internet connectivity and availability of proper mechanisms unlike an advanced computational environment has posed many challenges for the development of application. The fact that functionality that exist in available applications are being limited caused the application functionality to be ceased at times. Several existing applications have been studied in this manner in order to find the optimal solution. Other challenges in terms of available resources owing to the mobile environment are the major challenges that need to be addressed.

1.6 Assumptions

There are certain assumptions that have been made in order for the usage of application.

- The user has first hand knowledge of mobile environment especially android in terms of usage and functional abilities
- Continuous Internet facility will be available (atleast for usage time period)
- Supplemental computer application like Moodle or any other application is available along with the UNICON
- Users are legitimate participants in the university and are having the necessary credentials.

Chapter 2

Overview / Literature Review

2.0.1 Literature Works

There are many numbers of quality works by many authors that are done and are being currently done by others. Many of the product oriented organizations already deployed their products while some of them are open source while some of them are not. Many authors have proposed efficient theories regarding the framework to be used and the experiments conducted on these theories so as to check their efficacy. One such theory was by J.Hemabala

Ref : [http://www.ijcit.com/archives/volume1/issue2/Paper010224.pdf]

This paper is focused on frame work design of mobile learning management system which improves learners knowledge, performance, achievements, problem solving skills and individual learning system. The frame work design consists of a content module, learning module and evaluation module with learner, teacher and knowledge interface. It supports online, offline, in campus and out campus learning activities. The content module can be divided into five authoring tools i.e. content development, content management, content distribution, content collaboration and content delivery. The wireless technology development leads to restructuring of conventional classroom learning process into mobile learning from group of network with collaborative learning.

Moodle is an organization that has pioneered the process of learning management system and it is completely open source. We are taking many references from Moodle as it has already developed mobile apps for learning management system.

Ref : [https://docs.moodle.org/26/en/Mobile_app]

And other references that we have studied are

http://www.academia.edu/11306874/Integrating_Mobile_Learning_Management_System_Using_Activity_theory_In_Higher_Education
[<https://net.educause.edu/ir/library/pdf/ers1414.pdf>]
[<http://www.mlearn.org.za/CD/papers/Attewell.pdf>]

2.1 INTRODUCTION OF PROBLEM

With the advancement of technology, the power of computing and connectivity is very much owned in our hands in a Mobile device. The power of processing and accessibility are being ruled by these mobile environments. Making much use of its aspects the existing systems are mainly focused on enabling a wide spread learning management system. The current day system allows us for an active learning environment but they lack in accessibility. Some of the daily important tasks are not being addressed by these Learning Management systems. They are concerned with content management and resource sharing than other normal things which is making them a bit lacking to adopt Mobile LMS or Mobile learning management systems are the systems that use mobile platform as resources and function upon these mobile environments. They provide normal functionality like other learning management systems such as Learning capability building by knowledge sharing and content management, resource sharing etc., Although these functionality are limited by the environment, most of the current day mobiles are as fast as computers. Hence the concept of environment issues can be omitted. These mobile based learning management applications similar to that of the other applications and can be restrained to university or the organization level for the issues being addressed.

2.1.1 Related Concepts

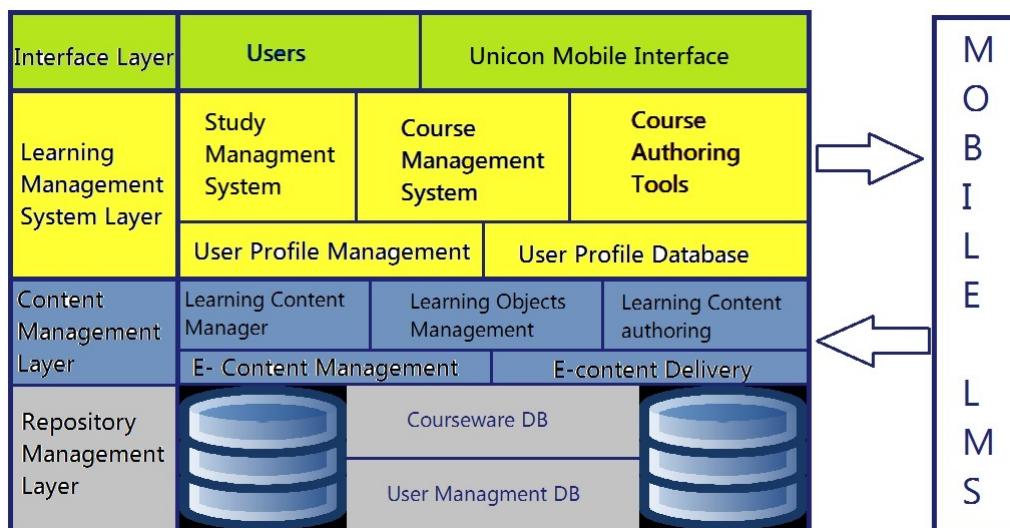
- Mobile LMS: Mobile learning management service is a type of service that can be designed and made available on the mobile environment. It deals

with the management of learning resources and application oriented services

- Mobile environment: Mobile environment refers to the type of operating system that the mobile user is using. Essentially our application is targeted for android operating system users. Hence we are referring to android OS.
- Learning Environment: The learning environment refers to a school or a college atmosphere where there will be faculty as instructors and students as learners. It follows typical University environment like posting tasks, submitting assignments, posting notes for learners etc.

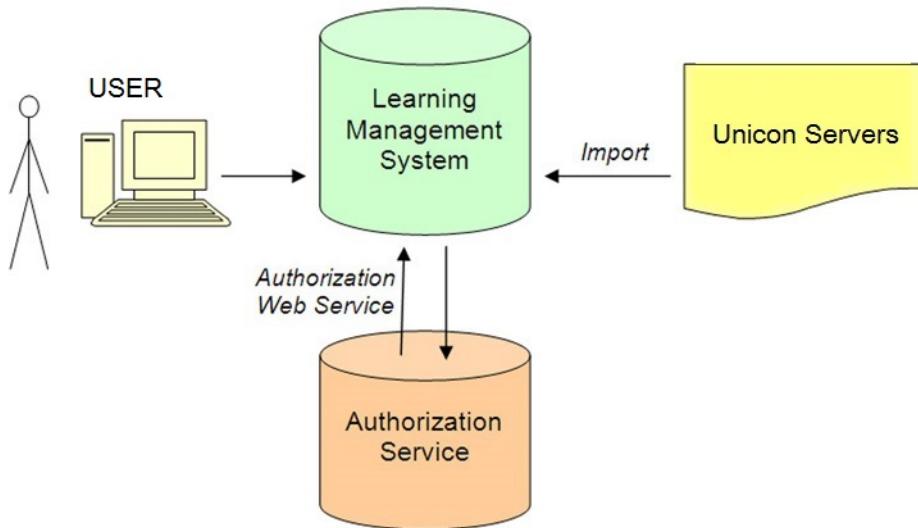
2.2 Overview of the Proposed System

The Layered Architecture diagram represents various application and interface layers that are totally functional in the Unicorn mobile application. From the very basic Repository layer which we are being serviced by parse web servers, Courseware database management and Users management is practically portable. The content management layer which rests upon the database layer Comprises of the learning content management and learning objects management system which is parsed only after the learning content is authored by users.



2.2.1 Layered Architecture Diagram

Upon this layer the Learning management system layer rests which consists of two main sub layers called user profile management and user profile database layer. This layer comprises of the key layers of LMS such as study management system and course management system associated with it. The course authoring tool is pure user oriented one and a promoter of the complete learning management system. The rules are set and played by these course authors. The interface for all these objects and functionality is provided by the interface layers which supports various users and individual functionality for each of them. Even though all of these layers rest upon each other they are bind to the mobile Learning management system layers.

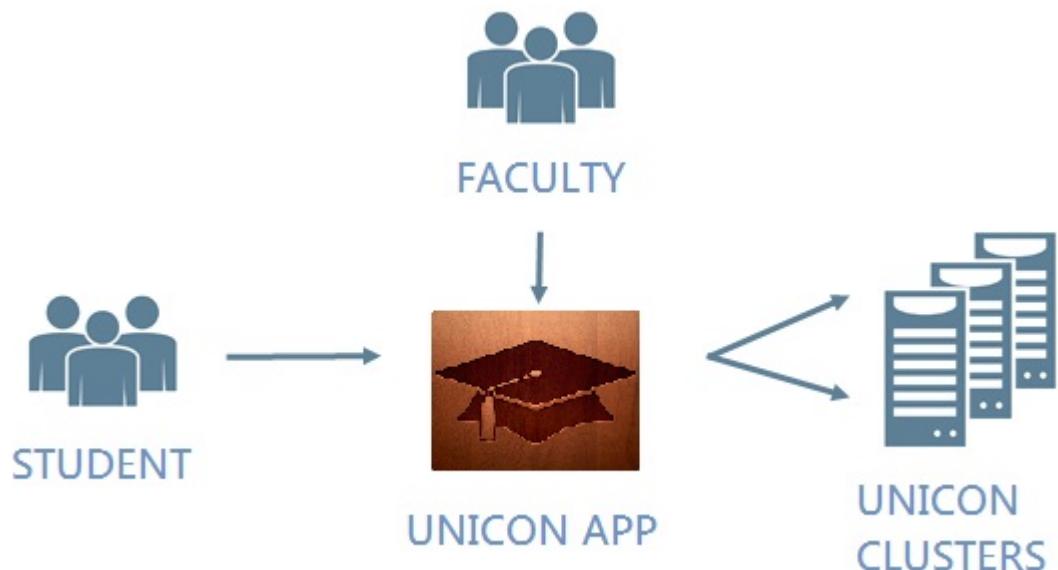


2.2.2 Application Architecture Overview

The Typical architecture of the system Consists of authorization as key factor as the whole application uses role based authentication system with individual permission confirming to key actions and objects by individual users. All the data resides on the Unicorn clusters. Hence the application should continuously interact with application services for the data to be imported and updated with the application web servers.

The Unicorn clusters consist of clustered databases for user services. They store the information in parse databases. Due the constraint of role based authentication system these clusters are restrained to minimalist performance. For the

successful running of the application the server clusters must continuously function as no local database is being used for storing the local variables and data. As a result the application totally functions on cloud servers and databases. These servers are provided by parse where the application libraries used in the application continuously interact with the clusters for data.



2.2.3 Basic Architecture

The application typically consists of parse servers and database at the back end and Android application interface at the front end. Service requests and user management are the typical functionality. User role based authentication system is the key feature controlling the permission of read and writes into the database. The typical course breakdown and authoring determines the course breakdown and Mentoring by the faculty. These are key features that determine the performance of the application. Currently the servers are not redundant controlled but soon the server's capability will be matched for redundant data interference and control.

Chapter 3

System Design

The UNICON application features top level minimalist design system for cohesion between modules. As a result all the modules are clearly abstracted in design to promote the cohesion between modules. All these modules act individually in terms of data service or interface but they can be integrated into single application. This hat makes the application unique in terms of service. Thus the application can also be made to provide individual modules as a service in the form of APIs or service URLs. Apart from these factors the design is kept pretty much simple so as to afford maximum users with a minimum complexity. All the design elements are standard components of the application that form crucial parts to serve the user. The minimalist design is what drives the application in terms of performance. The main focus of the application is to solve the Real time problems encountered. Hence simple design and re-factoring are part of the planning game from the initial stages. The various benefits associated with these minimalist design features are simplicity in application with the scope further enhancements. Since the process taken is incremental the cohesive functions of the design are pretty much useful in various aspects.

3.1 Requirement Analysis

3.1.1 Functional

- FR1 : The Users must be able to register and login
- FR2 : The users depending on their roles should have functional accessibility

- FR3: The Data should be continuously accessible and should be auto updated
- FR4 : The users should able to perform update action to credentials deepening on permissions
- FR5 : The users Should be able to respond to the posts and Messages
- FR6: The user should be able to view the posts and messages within permissive limits
- FR7: The Users must be able register and add to the courses offered
- FR8 : The users must be provided the facility of creating or responding to requests and posts

3.1.2 Domain Requirements

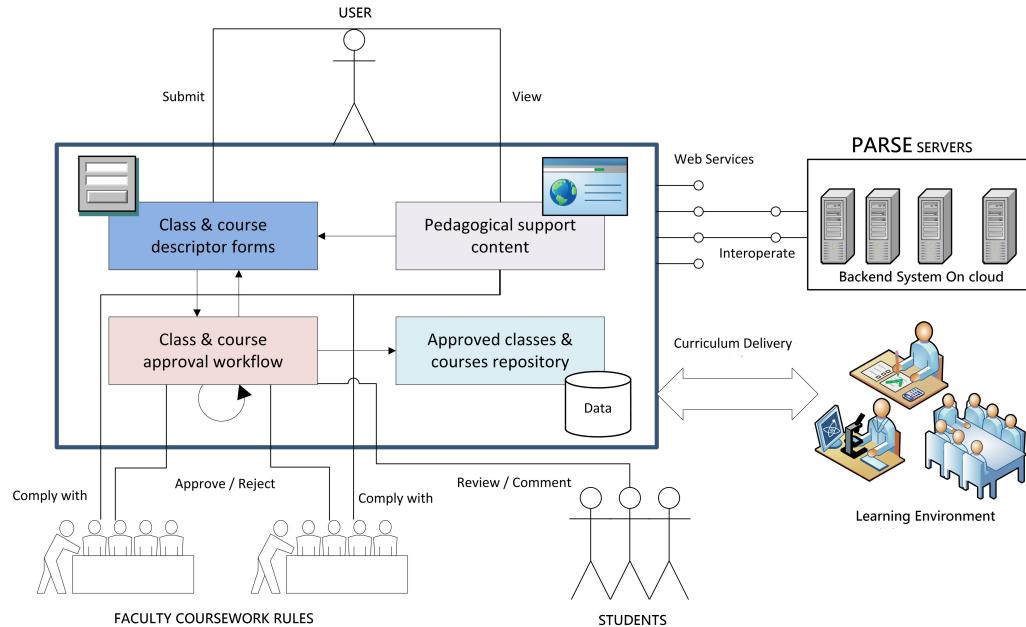
- MBAas
- Android 4.1 above

3.1.3 Non-Functional requirements

- Security
- Performance
- User Friendly UI
- Maintainability
- Scalability
- Usability

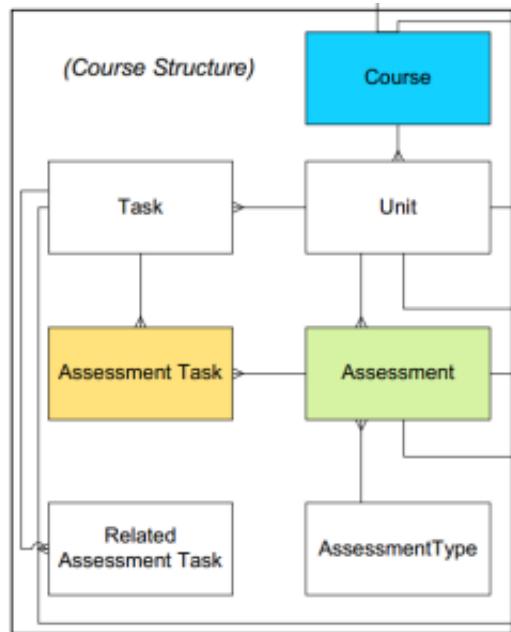
3.2 Detailed Design

The system architecture typically is represented by the functions and integration within the modules and in between the modules. The cohesive functionality can be seen within the application structure modules.



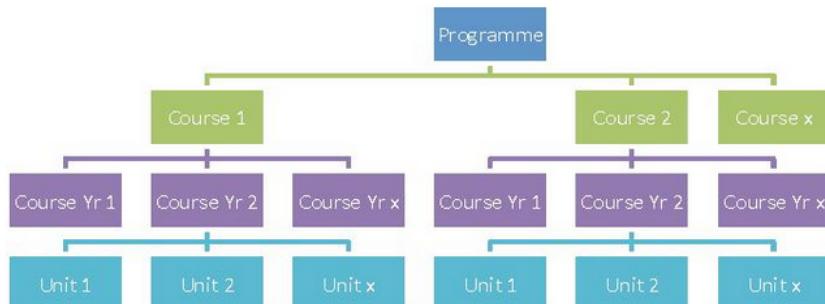
3.2.1 Design Diagram

The Unicon architecture typically represented within the diagram is composed of typical functionality that the application addresses. The various functional sub modules are the supporting types for the main functions that lay within the design architecture. The course authoring system acts as continuous monitoring system for the application. The central core always revolves around the typical functionality of the system and the features of the system. The course objects serve as core features of the system this also comprises of the course structure and course initialization of the system within different roles. The key areas are the structuring and building blocks of the application where the standards that need to be achieved from the application side are decoded and proved to be applicable with various factors



3.2.2 course Structuring

The Course structuring is a key feature in the building of the application, the entire content authoring is base for the course structuring in the design provided.



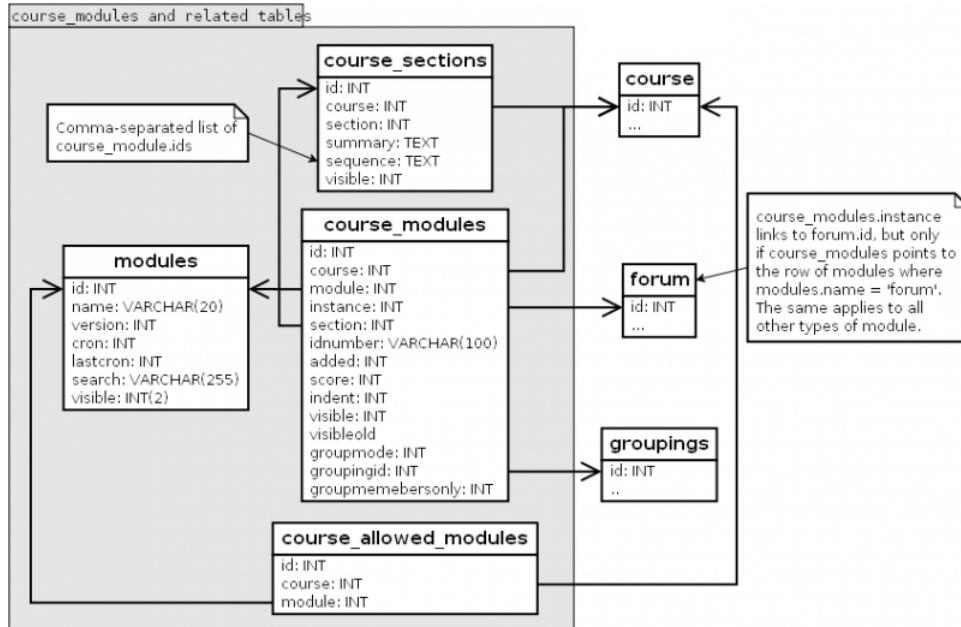
3.2.3 Content Authoring

3.3 Database Design

The database design consists of two typical Parts

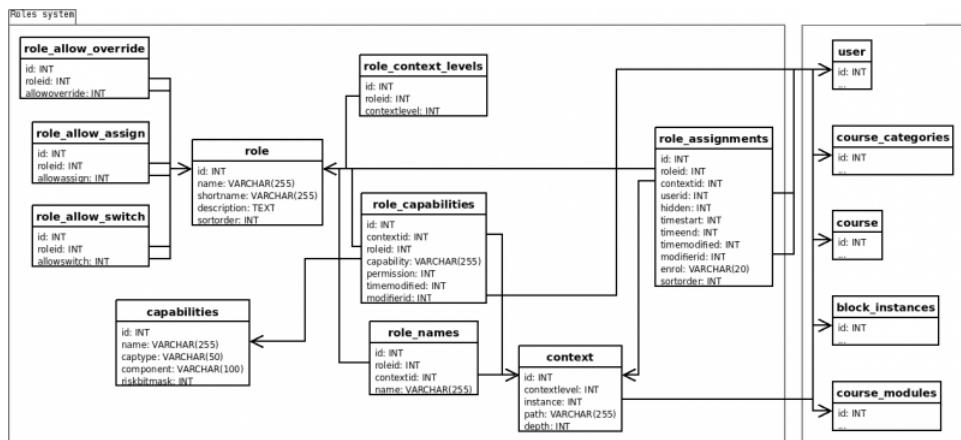
- Module Database Structure

- Roles structuring



3.3.1 Database Modules Class Diagram

Module database typically addresses the database concerns of the system from module related aspects. From the perspective of relative modules and submodules all the issues are clearly defined by the relations of the database structure



3.3.2 Database Roles Class Diagram

3.4 Modules

3.4.1 Module 1. Profile

The profile module gives read and write access to the users for viewing and editing the information

View Profile

It provides the overview of profile for both Student and the Faculty which includes the details like Name of the Student/Faculty, Email Id of the Student/Faculty, University Id of Student/Faculty, Profile picture of the Student/Faculty and their respective Roles.

Edit Profile

It provides an opportunity to update the details of the faculty/ student. The information that can be edited is Name, Email Id and the Profile Picture.

Change Password

It facilitates the Student and the Faculty to change their password. By entering their Old Password, New Password and by Confirming their New Password Student/Faculty can update their New Password.

Delete Profile

By Clicking on Delete My Account option both the Student and the Faculty are asked to confirm whether they really want to delete their account. If they select Yes then the account this be deleted else the account remains same as before.

3.4.2 Courses

This module provides information regarding the list of courses registered, list of pending courses, and list of students registered under a particular course. The Sub Modules present in the Courses module are

Create Course

Access Permissions: Faculty

Faculty can create a course through which students get added into it. The details required for creating the course are Course Name, Description regarding that particular course, Class Time which should include start time and end time, Class Days and they should also generate the Course Code by clicking on generate unique course code. By filling these details correctly, the faculty can be able to create course.

Register Course

Access Permissions: Student

The Student can register for a course by searching the course using the course name. The list of courses related to that search content will be displayed. Student has to click on the desired course then it is required to select Yes/No when they are asked whether they are willing to register for that particular course. If the student selects Yes then the Request will be sent to the respective Faculty for approval else the request will be discarded.

My Courses

Access Permissions: Student

It gives the list of courses registered by the student. On Clicking on the particular Course they could be able to view the information like Course Name, Description, Class Schedule, Professor and Professor Email Id. It also displays the posts regarding the particular course and the list of participants.

Access Permissions: Faculty

It gives the list of courses created by the student. On Clicking on the particular Course they could be able to view the information like Course Name, Description, Class Schedule, Professor and Professor Email Id. It displays the posts regarding the particular course and the list of participants. The Faculty can also be able to create posts regarding that particular course.

Unregister the Course

Access Permissions: Student

The Student is provided with an option to withdraw the registered courses by

clicking on Unregister the course and confirming their request of withdrawal by selecting Yes/No.

Delete Course

Access Permissions: Faculty

The Faculty can delete the course from the list of courses created by them.

3.5 Authentication

3.5.1 Registration

Access Permissions: Student, Faculty

Only registered Students and Faculty are allowed to access this application. Student/ Faculty can register by providing the information like Name, Email Id, University Id, Password, Role and Profile picture (optional).

3.5.2 Login

Access Permissions: Student, Faculty

Student/ Faculty can be able to login into the application using their registered details like University Id and Password.

3.6 Tasks

Both the Student and the Faculty are involved in this module. The work assigned to the students is given by the faculty in the form of tasks which are to be submitted by the students within the particular Time Span. The Sub Modules Present in it is as follows

3.6.1 Create Task

Access Permissions: Faculty

7 Faculty can create a task for the student of that particular course by mentioning the Title, Context, adding Image (optional) and by selecting the Category. Category can be anything like Announcement,Submission Request,Material Post,Forum Thread

For the above Submission Deadline, Material File has to be added depending on the type of category.

3.6.2 View Task

Access Permissions: Student, Faculty

Both the faculty and the student can view the posts regarding the Tasks which include information like Title, Description, Category, and Faculty Name. Submission Deadline and Material File can also be viewed depending upon the category.

3.6.3 Submit Task

Access Permissions: Student

The student can submit the assigned task posted by the faculty of respective subject. Student would be able to upload the file as the submission and also comment on it.

3.7 Forum

It contains all the notifications and updates with respect to all the Occasions within the University. They include updates on Assignments, Fests, Events, Holidays, and Guest Lecture etc. The sub modules present in it are

Create Notification

Faculty would be able to create notification depending upon the necessity. It is a mode of communication between them. The Faculty provides the details like Title, Description and select the category and submit that particular post.

View Notification

All the posts regarding events, occasions, holidays, assignments etc. will be notified to the students as well as the faculty. Student/ Faculty can view them on the home page. It includes the Title and Description of that particular event.

Chapter 4

Implementation of System

4.1 Tools Used

Due the cross functional nature of service required by the application we have to use the by the services provided by some service providers. As the system functionality completely rely on the data clusters from the servers we have chosen cloud to be the appropriate environment for the data parsing of the application. Developing the application for mobile environment poses various restrictions for the development. But certain alternative cognition have been used to cover the tracks. The application is made for android environment. Hence certain cognitive functionality that the environment provides are highlighted in the application development that serve to be key features of Interface control.

The key tools Used in the Process of Application Development are:

Creately for Designs



Creately is diagramming and design software operated by Cinergix, Pty Ltd. It is a cloud-based diagram tool built on Adobe's Flex/Flash technologies and provides a visual communication platform for virtual teams. It can be used to cre-

ate info-graphics, flowcharts, Gantt charts, organizational charts, website wireframes, UML designs, mind maps, circuit board designs, doodle art and many other diagram types. It features a drag-and-drop WYSIWYG interface and easy to use collaboration capabilities. Their main product is a browser-based application with support for all modern web browsers like Firefox, Safari, Chrome and Opera browser. For people who prefer offline diagramming they provide a desktop software which runs on Microsoft Windows, Mac OS and Linux.

Parse: Backend (Servers and Database)



Parse is a cloud app platform that enables users to add a scalable and powerful backend to launch a full-featured app. Parse is the cloud app platform for Windows 8, Windows Phone 8, iOS, Android, JavaScript, and OS X. With Parse, you can add a scalable and powerful backend in minutes and launch a full-featured mobile or web app in record time without ever worrying about server management. Parse offers push notifications, social integration, data storage, and the ability to add rich custom logic to your apps backend with Cloud Code

Android Studio (Front End Integration)

Android Studio is an integrated development environment (IDE) for developing for the Android platform. It was announced on May 16, 2013 at the Google I/O conference by Google's Product Manager, Katherine Chou. Android Studio is freely available under the Apache License 2.0. Android Studio was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014. The first stable build was released in December 2014, starting from version 1.0. Based on Jet Brains' IntelliJ IDEA software, Android Studio is designed specifically for Android de-

velopment. It is available for download on Windows, Mac OS X and Linux and replaced Eclipse Android Development Tools (ADT) as Google's primary IDE for native Android application development.



4.2 Methodology

4.2.1 Modules and Algorithms

Profile

Profile is the module which consists of the personal information about the student and the faculty depending on their access/ login.

Algorithm:

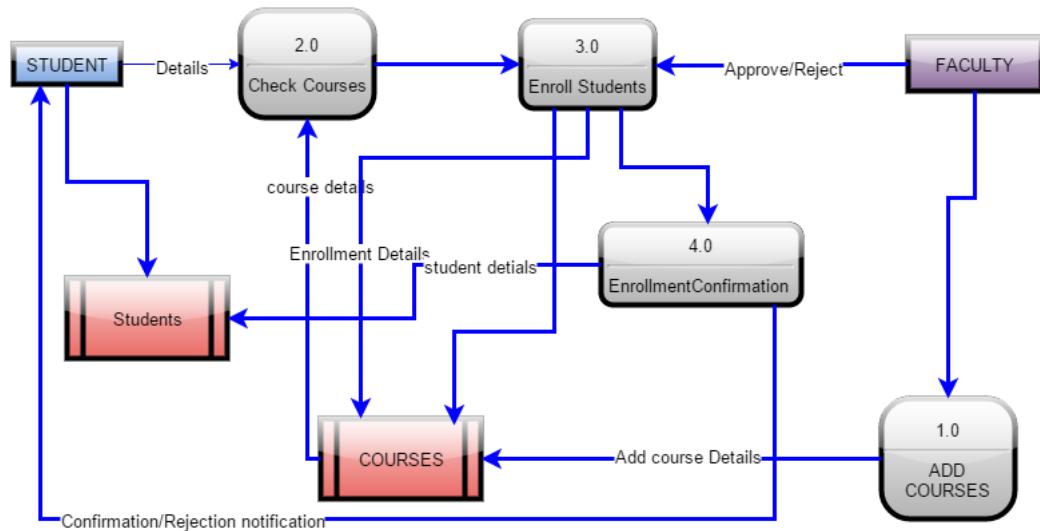
- The application returns users UID key for data retrieval from users table
- Once the UID key is proper permissions and access retrieval starts
- The access retrieval permits users to submit the data or retrieve the data
- UID collapses after the process

Courses

Algorithm:

- Initiate the process by returning UID

- The UIDchecks for permission access
- Depending on permission of roles the Server Allows data retrieval
- Submitting data prompts UID to be submitted
- UID key dumped when logout



4.2.1.1 Data Flow for Course Module

Authentication

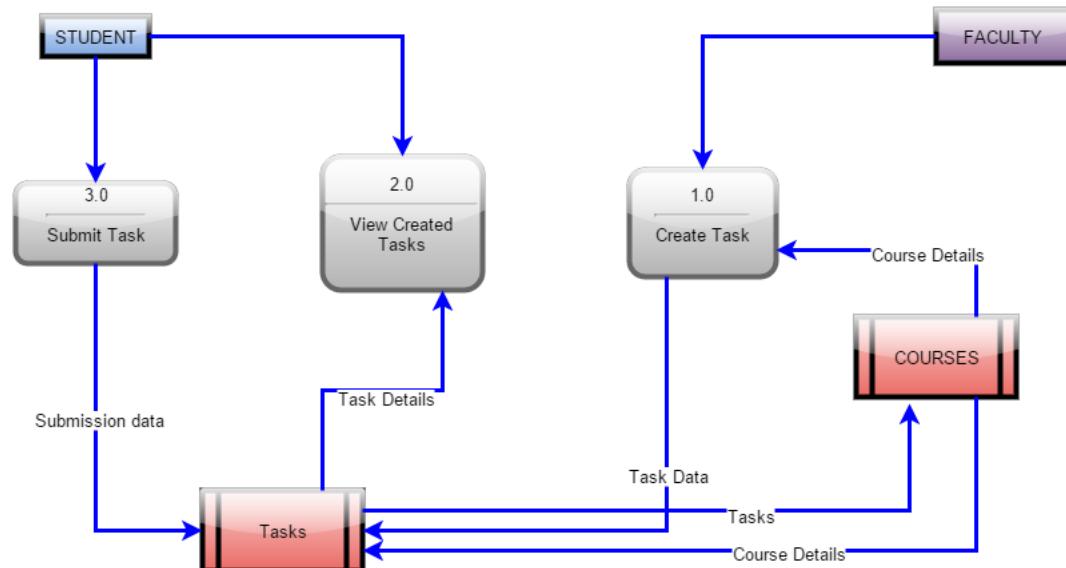
Algorithm:

- Enter Authentication credentials
- The application communicates with the server
- If credentials are true server returns UID
- UID serves as key for role based authentication system
- Provide UID for retrieving data

Tasks

Algorithm:

- User returns the UID key to server
- The server authenticates the UID key
- Session variable initiate
- User gets access permission for data retrieval
- Retrieved data can be updated by submitting with UID key
- UID key collapses after the retrieval



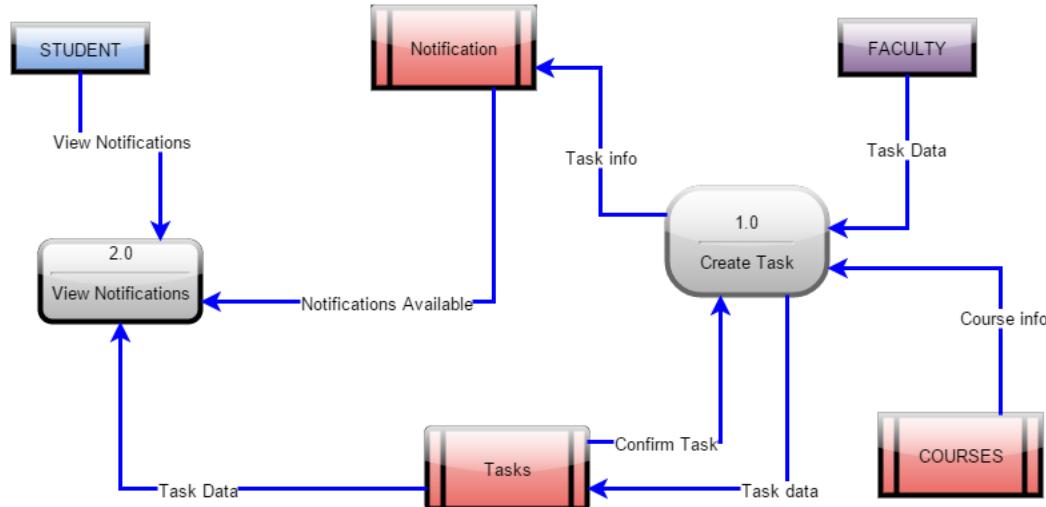
4.2.1.2 Data Flow for Task Module

Forum

Algorithm:

- User passes the UID key for notification retrieval
- The table associated with the authentic UID key are retrieved

- Data load into the columns of posts and notifications
- UID collapses



4.2.1.3 Data Flow for Notification Module

4.3 Implementation

The GUI (Graphical User Interface) is cardinal android interface as the current support is only for android application. The application features a light weight UI (User Interface) unlike the other existing applications like Moodle. The user interface typically accommodates principle interfaces embedded within the system. It does not rule out the scope for further enhancements or developments. The Menu and other dashboard features respond to accommodate any changes that need to be taken care of. The GUI consists of standard android components of interface. The application user simple interface to communicate with the user. This includes simple menu options and interface elements. The whole GUI component consists of very few interface elements. The objects returned by parse servers are handled by the interface elements so as to create an easy environment for the user. We have kept in our efforts to make the User interface as simple as possible.

On clicking the icon the application gets connected to the Parse servers. Continuous internet connection must be maintained as the Parse servers Provide MBaaS

cloud service Uninterrupted network connection must be maintained in order to retrieve or upload data to the Unicorn clusters. Even though in case of interrupted connection the interface allows the user for a re connection from time to time. There are no such session expiration as the application completely resides on the user machine. The application runs using a minimal memory footprint. The user interface is simply designed to meet the needs of the user. The application responds to the interface elements in a simple manner that android accommodates the environment for interface elements.

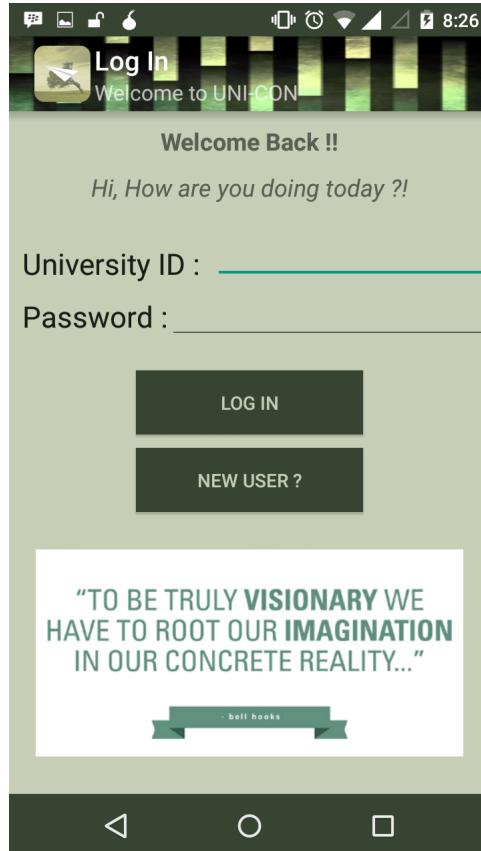
After launching the application the splash screen that appears on the screen can be used to display the logo of the college for additional customization. For now we just left the space blank without any customization.

This screen can be customized for the user interface according to the user community like school or college. This screen helps the interface as background connections like network establishment and connection with the servers take place. In order to conceal the background tasks or actions that gets triggered once the application starts we use the splash screen functionality. The splash screen functionality is part of android interface and can be modified for the user's needs and this is the initial screen that users see.



4.3.1 Splash Screen

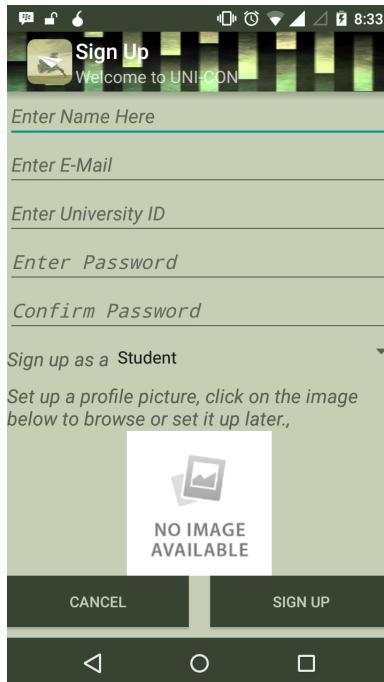
The next screen shows the Authentication module which consists of Login and Register options



4.3.2 Initial screen

The authentication screen gives the user the options to login. This is role based login and the connection with the parse servers and UNICON clusters initiates only after the authentication module. The authentication module consists of two parts

- Registration
- Login



4.3.3 Registration screen

The login and registration are a part of authentication module. The User has to register himself if he is a first time user and had to provide his login credentials in the login screen to access the services. For the registration Purpose the user has to enter valid mail address and University ID provided by the university. The same university will be login Id for the future communication and references. Once the user enters the credentials required he/she is registered user. The user can then login to avail the Service depending on their role.

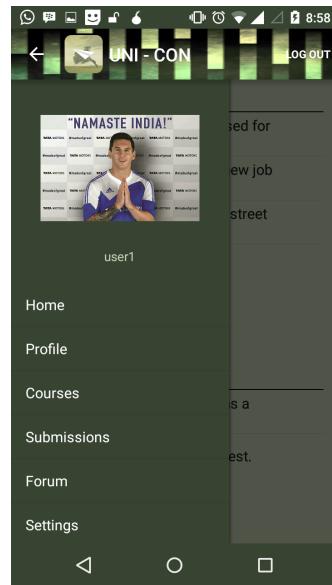
Since it is a role based authentication system the user has to supply the input of role as a student or as a faculty. This is very important in the authentication process as the entire system is role based authentication system and the permission to access or rewrite the data depends on the permissions obtained by the user. Once the user registers and is logged in he will be directed to the Home screen or dash board screen.

Once the user Logs in he can avail all the services from the application as a legitimate user. The Dash board consists of Basic notifications, a Home button and a Logout Button. All the University announcements and the Event Notifications will be visible on the home screen. The Home button gives access to the Navigation Drawer or aside menu that allows users to perform various functions.

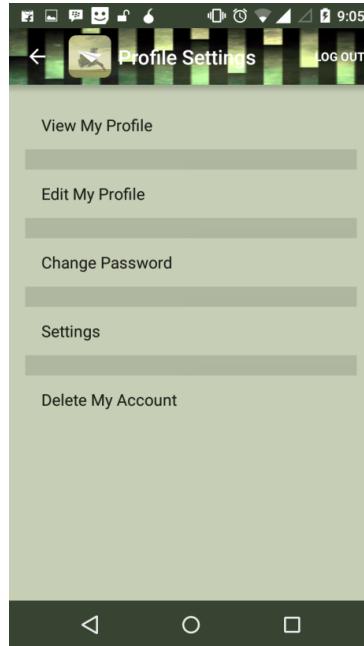


4.3.4 Dashboard screen

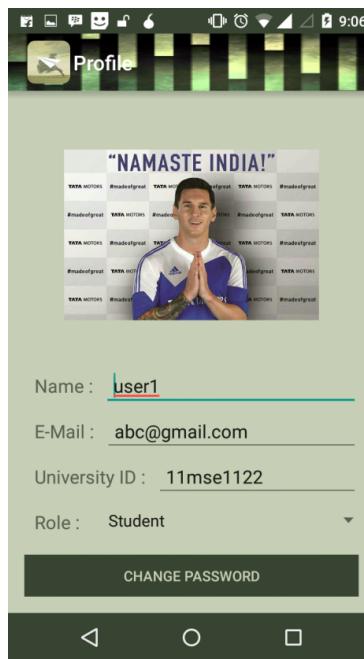
The navigation drawer enables user to easily get the menu and choose an option and then he can hide the Manu giving user the space for dashboard. The navigation drawer is a design element for interface provided by the android system



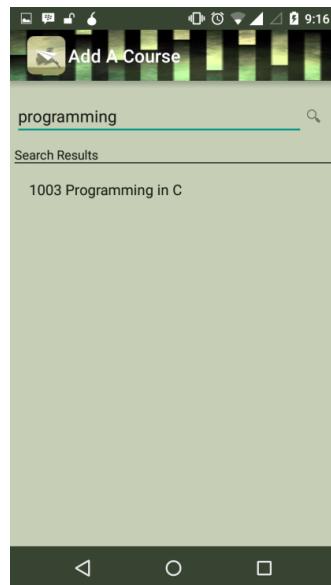
4.3.5 Navigation Menu



4.3.6 Profile Menu



4.3.7 Profile

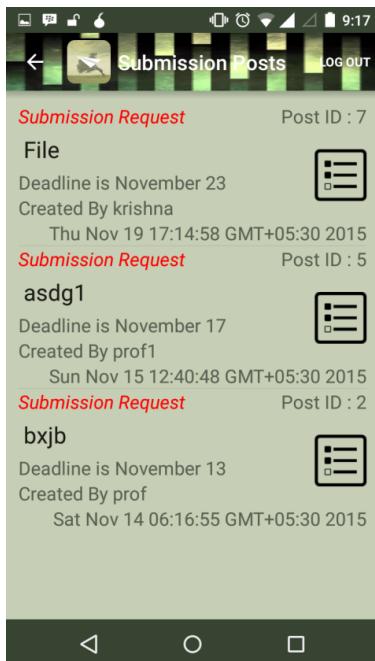


4.3.8 Search courses

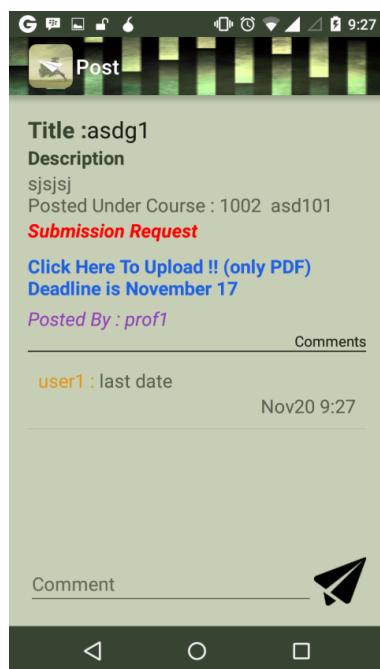


4.3.9 Registered course

The screens shows the student registering for a course. once he registers for a course he is a participant in the course.Only the participants in the course can view the posts that are presented for the course



4.3.10 Profile



4.3.11 Profile

4.4 Test Cases

Project Name : UNICON								
Pre Condition : Install the UNICON apk File and unintrerrupted Net Connection								
Test Scenario: LOGIN MODULE								
Sl.No	Test Case Name	TestCase ID	Test Case Description	Step Num	Step Description	Expected Result	Actual Result	Pass / Fail
1	Login	Login001	Validate UniversityID and Password	1	Enter UniversityID and password and click login button UserName:11MSE1027 Password: whamsy	Login should be successful	Login Successful	Pass
				2	Enter UniversityID and click login button UniversityID:11MSE1027	Login should not be successful	An error message "Enter password" should be displayed	Pass
				3	Enter Password and click login button Password:whamsy	Login should not be successful	An error message "Enter UniversityID" should be displayed	Pass
				4	Enter UniversityID and password and click login button UserName:11MSE1027 Password: asdf	Login should not be successful	An error message "Login Failed, Invalid UniversityID or password" should be displayed	Pass
Test Scenario: SIGNUP MODULE								
Sl.No	Test Case Name	TestCase ID	Test Case Description	Step Num	Step Description	Expected Result	Actual Result	Pass / Fail
2	SignUp	SignUp001	Registration of a new user	1	Enter Name, Email, UniversityID, Password, Confirm Password, SignUp as, Upload Pic and Click on SignUp button.	SignUp should be successful	SignUp Successful	Pass
				2	Enter Name, Email, UniversityID, Password, Confirm Password, Upload Pic and Click on SignUp button.	SignUp should not be successfu	An error message "Fields Should not be empty" should be displayed	Pass
				3	Enter Name, Email, UniversityID, Password, SignUp as, Upload Pic and Click on SignUp button.	SignUp should not be successfu	An error message "Fields Should not be empty" should be displayed	Pass
				4	Enter Name, Email, UniversityID, Confirm Password, SignUp as, Upload Pic and Click on SignUp button.	SignUp should not be successfu	An error message "Fields Should not be empty" should be displayed	Pass
				5	Enter Name, Email, Password, Confirm Password, SignUp as, Upload Pic and Click on SignUp button.	SignUp should not be successfu	An error message "Fields Should not be empty" should be displayed	Pass
				6	Enter Name, UniversityID, Password, Confirm Password, SignUp as, Upload Pic and Click on SignUp button.	SignUp should not be successfu	An error message "Fields Should not be empty" should be displayed	Pass
				7	Enter Email, UniversityID, Password, Confirm Password, SignUp as, Upload Pic and Click on SignUp button.	SignUp should not be successful	An error message "Fields Should not be empty" should be displayed	Pass

Test Scenario: COURSE MODULE								
Sl.No	Test Case Name	TestCase ID	Test Case Description	Step Num	Step Description	Expected Result	Actual Result	Pass/ Fail
3	Courses	Course001	Add a Course	1	Enter Course Name, Description, Class Time, Class Days, Class Address ,Generate unique course code/num and click Create Course	Course should be added	Course added	Pass
				2	Enter Course Name, Description, Class Time, Class Days, Class Address , and click Create Course	Course should not be added	An error message "Filed's mustn't be empty" should be displayed	Pass
				3	Enter Course Name, Description, Class Time, Class Days, Class Address ,Generate unique course code/num and click Create Course. Class Time: 11.00 To 11.00	Course should not be added	An error message "Invalid Timings" should be displayed	Pass
				4	Enter Description,Class Time, Class Days, Class Address , and click Create Course	Course should not be added	An error message "Filed's mustn't be empty" should be displayed	Pass
				5	Enter Course Name, Description, Class Time, Class Days,Generate unique course code/num and click Create Course	Course should not be added	An error message "Filed's mustn't be empty" should be displayed	Pass
				6	Enter Course Name, Description, Class Time, Class Days, Class Address ,Generate unique course code/num and click Create Course. Class Time: 11.00 To 10.00	Course should not be added	An error message "Invalid Timings" should be displayed	Pass
		Course002	Approval of course	1	Click on Add Student to course	Request should be Accepted	Request Accepted	Pass
		Course003	Register for a Course	1	Search for course using course name and click Yes to register Course:Requirements	Registration Pending	Registration Pending	Pass
				2	Search for course using course code Course code:1003	Cannot register	No Matching Results	Pass
Test Scenario: PROFILE MODULE								
Sl.No	Test Case Name	TestCase ID	Test Case Description	Step Num	Step Description	Expected Result	Actual Result	Pass/ Fail
4	Profile	Profile001	Change Password	1	Enter old password,new password and confirm password and click save changes OldPassword:12345 New password:whamsy confirm password:whamsy	Password should be updated	Password update successful	Pass
				2	Enter old password,new password and confirm password and click save changes Old Password:123 New password:whamsy confirm password:whamsy	Password should not be updated	An error message "Incorrect old password" should be displayed	Pass
				3	Enter old password,new password and confirm password and click save changes OldPassword:12345 confirm password:whamsy	Password should not be updated	An error message "Filed's mustn't be empty" should be displayed	Pass
				4	Enter old password,new password and confirm password and click save changes OldPassword:12345	Password should not be updated	An error message "Filed's mustn't be empty" should be displayed	Pass
		Profile002	Delete Account	1	New password:whamsy			
				2	Click on delete my account and select YES	Account should be deleted	Account Deleted	Pass
		Profile003	Edit Profile	1	Click on delete my account and select NO	Account not Deleted	No change can be seen	Pass
				2	Change existing Name and Click save Changes	Changes should be updated	ChangesUpdated. LogIN again	Pass
				2	Change existing Email and Click save Changes	Changes should be updated	ChangesUpdated. LogIN again	Pass

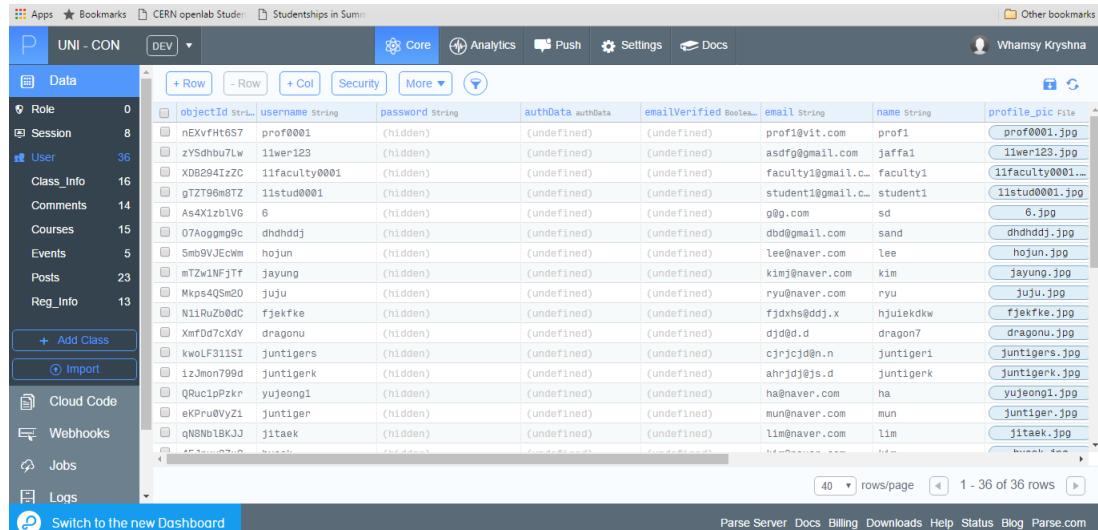
TestCase Scenario: TASK MODULE								
Sl.No	Test Case Name	TestCase ID	Test Case Description	Step Num	Step Description	Expected Result	Actual Result	Pass/ Fail
5	Task	Task001	Create Task	1	Enter Assignment Name,Time,Task ,Class and click on create Task	Task should be Created	Task Created	Pass
				2	Enter Time,Task ,Class and click on create Task	Task should not be Created	An error message "Filed's mustn't be empty" should be displayed	Pass
				3	Enter Assignment Name, Task ,Class and click on create Task	Task should not be Created	An error message "Filed's mustn't be empty" should be displayed	Pass
				4	Enter Assignment Name,Time,Class and click on create Task	Task should not be Created	An error message "Filed's mustn't be empty" should be displayed	Pass
				5	Enter Assignment Name,Time,Task and click on create Task	Task should not be Created	An error message "Filed's mustn't be empty" should be displayed	Pass
		Task002	Submit Task	1	Enter Assignment Name,upload file and submit	Task should be Submitted	Task Submitted	Pass
				1	Edit Assignment Name and Click on Save Changes	Task should be Modified	Task Modified	Pass
				2	Edit Time and Click on Save Changes	Task should be Modified	Task Modified	Pass
				3	Edit Task and Click on Save Changes	Task should be Modified	Task Modified	Pass
				4	Edit Class and Click on Save Changes	Task should be Modified	Task Modified	Pass
		Task004	View Task	1	Click on the task to view it	Task should be opened	Task Opened	Pass
Test Scenario: FORUM MODULE								
Sl.No	Test Case Name	TestCase ID	Test Case Description	Step Num	Step Description	Expected Result	Actual Result	Pass/ Fail
6	Forum	Forum001	View Notification	1	Click on the notification to view it	Notification should be opened	Notification viewed	Pass
				1	Enter Title,Description and select Category to create Notification	Notification should be created	Notification created	Pass
				2	Enter Title,Description to crea	Notification should not be created	An error message "Filed's mustn't be empty" should be displayed	Pass
				3	Enter Title and select Category to create Notification	Notification should not be created	An error message "Filed's mustn't be empty" should be displayed	Pass
				4	Enter Description and select Category to create Notification	Notification should be created	Notification created	Pass

Chapter 5

Results and Discussions

5.1 Results

All the intended modules of the application are working properly. Initially the registration and log in module is working as per the intended functionality. As the application stores all the data in the Parse cloud server the entries are phenomenally checked in the database. They are consistent without any errors.



The screenshot shows the Parse Cloud Dashboard with the 'Data' tab selected. The 'Users' class is displayed in a table format. The columns are: objectId, username, password, authData, emailVerified, email, name, and profilePic. There are 36 rows of data, each representing a user account. The 'profilePic' column shows small thumbnail images for each user. The table includes standard data entry controls like '+ Row', '- Row', '+ Col', and 'More'.

	objectId	username	password	authData	emailVerified	email	name	profilePic
0	nExvfHtbS7	prof0001	(hidden)	(undefined)	(undefined)	prof1@vit.com	prof1	
8	zYSdnbu7Lw	11wer123	(hidden)	(undefined)	(undefined)	asdf@gmail.com	jaffa1	
16	XDB2941zZC	11faculty0001	(hidden)	(undefined)	(undefined)	faculty1@gmail.c...	faculty0001...	
14	gTZT96mBTZ	11stud0001	(hidden)	(undefined)	(undefined)	student1@gmail.c...	student1	
15	As4X1zbLVG	6	(hidden)	(undefined)	(undefined)	g@q.com	sd	
5	07agogmp9c	dhdhdddj	(hidden)	(undefined)	(undefined)	dbd@gmail.com	sand	
23	Smb9VJECim	hojun	(hidden)	(undefined)	(undefined)	lee@naver.com	lee	
13	mTzW1NFjTf	jayung	(hidden)	(undefined)	(undefined)	kimj@naver.com	kim	
15	Mkps40Sm20	juju	(hidden)	(undefined)	(undefined)	ryu@naver.com	ryu	
1	N1iRuZ0@dc	fjekfke	(hidden)	(undefined)	(undefined)	fjdxhs@ddj.x	hjuekdkw	
0	XmfDd7cXdy	dragonu	(hidden)	(undefined)	(undefined)	djd@dd.d	dragon?	
1	kwOLF311SI	juntigers	(hidden)	(undefined)	(undefined)	cjrjcjd@n.n	juntigeri	
0	1z3mon799d	juntigerk	(hidden)	(undefined)	(undefined)	ahnrdje9s.d	juntigerk	
0	QRuc1pZkr	yujeong1	(hidden)	(undefined)	(undefined)	ha@naver.com	ha	
0	eKPrU0VyZl	juntiger	(hidden)	(undefined)	(undefined)	mun@naver.com	mun	
0	qNBNo1BKJJ	jitaek	(hidden)	(undefined)	(undefined)	lim@naver.com	lim	
0	4F3auuQ7Oo	hjuekdkw	(hidden)	(undefined)	(undefined)	hjuekdkw@n.n	hjuekdkw	

5.1.1 Users Database

After log-in the student is able to do the intended works like profile management , join a course, submit a assignment, create post etc., All the functionality that are

intended are working totally.

The teacher or the faculty is able to log-in successfully. He is able to create posts, create submission requests and add students to the course successfully. all the entries are being taken into the parse cloud servers correctly.

	objectId	class_info	courseCode	courseName	description	prof	createdAt	updatedAt
0	qe2oQDwIWd	15CaBR2RjR	1016	core11	cuda tech	nExvFhtBS7	Apr 07, 2016, 05:29	Apr 07, 2016, 05:29
8	z2X0g1Q7YB	jXFQDSILGA	1015	Machine Learning	Ample basics to ...	XDB2941zZC	Feb 25, 2016, 02:55	Feb 25, 2016, 02:55
16	uuBotKUuhz	IYbA5mvygN	1014	Virtual Reality	Basics of Virtua...	XDB2941zZC	Feb 25, 2016, 02:54	Feb 25, 2016, 02:54
14	HnCGwtzQl6	HKzPKzkh04	1013	by dj	stud	A54X1zbLVG	Feb 10, 2016, 21:40	Feb 10, 2016, 21:40
15	B4ftJtdKxx	MX13cx2V1b	1012	mining	ㄱ ㄷ ㄱ ㄷ ㅂ ㅅ ㅅ ㄷ	mtZw1NFjTf	Dec 16, 2015, 19:08	Dec 16, 2015, 19:08
5	iu08km2PG0	oDqFWFMsvN	1011	오쌤	rufk	kwolF511SI	Dec 16, 2015, 14:52	Dec 16, 2015, 14:52
5	qtJamc0dM1	D5vy8dknZc	1010	data	한국어	eKPrubVyzI	Dec 16, 2015, 14:20	Dec 16, 2015, 14:20
23	sHNyvcCvNn	X4oZoCu10t	1009	mobile	모바일입니다	eKPrubVyzI	Dec 16, 2015, 14:13	Dec 16, 2015, 14:13
13	2xL0wE3eZ0	bkmnDFeyLU	1008	mobile	mobile	PGaryUEfU8	Dec 16, 2015, 13:01	Dec 16, 2015, 13:01
	WHQE7JM044	h86mZQnhPQ	1007	aaa	마모임	pdYYX0HbmA	Dec 16, 2015, 12:28	Dec 16, 2015, 12:28
	fHUcktk1dEe	JUVuf00GU7	1006	date	미버娼	qJxxxx3aRj	Dec 16, 2015, 12:24	Dec 16, 2015, 12:24
	IKty41RSN9	XswbGvFhsF	1005	asdf	asff	3rcwd5PUb	Nov 21, 2015, 05:00	Nov 21, 2015, 05:00
	ZqQaafKQ6z	GP8WZtBvxW	1004	Physics	physics	3rcwd5PUb	Nov 20, 2015, 04:45	Nov 20, 2015, 04:45
	KJxpjnRirc	MolmaKdf6	1002	asd101	asdfg	jH0Hxc00nB	Nov 15, 2015, 07:09	Nov 15, 2015, 07:09
	ho1SNxx1QK	BCEKKK2cd7	1001	asfdf	really??	XNJm07uf6	Nov 14, 2015, 00:23	Nov 21, 2015, 02:33

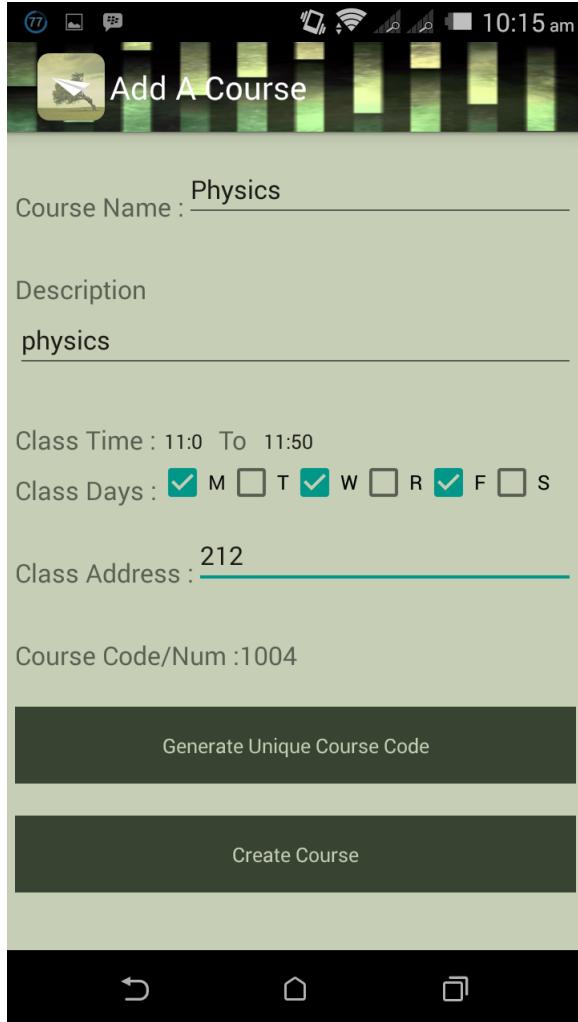
5.1.2 Users Database

Announcements like cancellation of class being posted by the faculty by selecting the category as Announcement, with which student can be able to get notified are working correctly as per requirement. Students will be provided with a link to upload their file. By clicking on the Click To Upload , student can upload their file in the form of a pdf and submit it. This module is properly working. The faculty can post various updates regarding class or any other events by selecting the course and creating the post in that particular subject. In the above image the faculty is informing about the guest lecture and the category is forum thread. A forum thread is created with which all the students registered under that subject can view the post. All the intended functionality of the core functionality are functioning as per the requirement. The UI is currently kept as simple as possible for the users ease of access.

The application on the whole is functionally well built to help the student and faculty in fulfilling its requirement that it is intended for. The application is also performing well at its cluster level servers.

5.2 Performance Analysis

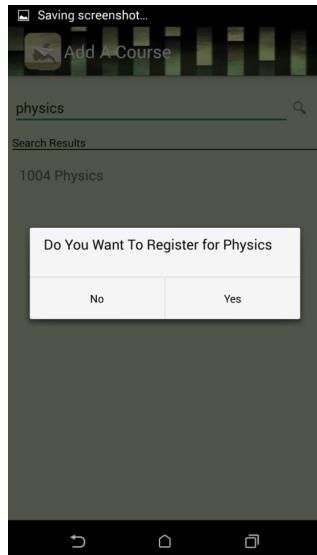
The application performance is concentrated in the certain modules of the unicorn application. The performance is determined in the following screens



5.2.1 Creating a course

The faculty screens of adding a course is completely successful. The ease of operation and aptness in the operation determines the resourcefulness of the operation implemented. This operational functionality is one key performance parameter for faculty login. After adding courses by the faculty students will be able to login to their accounts and register them selves for the courses added by the faculty. The

student can search for the course and can register himself for the course. After the approval from the faculty the student will be able to view all the posts and submission requests from that particular class.

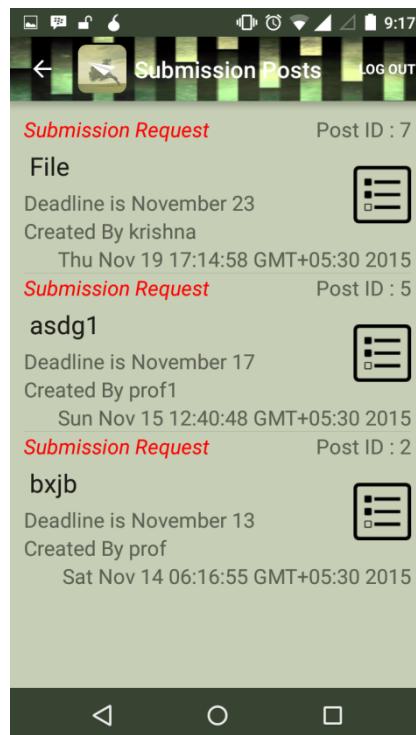


5.2.2 Register a course



5.2.3 Registered course

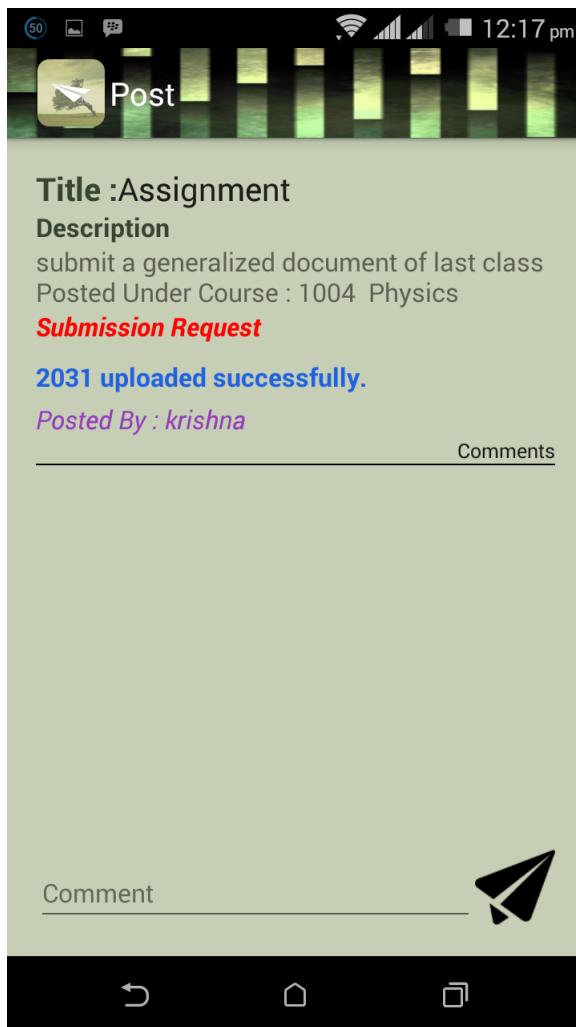
This functional performance is one of the key area in the implementation. This is absolutely working. Hence key areas are functioning to the core with the ease of access. This one key functional factor in the application contributing to performance All the key areas are totally functional to the core. Key area are extremely tested to ensure best performance at every stage and multitude . The application performance is being affected by several factors like server speed, net connection speed and the processing capability of the mobile device. In-spite of all these facts the application is completely secure and authenticated in usage The submission of materials is currently supported to two format of JPEG and PDF. This is the restriction within the mobile device and this functionality is working properly The resulted oriented environment can only be measured in terms of functionality as speed and other factors are determined by the environmental issues There are performance oriented authorizations that the application is processing very fast in terms of performance. Thus the application is totally disruptive in terms of functionality



5.2.4 Course Page

Other features of the application are also functional to the core providing access to lot information from and to the user Some of the functional screen shots that

determine the functionality are:



5.2.5 Course Page

The uploading and downloading of the document or material submission is fully functional and is functioning as per the design and requirements. These key features are helping in the total functionality of the application. Performance wise the application is functioning to the core.

Chapter 6

Conclusion and Future Work

The application UNICON is mere enhanced version of the existing systems. It has the advance features that the current applications are lacking. At the same time UNICON has its own implications and limitations. The Application UNICON can be used for supplementary purposes along with the other Existing Learning Management systems but it cannot be a full length standalone system that can support the knowledge or content management system. The application although performs at its best there are many number of future enhance means that can be done with the system further. Owing to performance wise solutions of the application the performance speed can be farther made to contain the application at its best performance. Certain futures like portability with other Learning management systems like Moodle can be done. The UNICON application can entirely be provided as a service to the users in the form of APIs. The application is currently limited to Android environment. This service can further be extended to other environment like windows and IOS. The application currently addresses many of the issues. But certain enhancements like Push notifications, deployment, Universal customization etc. can also be made available depending on the user's requirements. The application on the whole bypasses many complex issues that the current systems addresses in order to balance the load on the system. This can be enhanced as well. The Application can be enhanced in numerous ways leaving the development of application to the developer's imagination. The application also leaves the possibility and limitations of the service to be an unanswered question. The application can be made robust to any level irrespective of the environment and handlers to support various functionality. UNICON provide the basic platform for any application to be developed or service to be developed on its foundation headers.

Appendices

Backend as a Service, or BaaS (sometimes referred to as mBaaS) is best described by a tech analyst who refers to it as turn-on infrastructure for mobile and web apps. Basically, its a cloud computing category that's comprised of companies that make it easier for developers to setup, use and operate a cloud backend for their mobile, tablet and web apps.

MBaaS providers tend to fall into one of two categories: consumer BaaS or enterprise BaaS. The former focuses largely on lighter-weight brand apps (and games), whereas the latter centers on mobilizing sensitive, business-critical data from enterprise systems. As a whole, BaaS providers are disrupting the on-premise Mobile Enterprise Application Platform, or MEAP, category, while providing a lot more turn-key functionality for your mobile strategy than traditional API management and Platform as a Service vendors.