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# **Software Requirements Specification**

**for**  
**PESU App**

**Version 1.0 approved**

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**6 February 2021**

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# Revision History

Name	Date	Reason For Changes	Version

# 1. Introduction

## 1.1 Purpose

The main purpose of this document is to collect and analyse the ideas and define the system for the PESU app intended for the use of students, parents and teaching staff of PES University. This is the version 1.0 of this application.

## 1.2 Intended Audience

This document is intended for developers, project managers, testers and documentation writers who are involved in the making of this app. This document is a base and will act as a guide for further developments.

## 1.3 Product Scope

This software system will be an application for PES University wishing to manage their academic needs. The main objective is to design and develop a system which will help the students with their academic needs. It will be a one stop application for the faculty members and students of the university for convenient access to all the requirements.

Features provided for Teachers are: To upload attendance and results, Uploading of assignments, viewing and editing of profile and uploading of course content.

Features provided for Students are: View and edit profile, view course content, view timetable, assignment submissions, view ISA results, view ESA results, view seating info for exams, watch recorded class videos, register for backlogs, view placement information, view calendar, view attendance, access various web pages such as library, transport, PESU Forums, PESU IO, CIE, bootstrap, emergency, clubs and activities, PRMS, Info, Links, Directory and Maps, view help page, and receive notifications about the happenings in college.

Features provided for Parents are: View attendance, view ISA results, view ESA results, view profile, view placement information of their ward.

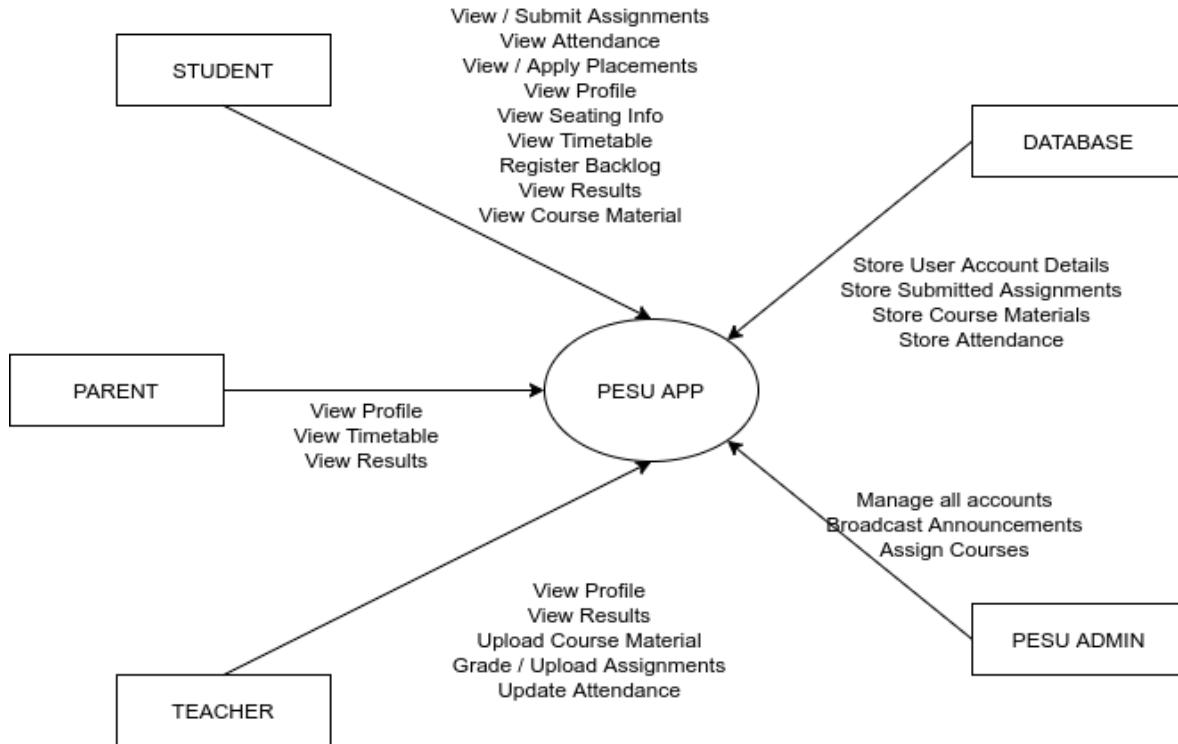
## 1.4 References

For features- [www.pesuacademy.com](http://www.pesuacademy.com)

Student portal-[Student Portal Guide for Students](#)

## 2. Overall Description

### 2.1 Product Perspective



PESU App is meant to serve as a common platform where management of everyday academic tasks can be carried out conveniently. The goal of PESU App is to develop a complete application for easier to use GUI and more pulchritudinous application for PES University.

### 2.2 Product Functions

- Login/Authentication Page
- View Profile
- Edit Profile
- View Attendance
- Edit Attendance (for professors only)
- View ISA Results
- View ESA Results
- View and upload Assignments
- View Timetable
- View Recorded videos
- View Calendar
- View Announcements

- View Seating Information
- View Placement Information
- Register for Backlogs

## 2.3 User Classes and Characteristics

“Student”, “Teacher”, “Parent”, “PESU Server” and “Admin” are the user classes for the given application.

### 2.3.1 Student

Students are the primary consumers of an academic portal. They are accessing information posted by professors, uploading assignments and project files, and discussing concepts.

### 2.3.2 Teacher

Professors are the primary content administrators of an academic portal. They are uploading files, links, and multimedia, and grading assignments in addition to creating new places for students to discuss and collaborate.

### 2.3.3 Parent

Characteristics of Parent class are:

Parents are the secondary consumers of an academic portal. They access some information posted by the teachers such as results, placements information and attendance. They can also view their ward's profile.

### 2.3.4 PESU Server

The PESU Server holds the entire backend for the application. This includes various databases such as student records, course content, attendance records, et cetera.

### 2.3.5 Admin

Characteristics of Admin class are:

System administrators are primarily responsible for maintaining the academic portal. They contribute minimally to the courses themselves, but spend more time modifying the system's configuration and making appropriate updates. Password recoveries can be managed by the admins for reset to recover accounts.

## 2.4 Operating Environment

This application will run on any mobile computer systems that run either iOS 8.0 or Android 6.0 and above. It has no other software or hardware requirements.

## 2.5 Design and Implementation Constraints

This project has to be implemented under the following constraints:

Hardware limitations for the servers in terms of availability and cost for hosting and opening for the use of the general public.

- There must be a focus on the security during the sending of the credentials so that it can be viewed only by the user and no one else

- The potential number of users can increase over time and scalability and cost of storage could act as a major constraint
- The application must be developed in free open source programming languages and databases
- The maintenance needed for the software needs to be minimized and the application should be simplified

## 2.6 Assumptions and Dependencies

The dependencies for the project are:

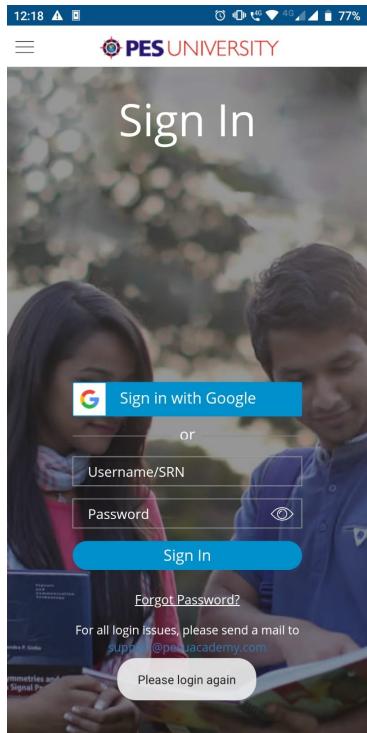
- Open source languages like JavaScript,HTML,CSS and respective frameworks as per implementation.
- Database applications
- Browser Applications for themes etc.

# 3. External Interface Requirements

## 3.1 User Interfaces

- Login / Signup Page
- Home Page containing the latest announcements and notifications
- Notifications Page containing all the notifications
- Announcements Page containing announcements broadcasted by the university
- My Courses Page containing the list of courses taken by the student
- Time Table Page containing the academic timetable of the student
- Attendance Page containing attendance details of the student
- Assignments Page contains the assignments details of all courses opted by the student
- ISA and ESA Results Page containing the results of the students
- Seating Info Page containing the seating allocations of the student for a given test
- Calendar Page containing the academic calendar of the University
- Video Archives containing lecture videos

### 3.1.1 Login /Signup Page



### 3.1.2 Home Page

**IDEA FOR INDIA**

The participants have to come up with problem solving IDEAS and suggestions which will help INDIA prosper to great heights.

The commerce club Event on the coming Friday (5th Feb 2021) at HN campus - Shevadi club event.

**Important Announcements (4/4)**

- Feb 2021 ISA-1 TIME TABLE FOR M. Com, B. Pharm, B.Tech & B.Arch I SEM (RR, HN an... Date: 08-Feb-2021)

**Navigation Bar:**

- Home
- Courses
- ISA Results
- Attendance
- Notifications

### 3.1.3 Notifications Page

The screenshot shows a mobile application interface for notifications. At the top, there is a blue header bar with the text "Notifications". Below the header, there is a list of notifications, each enclosed in a light gray box. The notifications are as follows:

- PESU - Announcement  
From the VC's desk - Bulletin #15, October 27, 2020  
27-10-2020,20:24:09
- PESU - Announcement  
Update on PESU Online classes - Microsoft Teams - Sign in Information.  
13-08-2020,20:38:41
- PESU - Announcement  
From the VC's desk Bulletin #10, August 9, 2020  
09-08-2020,14:30:03
- PESU - Announcement  
Application for PDC  
28-07-2020,15:57:11
- PESU - Announcement  
From the VC's desk, Bulletin #8, July 10, 2020  
10-07-2020,20:50:46
- PESU - Announcement  
ESA Notification : July 2020 for Graduating batches  
10-07-2020,15:56:56
- PESU - Announcement  
Guest Lecture Live session - Future Trends and Importance of Computer ArchitectureA in Computer Science  
11-04-2020,19:05:40

At the bottom of the screen, there is a navigation bar with five icons: Home, Courses, ISA Results, Attendance, and Notifications. The "Notifications" icon is highlighted.

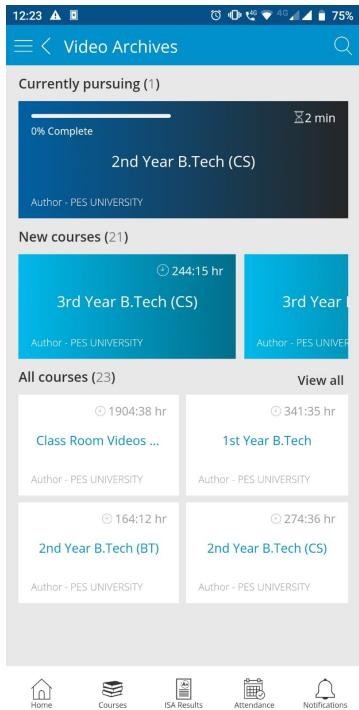
### 3.1.4 Announcements Page

The screenshot shows a mobile application interface for announcements. At the top, there is a blue header bar with the text "Announcements". Below the header, there is a section titled "IMPORTANT ANNOUNCEMENTS (17)". Below this section, there is a list of announcements, each with a small thumbnail image, the announcement title, the date, and a "View" button. The announcements are as follows:

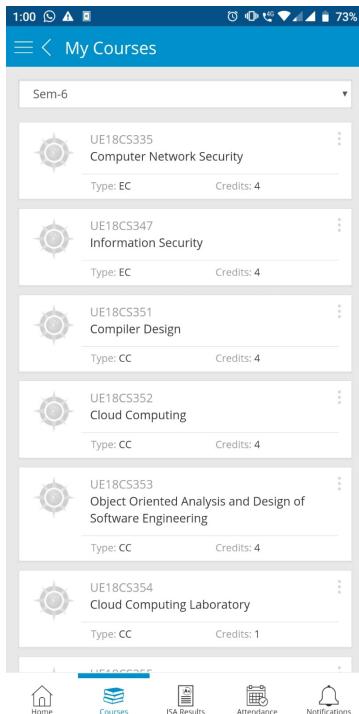
- Spacejam - our first ever hackathon- By HackerSpace  
Date: 05-Feb-2021
- VOCAL BAND FESTIVAL  
Date: 04-Feb-2021
- PESU IO is Hiring  
Date: 04-Feb-2021
- "vLabs" : A Two-Day Workshop on Kubernetes, Docker, and VMware's very own, Tanzu!  
Date: 04-Feb-2021
- Ph.D/M.Tech by Research Course work Draft Time Table  
Date: 04-Feb-2021
- The Quotient Quiz Club calls out all DC fans to take part in the DC Quiz. Tune into QQC's official Instagram handle on Saturday, 6th February 2021 at 6:00 PM to participate!  
Date: 03-Feb-2021
- The commerce club Event for the coming Friday (5th Feb 2021) at HN campus - Shevadi club event  
Date: 03-Feb-2021
- PESU IO SME Recruitment Notification  
Date: 02-Feb-2021

At the bottom of the screen, there is a navigation bar with five icons: Home, Courses, ISA Results, Attendance, and Notifications. The "Notifications" icon is highlighted.

### 3.1.5 My Courses Page



### 3.1.6 Attendance Page



### 3.1.7 ISA Results Page

The screenshot shows a mobile application interface for tracking student attendance. At the top, there is a header bar with the time (1:04), battery level (73%), and signal strength. Below the header is a navigation bar with three icons: a menu icon, a back arrow, and the text "Attendance". A dropdown menu is open, showing the option "Sem-6". The main content area is a table titled "SUBJECT ATTENDANCE %". The table lists several courses with their respective attendance percentages:

SUBJECT	ATTENDANCE	%
UE18CS335 Computer Network Security	NA	NA >
UE18CS347 Information Security	NA	NA >
UE18CS351 Compiler Design	NA	NA >
UE18CS352 Cloud Computing	NA	NA >
UE18CS353 Object Oriented Analysis and Design of Software Engineering	NA	NA >
UE18CS354 Cloud Computing Laboratory	NA	NA >
UE18CS355 Object Oriented Analysis and Design of Software Engineering Laboratory	NA	NA >
UE18CS356 Machine Learning Laboratory	NA	NA >

At the bottom of the screen, there is a navigation bar with five icons: Home, Courses, ISA Results (selected), Attendance, and Notifications.

### 3.1.8 Video Archives

The screenshot shows a mobile application interface for managing video content. At the top, there is a header bar with the time (12:23), battery level (75%), and signal strength. Below the header is a navigation bar with three icons: a menu icon, a back arrow, and the text "Video Archives". A search bar is located above the main content area. The main content area is divided into sections:

- Currently pursuing (1):** Shows a video thumbnail for "2nd Year B.Tech (CS)" with a progress bar at 0% Complete and a duration of 2 min.
- New courses (21):** Shows two video thumbnails: "3rd Year B.Tech (CS)" with a duration of 244:15 hr and "3rd Year I" with a duration of 341:35 hr. Both are authored by PES UNIVERSITY.
- All courses (23):** Shows a grid of video thumbnails for various courses:
  - "Class Room Videos ..." with a duration of 1904:38 hr, authored by PES UNIVERSITY.
  - "1st Year B.Tech" with a duration of 274:36 hr, authored by PES UNIVERSITY.
  - "2nd Year B.Tech (BT)" with a duration of 164:12 hr, authored by PES UNIVERSITY.
  - "2nd Year B.Tech (CS)" with a duration of 274:36 hr, authored by PES UNIVERSITY.

At the bottom of the screen, there is a navigation bar with five icons: Home, Courses, ISA Results, Attendance, and Notifications.

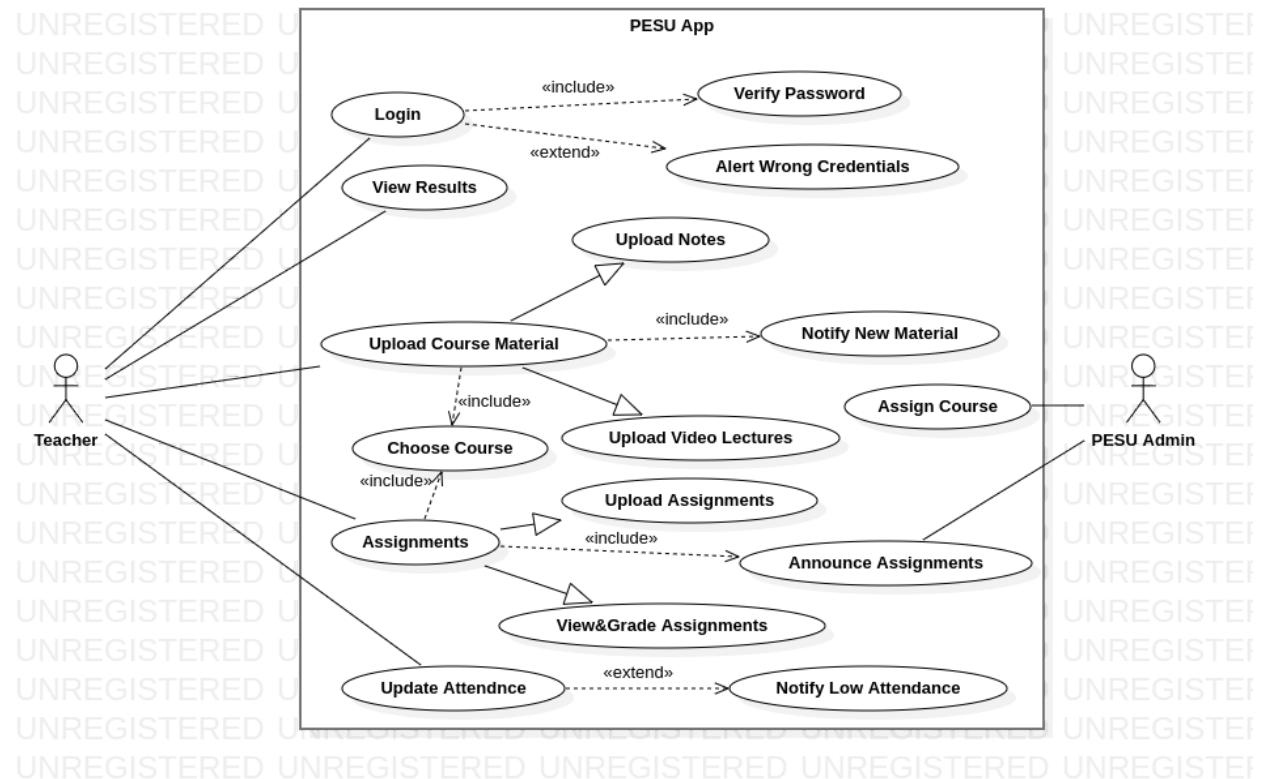
## 3.2 Software Interfaces

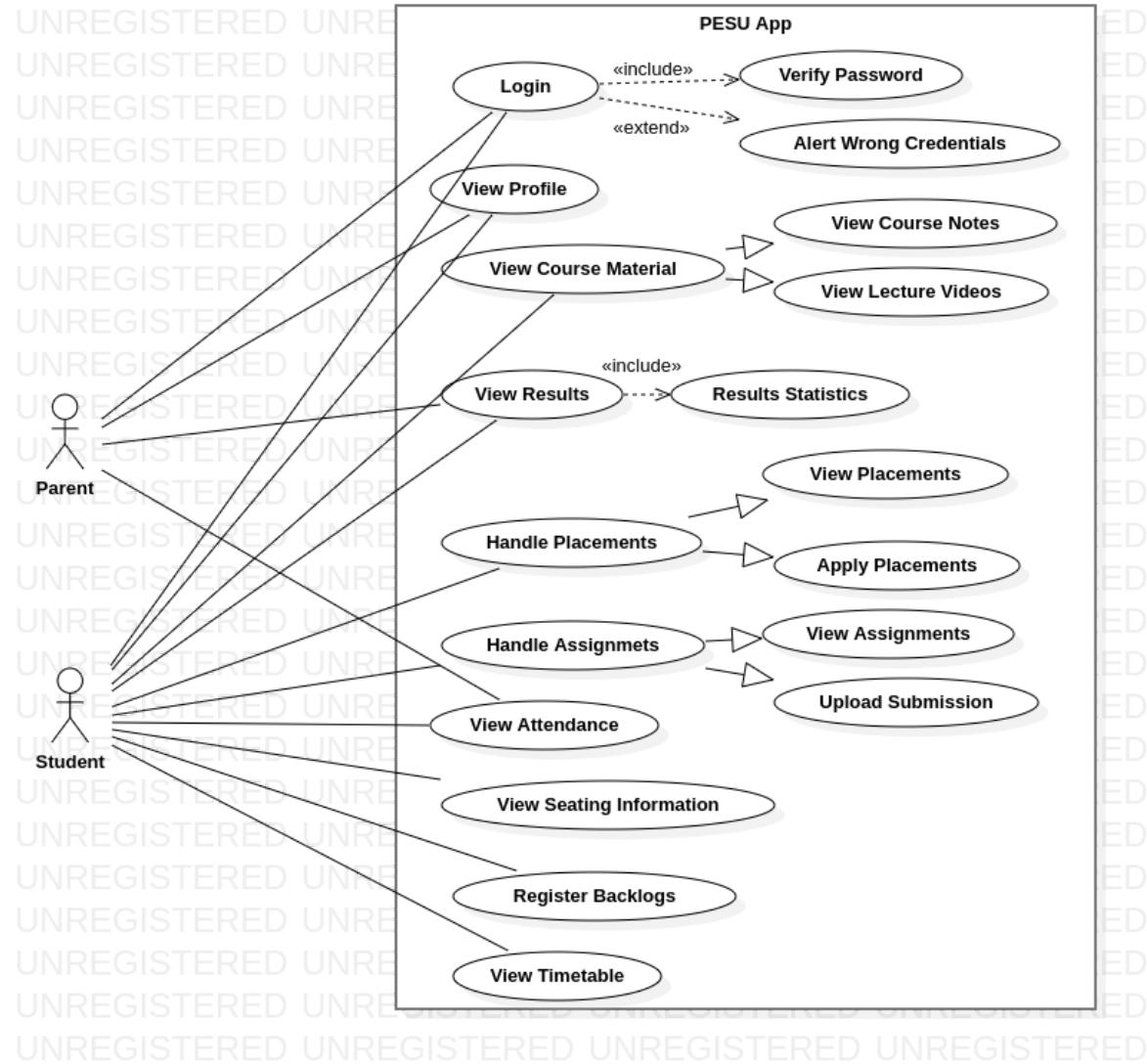
The user can login to the application through the login credentials given to him/her after registration into the university. Signing in to the application through the client's google account is also possible as the google id provided to the university is linked to the students account.

## 3.3 Communications Interfaces

The application will use HTTP(S) protocol for communication over the internet and intranet communication will be through TCP/IP protocol suit. The application uses JSON as data-interchange format as it is simple and versatile.

# 4. Analysis Models





## 5. System Features

The most important features of the PESU Application are explained below:

### 5.1 Login/Authentication

#### 5.1.1 Description and Priority

The login page for the application will be of high priority because unless the user logs in he won't be able to access the contents of the application.

#### 5.1.2 Stimulus/Response Sequences

If login fails, go back to the same page and tell that login failed and request details again. If successful, go to the home page and the data will be stored in the

database. Alternate options for login would be through google account and instead of using srn it will be replaced by the corresponding mail id.

#### 5.1.3 Functional Requirements

When the user gives the correct srn and password he will be successfully logged in to the home page and if the user gives the wrong credentials the user would be asked to re login.

REQ-1: SRN given to each user must be unique.

### 5.2 Home Page

#### 5.2.1 Description and Priority

The home page for the application will be of high priority because it shows the user the contents of the application and also he gets to view all the features of the application.

#### 5.2.2 Stimulus/Response Sequences

The page has a hamburger menu on the left hand side where you can view all the functions of the application. Each page has its own unique characteristic.

#### 5.2.3 Functional Requirements

When the user gives the correct srn and password he will be successfully logged in to the home page and if the user gives the wrong credentials the user would be asked to re login

### 5.3 My Courses/ Course Content

#### 5.3.1 Description and Priority

The course page for the application will be of high priority because it shows the user the subjects he has taken for the particular year and also he gets all the course information, details and detailed view of what is happening in each subject.

#### 5.3.2 Stimulus/Response Sequences

The teacher uploads the contents of each subject and also uploads lectures and slides corresponding to each unit of each subject.

There is a course objective, the outcomes of the course, question banks, slides for each unit and also video recordings of each unit..

#### 5.3.3 Functional Requirements

REQ\_3: Content must be uploaded on a regular basis as it is important for the user to get the contents of the course.

### 5.4 Results

#### 5.4.1 Description and Priority

The results page for the application will be of high priority because it shows the user his/her results for each subject for all the years. It also has graphs to indicate where the user stands among the rest in terms of his/her grade.

#### 5.4.2 Stimulus/Response Sequences

The teacher must upload the marks of each subject and also upload it on the corresponding page for the user to view the results that they have obtained by writing tests. Two sections are present in this page

1.ISA- internals/unit tests marks will be provided in this section with a graph and also there will be a class average score as well where the user can see where he stands in class.

2.ESA-End semester exam marks will be provided in this section and also the current cgpa the user sits on and a graph will also be there to show whether the user has improved over the year or has fallen down the year.

#### 5.3.3 Functional Requirements

REQ\_4: Marks must be uploaded as it is important for the user .

REQ\_4\_a: A send button must be there for the teacher to upload the marks

### 5.5 Assignments

#### 5.5.1 Description and Priority

The assignments page for the application will be of high priority because it tells the user to submit the assignment for each subject on time.

#### 5.5.2 Stimulus/Response Sequences

The teacher must upload the assignments page for the user to know what are the contents that must be present in the assignment and the deadline date for submitting the assignments.

#### 5.5.3 Functional Requirements

REQ\_5: Start Date and deadline date are a must for timely submission of assignments.

REQ\_5\_a:There must a send button for the teacher so that he/she can upload the assignment

REQ\_5\_b:There must be a view button to view assignments and there must be a send button for the user to view and send the assignment.

### 5.6 Profile

#### 5.6.1 Description and Priority

The profile page for the application will be of low priority. This page consists of the user's information.

#### 5.6.2 Stimulus/Response Sequences

Once the user is on the homepage he will be able to go to the profile page which would be present on the hamburger menu. Once the user clicks on the profile page the user

gets a detailed information about himself , his address location , phone number, 10th and 12th marks,his current semester and also the branch of study.

### 5.6.3 Functional Requirements

REQ\_5: A button to go to the profile page

REQ\_6\_a:An edit button to change personal information such as address and phone number

REQ\_6\_b:A save button to save the changes made to the profile page.

## 5.7 Settings

### 5.7.1 Description and Priority

This page is of low priority and it can be used to change the settings according to the user's choice.

### 5.7.2 Stimulus/Response Sequences

Once the user clicks the settings option he would have options to change theme(light or dark mode).The user also has a button to sync latest data if incase he doesn't receive updates.

### 5.7.3 Functional Requirements

REQ\_5: A button to sync data

REQ\_7\_a:Save button to save the changes made.

REQ\_7\_b:A button to change theme from light to dark and vice versa.

REQ\_7\_c:A back button to go back to the home page

## 5.8 Payments

### 5.8.1 Description and Priority

The Payments page for the application will be of high priority.This page consists of the payment made by the user.

### 5.8.2 Stimulus/Response Sequences

Once the user is on the homepage he will be able to go to the profile page which would be present on the hamburger menu. Once the user clicks on the profile page the user

gets a detailed information about himself , his address location , phone number, 10th and 12th marks,his current semester and also the branch of study.

### 5.8.3 Functional Requirements

REQ\_8: A button to go to the payments page.

REQ\_8\_a:A button to enter the payment details such as bank name, account number, transaction id, amount to be paid , installments(if any).

REQ\_8\_b:An review button to make sure the user checks the amount to be paid before confirmation.

REQ\_8\_c:A save button to save the changes made to the profile page.

## 6. Other Nonfunctional Requirements

### 6.1 Performance Requirements

1. The system should support at least 80% of the academic body of the university to query the web server
2. The response time of the HTTP interfaces should be less than 1 second.

### 6.2 Safety Requirements

1. Transactions that have a direct influence on the clients career, like dropping or withdrawing from a course, should display warning messages before completion.

### 6.3 Security Requirements

1. All personal details of the users like contact information, date of birth etc., should be encrypted before storing in the database.

### 6.4 Software Quality Attributes

1. The application should be available 24/7 and should have minimum downtime during maintenance.
2. The application should be smaller than 20MB on Android and 35MB on iOS devices.

### 6.5 Business Rules

Users must have an account in-order to view the course contents and receive notifications on a regular basis.

If a user wants to change the password then he/she must provide previous credentials.

## 7. Other Requirements

1. The user should be allowed to set preferred language on his/her device.
2. The application should cache frequently accessed data to increase the performance and decrease server traffic

## Appendix A: Glossary

**Authentication:** The process or action of verifying the identity of a user or process.

**Database Server :** A Database Server is a computer in a LAN that is dedicated to database storage and retrieval. The database server holds the Database Management System (DBMS) and the databases.

## Appendix B: Field Layouts

An Excel sheet containing field layouts and properties/attributes and report requirements.

### Sample sheet with information required to register the customer

Field	Length	Data Type	Description	Is Mandatory
SRN	11	Alphanumeric		Y
Password	60	Alphanumeric		Y
10th Marks	3	numeric	Grade received during 10th grade	N
12th Marks	3	numeric	Grade received during 12th grade	Y
Phone Number	10	numeric	User's phone number	Y
Address	60	String	User's address	Y
Change Password	60	Alphanumeric	re-entering forgotten password	N

### Sample Report Requirements: Include the fields to be included in the report

#### Student Report

#### Teacher Report

SRN	Teacher Phone number
Subject codes	Teacher id
Subjects	Teacher Name

Email ID	Teacher mail id
Results	Teacher Subject
Notifications	Notifications

## Appendix C: Requirement Traceability Matrix

Sl. No	Requirement ID	Brief Description of Requirement	Architecture Reference	Design Reference	Code File Reference	Test Case ID	System Test Case ID
1	REQ_1	Registration					
2	REQ_2	Login					
3	REQ_3	Home Page					
4	REQ_4	My Courses					
5	REQ_5	Assignments					
6	REQ_6	Results					
7	REQ_7	Payments					
8	REQ_8	Placements					
9	REQ_9	Notifications					
10	REQ_10	Settings					