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Campus Cube

First Deliverable

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1 Introduction

The primary goal of our project targets the communication gap that exists in institutions. To overcome this problem, we have devised a solution that involves creating a centralized platform for all the secondary communications that happen in an educational environment. Considering the scope of our problem, we will be including a social media platform *for miscellaneous collaboration*, a learning management system *for managing classes and making class-related announcement*, an online assessment system *for online assessments* and a global resource system *for holding global and private resources*.

1.1 Project Feasibility

The quantification of a project/product's feasibility can be done by first categorizing the feasibility into the following 8 sub-feasibilities. Each one of the described feasibility targets a specific area of the project's scope.

1.1.1 Technical Feasibility

The idea is simple and straight-forward. All the modules that our product includes already exist with some modifications in them. The technology that we will be using readily available, and are either free, or offer a free tier of their services. All of the members of the team are familiar with the technologies that are used in the project and have considerable experience in it.

1.1.2 Operational Feasibility

As far as the operational feasibility of the project is concerned, the product when deployed will need a central admin who manages all the courses, teachers, students, and classes. The management will include handling all the basic CRUD (*create, retrieve, update, and delete*) features. The admin will also be the one to make all the announcements, handle all the complaints reported, and update campus information. Since our product is a replacement for the traditional campus management system, which is already used by every institution, therefore the said staff member/admin will be available. Almost all the teaching staff already takes assistance from class management systems such as piazza, Google classroom etc. Since our project includes an upgraded module that replicates the features offered in these products and adds additional functionality on top of it, the said staff/users will most probably not feel any difficulty in using it.

1.1.3 Economic Feasibility

Most of the technology needed for this project is either free of cost or can be availed using the free-tiers provided by the service providers. For calculating the economic feasibility of our project, we need to estimate the cost and benefits of the project.

- **Cost Estimates:**

A thorough analysis of all the project related costs is done in the 1.3.1 section using the Function Point Analysis method. Briefly speaking, to estimate the cost of the project, we will need to estimate two different types of costs first that are as follows.

- **Development Costs**

- As discussed above, the technology needed for this project is free of cost. There is no hardware involved in the project. The database in the development phase can be hosted on a free server. Similarly, the servers needed for client and server-side deployment are readily available and can also be used even after the project's development phase ends.

- **Maintenance Costs**

- Since the product is a generic software, there are no maintenance costs tied with it. All the institution specific configurations can be done at the time of the product's installation. However, in the long run, the institution will need to buy cloud or server-based database to store all the institution related data.

- **Benefit Estimates:**

The project's benefits can be divided into two types, *tangible and intangible benefits*.

- **Tangible Benefits**

- *Revenue*: This type of benefit concerns the generated revenue. Since most of the already available services provide a free tier service with upgradable subscriptions there will not be much benefit on this side, however if an institution that avails the paid subscription may want to switch to our platform.
 - *Resource saving*: There will not be any significant resource saving but then again, the total resource cost in our product or any other alternative is already low. The only resource that our product can possibly replace is the need of manually maintained announcement boards.

- *Hardware cost saving:* There is no hardware involved in the traditional management system neither will be in this product.
- *Software cost saving:* The institutions that use different platforms to avail different services will benefit from this product the most. Since our product centralizes all these products into a single platform, the need for buying different software for different features will be eliminated.
- *Productivity gain:* The teaching staff and students will be able to post resources globally which will enable different students and even other teaching staff to benefit from it.
- ***Intangible benefits***
 - *Enhanced user experience:* The user in the current context previously used different platforms to access different classes' class specific announcements, and resources, a different platform to check their grades, and another platform to attempt online assessments. However, with the introduction of our product that combines all these modules into a single product, the need for maintaining different platforms will be eliminated.

1.1.4 Schedule Feasibility

The product's initial phase, including the requirements gathering and the first phase of development including the design of database and coding of front-end UI will be done throughout semester 7. At the end of the product's first development phase, we will have a visualization of the product by the help of a prototype that will use dummy data to simulate all the features that the original product will offer. In 8th semester, the back end of the product will be developed along with some required tweaks to the front-end logic. The front-end and the back-end will be combined throughout this second phase of development and in the end, we will have a working product.

1.1.5 Specification Feasibility

The requirements were first defined by keeping in view the problems one faces due to miscommunication or a communication gap, in an institute. The constraints in this product are similar to the ones that are enforced in an educational environment. Some of them include keeping into check what content is posted by a user onto the site and regularly filtering, etc.

1.1.6 Information Feasibility

All the information regarding the classes provided on the platform will be uploaded by the admin, managing the creation of classes. Furthermore, the information uploaded by users, such as students, and teachers will be filtered regularly and the unwanted content will be removed from the platform. Every non-admin user will have the ability to report some content posted by some other user, which will then be flagged for admin-check and temporarily removed from the platform. If the content is marked clear, the content will be reuploaded automatically, otherwise the uploader will be penalized.

1.1.7 Motivational Feasibility

The motivation behind this project is the need for a better communication platform that bridges all the communication gaps amongst all the institute members.

1.1.8 Legal & Ethical Feasibility

Particularly speaking, almost all the institutes in existence take help of management systems, that are built on the same underlying concept. Therefore, implementing the concept and adding or customizing features on top of it, will most probably be free of infringements.

1.2 Project/Product Scope

The primary scope of the project targets the communication gap in an educational environment that so often forsakes the interest and motivation of students in academic activities. This involves the communication between teachers and students to tackle all the difficulties students face during an academic course.

The product will also facilitate communication amongst students of the institution. The main idea behind student-to-student communication is based on collaboration. Students can use our social media platform to ask for help on any project they wish to. They can share information regarding the project pictorially as well. The social media platform may also be used for entertainment purposes such as to cover news regarding events that occur in the institution.

The learning management system targets the facilitation of management of academic activities that happen throughout a course in a semester. The module can be used to post class related announcements, and resources.

The online assessment system can be used for either short assessments that are of object type including MCQs etc. or long assessments that include short and long questions. To

facilitate the instructors, the option to add keys/answers to the objective type assessment is also added which they can use to automatically grade the assessments as soon as they are submitted.

The global resource center is a module that houses all the global and class related resources. The resources are identified by their tags. Another noticeable feature in this module will include thread-like forum-based discussion on each resource.

All in all, the product specifically targets all the activities that happen in an institution; therefore, the scope of the project is constrained to an educational environment's activities boundaries.

1.3 Project/Product Costing

For cost estimation, the *Function Point Analysis* method is used.

1.3.1 Project Cost Estimation by Function Point Analysis

External inputs

An elementary process processing data from outside the application boundary that is permanently saved.

1. Registration screen inputs. (i.e., credentials)
2. User registration data from API.
3. Group Chat Conversation messages stored in database.
4. Individual p2p chat messages.
5. Post Details required to upload a post.
6. Edit user details screen where a user can upload external social profile links and change his details.
7. Admin Register/ Login Screen
8. Generation of Class by an admin
9. Class Resource Post by a Teacher.
10. Universal Resource post by any user.
11. Question pool for each subject. (Question pools contains different categories of questions i.e., objective, subjective, diagram related question etc.)
12. Course Add Module
13. Teacher Schedule

External outputs:

An elementary process sending data or control information.

1. User Authentication to the system via firebase.
2. Show post of users in news feed from the database.
3. Group Chat conversation messages to database.
4. Individual p2p messages to the database.
5. Show Teacher Availability status to users.
6. Individual user profile page from database.
7. Class Rooms (A list of classes (in which he is enrolled) shown to each user)
8. Individual Post data from the database.
9. Universal Resource Center Post (i.e., Resources)
10. An individual Resource data from db.
11. Questions data from question pool exist in database.
12. Courses and Teacher Lists Provides to the Admin.
13. Searching user from database at front end.

External Interfaces:

Shared databases and routines from external applications.

1. Authentication by firebase
2. Live updates from firebase
3. Images stored in Cloudinary

Internal files

Relational data stored and maintained within the application boundary (relational databases, flat files/directories).

1. User Table
2. Admin Table
3. Post Table
4. Course Table
5. Class Table
6. Class Post Table
7. Teacher Schedule Table
8. Resource Table
9. Question Pool Table
10. Question Table
11. Question Types Table (Parent Child Relation Ship)
12. Web Sockets used for p2p and group Conversation messages

External Inquiries

An elementary process that sends data or control information outside the application boundary as interrupts and prompts (or event responders).

1. Validate User (User Authentication)
2. Generating A Quiz from the questions pool related to the course.
3. Percentage of Questions the quiz comprises of.
4. Providing message option and opening chat tabs for conversations (Global chat & p2p).
5. Filter the Classrooms and show only those classrooms to user in which he is enrolled in.

Information domain values

- ❖ No. of inputs: 13
- ❖ No. of outputs: 12
- ❖ No. of external interfaces: 3
- ❖ No. of files: 12
- ❖ No. of inquiries: 5

Information Domain Value	Total Count	Simple	Average	Complex	Individual Attributes
Number of inputs	13	7 x 3	3 x 4	3 x 6	51
Number of outputs	12	6 x 4	4 x 5	2 x 7	58
Number of files	12	7 x 7	3 x 10	2 x 15	109
Number of external Interfaces	3	2 x 5	1 x 7	0 x 10	17
Number of inquiries	5	2 x 3	2 x 4	1 x 6	20
Count Total					255

Sr #	Complexity Adjustment Factor	Scale					Value
		1	2	3	4	5	
1	Data communication			√			3
2	Data distributed processing			√			3
3	Performance Critical					√	5

4	Heavily used configuration				√		4
5	Transaction rate			√			3
6	Online data entry			√			
7	End user efficiency				√		4
8	On-line update				√		3
9	Complex processing			√			3
10	Reusability					√	5
11	Installation ease				√		4
12	Operational ease				√		4
13	Multiple Sites	√					1
14	Facilitate Change				√		4
$\sum Fi$							46

Calculate Function Point:

$$FP \text{ est.} = \text{Count Total} * [0.65 + 0.01 * (Fi)]$$

$$FP \text{ est.} = 255 * [0.65 + 0.01 * (46)] = \mathbf{283.05 \text{ p-m}}$$

For our project:

Assuming: 1 month = 22 working days, per person

Labour Rate = 30000 Rs/pm (per day: 1363.63 Rs)

Average productivity = 15 FP/month (per day: 0.68 FP)

Cost per FP = Cost/FP = Labor Rate/Productivity

Cost/FP = Labour rate / productivity parameter

$$\text{Cost/FP} = 1363.63 / 0.68$$

$$\text{Cost/FP} = \mathbf{2005.33 \text{ Rs/FP}}$$

Total Project Cost = FP estimation * (Cost/FP)

$$\text{Total Project Cost} = 283.05 * 2005.33$$

$$\text{Total Project Cost} = 567,608.6565 \text{ Rs}$$

Effort = Total cost / Labor rate per p-m

Total estimation effort = FP estimation / productivity parameter

$$\text{Total estimation effort} = 283 / 15$$

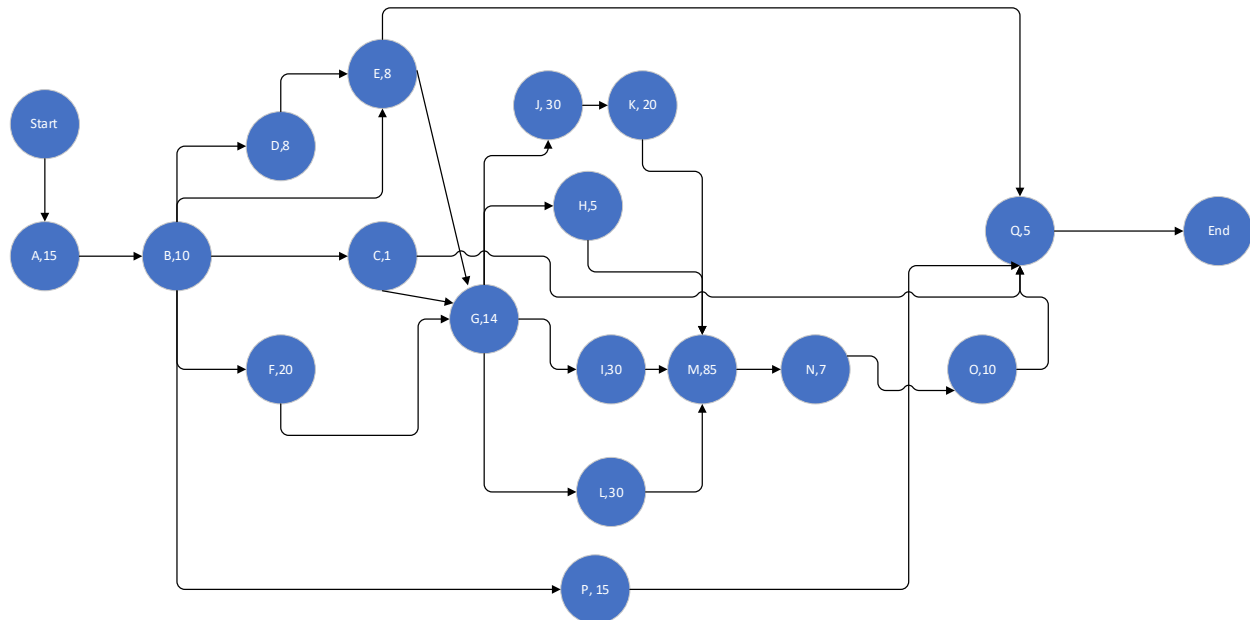
Total estimation effort = 18.87 pm. (18.87 * 22 = 415 days)

1.4 Critical Path Method CPM

1.4.1 Critical Path Method Activity Sequence and Completion Time

Activity	Activity Name	Immediate predecessor	Duration(days)
A	Concept	None	15 days
B	Requirement Gathering	A	10 days
C	Cost Analysis	B	1 day
D	Context Level Modelling	B	8 days
E	Modelling	D, B	8 days
F	Explore Tools and Technologies	B	20 days
G	Design Mockups	F	14 days
H	Login/Signup Module	G	5 days
I	Social Media Module	G	20 days
J	Learning Management System (LMS) Module	G	30 days
K	Online Assessment Module	J	20 days
L	Global Resource System Module	G	20 days
M	Back End Development	H, I, J, K, L	85 days
N	Integration	M	7 days
O	Testing	N	10 days
P	Documentation	B	15 days
Q	Deployment	C, E, O, P	5 days

1.4.2 Network Diagram:



1.4.3 Identify the Critical Path

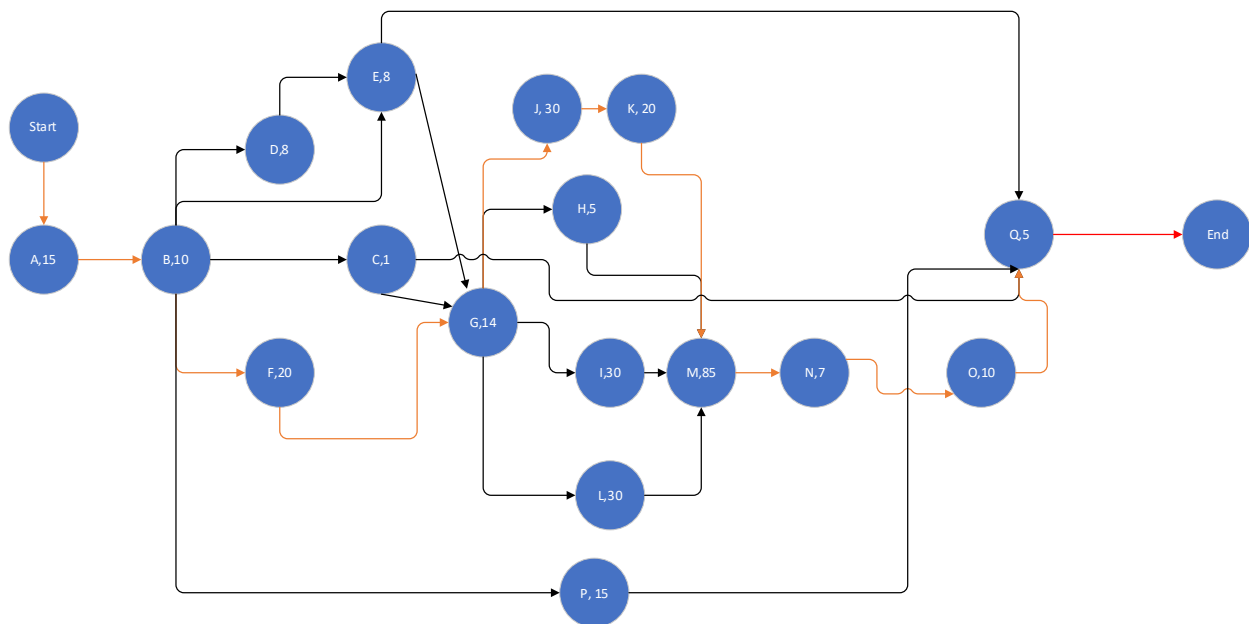
Activity	Duration(days)	ES	EF	LS	LF	TS	FS
A	15	0	15	0	15	0	0
B	10	15	25	15	25	0	0
C	1	25	26	215	216	190	190
D	8	25	33	200	208	175	175
E	8	33	41	208	216	175	175
F	20	25	45	25	45	0	0
G	14	45	59	45	59	0	0
H	4	59	63	105	109	46	46
I	20	59	79	89	109	30	30
J	30	59	89	59	89	0	0

K	20	89	109	89	109	0	0
L	20	59	79	89	109	30	30
M	85	109	194	109	194	0	0
N	7	194	201	194	201	0	0
O	10	201	211	201	211	0	0
P	15	25	40	201	216	166	166
Q	5	211	216	211	216	0	0

Critical Path:

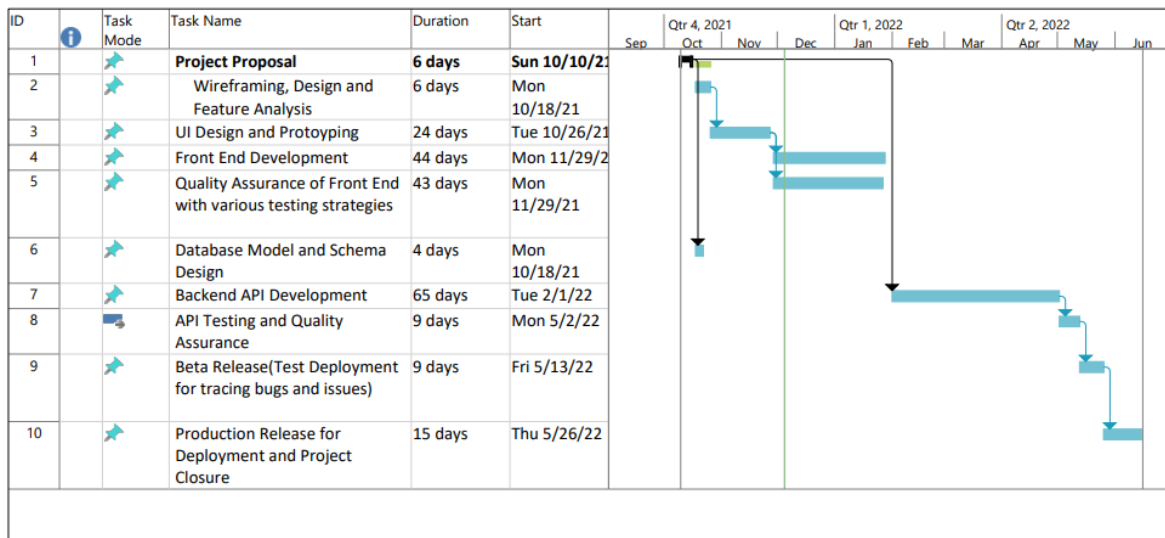
$A \rightarrow B \rightarrow F \rightarrow G \rightarrow J \rightarrow K \rightarrow M \rightarrow N \rightarrow O \rightarrow Q$

1.4.4 Update CPM Diagram



Here, the red line showing the path is the critical path.

1.5 Gantt Chart



1.6 Introduction to Team Members and their skill set

Team member are listed below:

1.6.1 Syed Faateh Sultan Kazmi (Team Leader)

His technical skills related to this project include

- C++, C#, Java, Python, React JS, Next JS, MERN Stack.
- MVC, Django REST API framework, UI Design, Wireframing, Problem Solving.

Apart from this he has leadership skills and have already led many term projects. He will be working on development, requirement engineering, testing and designing, managing the project at his best

1.6.2 Muhammad Afaq Shuaib (Group Member)

His technical skills related to this project include

- C++, C#, Java, Python, HTML, CSS3, React JS, Mongo DB.
- MVC, Database Design and Modeling, Problem Solving.
- Currently Learning (Django REST API framework)

He has good analytic skills. He will be working on development, requirement engineering and designing. He will be working on backend development part. He has a strong grasp on data design and modeling.

1.6.3 Muhammad Bilal (Group Member)

His technical skills related to this project include

- C++, C#, Java, Python, Kotlin, SASS CSS, React JS, Next JS, MERN Stack.
- MVC, Flask REST API framework, Database design, Problem Solving, Web Scraping.

He has good analytic and verbal and writing skills. He will be working on development, requirement engineering and designing. He has convincing powers. He will be also working on development part.

1.6.4 Muhammad Azam (Group Member)

His technical skills related to this project include

- C++, C#, Java, Python, HTML, CSS3, React JS, Android Development
- MVC, Problem Solving, Graphic Designing
- (Currently Learning) Django REST API framework.

He has good designing skills. He will make sure that user will have good experience using this Application. He will be working on both design and development part.

1.6.5 Muhammad Omer Sharif Bhatti (Group Member)

His technical skills related to this project include

- C++, C#, Java, Python, Full Stack Developer, Automation Engineer
- MVC, Problem Solving, Graphic Designing, Web Scraping, Bug hunter

He has good analytic and testing skills. He will be working on development, testing and designing the project at his best. He has a huge role in testing our application.

1.7 Tools & Technology with Reasoning

Our project will mainly be developed using MERN stack as it best suits a web development environment. The said stack includes the following technologies:

- **Next.js – A React framework for production**

- This technology will be used for client-side development and UI. Next.js is a light weight React framework optimized for the best performance, providing features such as static site generation and server-side rendering.
- The client side of the project will be deployed on Vercel during the development phase.
- The languages used in this tool will be HTML, SASS, JavaScript
- **MongoDB**
 - This technology will cover the database of our project. MongoDB is based on NoSQL document database that provides flexible schemas to meet changing requirements.
 - The database during the development phase will be deployed on MongoDB's free tier cloud server.
 - The language used in this tool will be NoSQL
- **Golang**
 - The backend of our project, covering all the endpoints, will be developed in Golang.
 - Go is an open-source programming language supported by Google.

1.8 Vision Document

1.8.1 Introduction

The application is to create a platform for interaction among teachers and students in order to enhance the overall academic structure of an institution in technical perspective. This will allow the students to have a centralized platform to be up-to-date with the class and university happenings. Moreover, the OAS and RMS modules of the platform will allow the students to access global resources and attempt quizzes online.

1.8.2 Existing Campus Management System

The existing and traditional campus management system provides only basic features, such as grade and attendance history. For other features, such as LMS, and OAS, most of the teachers use a 3rd party platform, for example Piazza, Google Classroom. Moreover, the UI of the traditional CMS is not much user friendly.

1.8.3 Project Overview

Our aim is to create a centralized platform to facilitate the students and the teachers so that they can interact in an environment that offers all the features that an ed-tech software should. For this purpose, we will be adding all the features that the staff of an institution come across during their academic career that involve handling the students,

such as Piazza. Moreover, we will also be implementing the online assessment system that will allow the teachers to take short quizzes and subjective tests. The teacher availability system will allow the students to have prior information about a teacher's schedule throughout a week before scheduling a meeting. The resource management system will facilitate the students to explore an unlimited number of resources, categorized using tags that can be created and added to a resource while posting one.

1.8.4 Scope of the System

The scope of the system can be divided into the following steps:

1.8.4.1 Concept

Defining project goal and objectives along with the success criteria of the project. Gathering high level components and application architecture in order to estimate the extent of the system and the target audience.

1.8.4.2 Inception

This phase includes planning and requirement gathering. Moreover, it includes modelling the requirements to get an accurate picture of the working system.

1.8.4.3 Iterations

This is the development phase of the system. At the end of each iteration, we will be done with one module of the product. After each iteration, the relevant modules, *if any*, will be integrated first, and then tested. The first series of iterations will include development on the front-end and the second series of iterations will include development on the back-end.

1.8.4.4 Release

This phase will be the final stage of the project. It will wrap up the project. Documentation will be finalized which will involve training for the technical staff.

1.8.4.5 Production

This phase will include the regular maintenance of the platform. All the CRUD operations of the classes, courses, students, and teachers will be handled by the admin.

1.8.4.6 Summary of requirements

1 This project involves following requirements.

Requirement Entity	Type
--------------------	------

Live peer-to-peer chat system	Functional
Responsive web application to facilitate the usage for multiple screens	Functional
Live alert through toasts and push notifications	Functional
Admin can send live announcements to the whole campus community	Functional
Campus user details (students & teachers) can be searched from the app	Functional
Both students & teachers can have their own timetable views from a central database for classes	Functional
Campus community can access all the public resources from Campus Resource Center that will be available with relevant tags	Functional
Class specific resources can be accessed through the portal of individual classes	Functional
Admin can create classrooms, assign roles to teachers & students, and users can use their rights to post content and follow-up discussions	Functional

If a post/user appears violent, users can report it and admin can take appropriate actions as per the campus internal policies	Functional
Users can check if a teacher is available for a meeting right now and similarly, teachers can toggle their availability status from web app	Functional
Chat systems are not encrypted (for transparency concerns) and the text (or media) sent over the messages will be filtered (according to the ethical policy of college).	Constraint
The user's data, resources and other information is only viewable by the campus community users registered by the admin.	Constraint

1.8.5 Identifying External Entities or Actors

1.8.5.1 Over Specify Entities from Abstract

On the basis of the Abstract, one might identify the following entities from the Campus Cube Case Study.

- Students
- Teachers
- Admin
- Post
- Like/Comments
- Course
- Push Notifications/ Campus Announcements
- Class Resource
- Universal Resource Center
- Question Pool
- Question Types
- Quiz

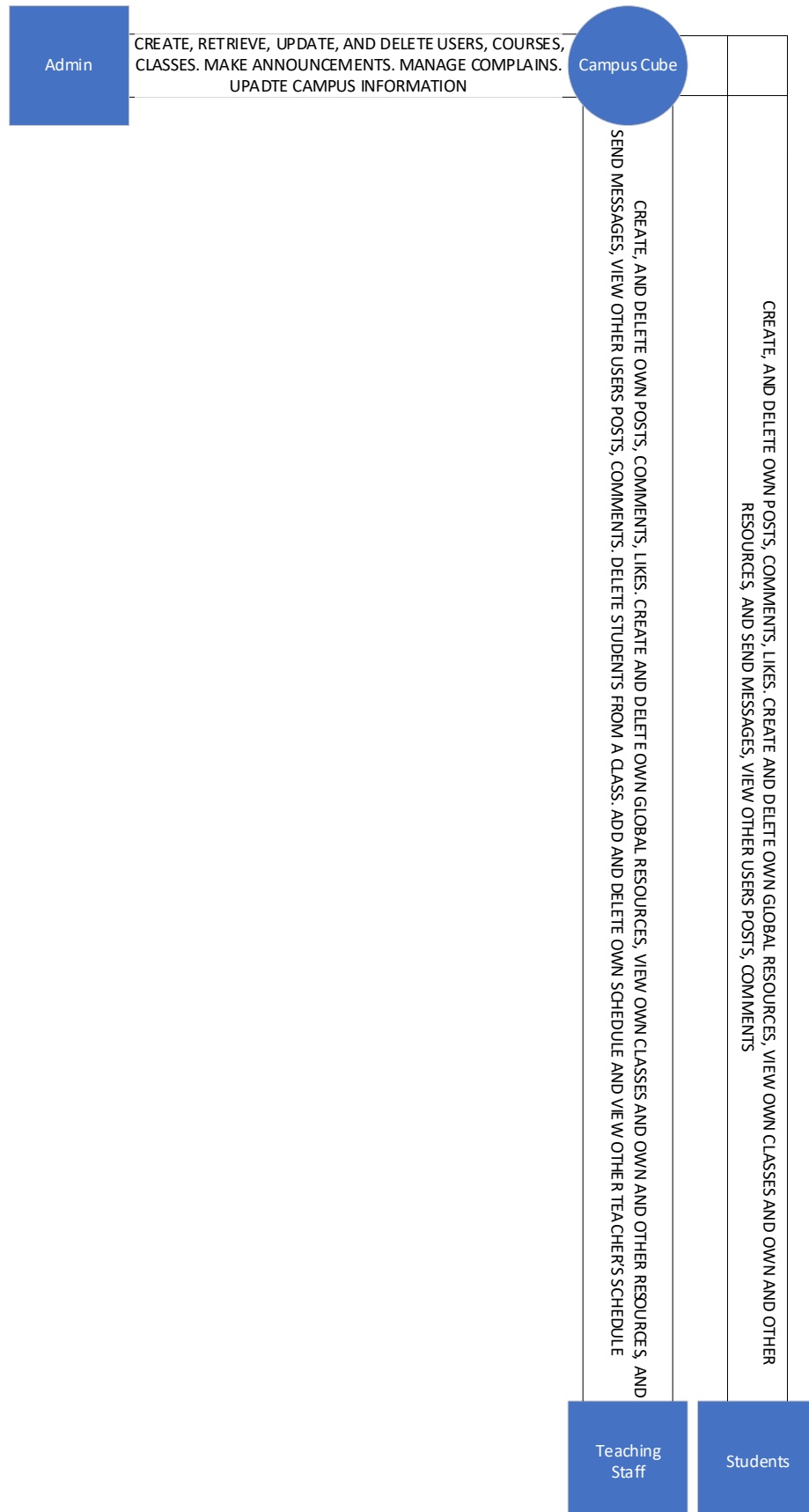
- Universal Chat
- p2p Chat

1.8.5.2 Perform Refinements

We found the following entities more related to our Business Logic.

- Student
- Teacher
- Admin
- Firebase User Authentication
- Class Resources
- Universal Resource Center
- Quiz

1.8.6 Context Level Data Flow Diagram



1.8.7 Capture "shall" Statements and the external entities (Actors)

Identify "shall" statements, as they would be all functional requirements.

Here User at every entity instance represents Teacher and Student.

No	Entities	Initial Requirements
1	User (Teacher & Students)	Shall Access the Web Application from the PC, Laptops, Smartphones etc.
2	User	Shall create an account for the Application
3	User	The user "shall" sign in to the application.
4	System	Shall provide all the posts posted by the Users (by their colleagues, peers, students etc.)
5	User	Shall add comments to the post.
6	User	Shall like, share the post.
7	User	Shall post/upload a post to the timeline (which can be viewed to themselves and other users)
8	User	Shall Select a class from its My classrooms page to view the classroom posts and resources.
9	System	Shall provide a list of classrooms in which the user is enrolled in.
10	User	Shall choose Class from the My classrooms tiles
11	User	Shall access the content (classroom post and resources) related to that classroom.
12	User	Shall start/initiate and follow-up a discussion against some post or resource in classroom.
13	Teacher	Shall upload the resource in the class resource center
14	User	Shall post a resource in the universal resource center.
15	User	Shall access the individual user profile page where user external profile links and posts are given.
16	Teacher	Shall add a question to the question pool for the specific course
17	Teacher	Shall generate a quiz for the students

18	User	Shall change their availability status from the toggle button shown in hamburger options.
19	User	Shall send their messages to the universal chat.
20	User	Shall communicate to each other via p2p chat.
21	Admin	Shall login into the system via separate Admin login.
22	Admin	Shall Add a course in the course list
23	Admin	Shall generate a specific course class and assign an instructor and enrolls the student in.
24	Admin	Shall add a timetable of the class.
25	Admin	Shall review the reported contents by the user and can delete that content.
26	Admin	Shall send the Campus Announcements to all users.
27	User	Shall Logout from the Application.
28	User	Shall Delete his own post

1.8.8 Allocate Requirements

No	Initial Requirements	Use Case Name
1	User Shall create an account for the Application	UC_Register
2	User Shall login to the account	UC_Login
3	System Shall provide all the posts posted by the Users.	UC_Get_User_Posts
4	User Shall add comments to the post	UC_Post_Comments
5	User Shall like, share the post.	UC_Post_Like_Share
6	User Shall post/upload a post to the timeline	UC_Post_Timeline_Show
7	System Shall provide a list of classrooms in which the user is enrolled in	UC_User_Classrooms

8	User Shall access the content (classroom post and resources) related to that classroom.	UC_Access_Classroom_Content
9	User Shall start/initiate and follow-up a discussion against some post or resource in classroom	UC_User_Discussions
10	Teacher Shall upload the resource in the class resource center	UC_Upload_Class_Resource
11	User Shall access the individual user profile page where user external profile links and posts are given.	UC_User_Profiles
12	Teacher Shall add a question to the question pool for the specific course	UC_Add_Questions
13	User Shall post a resource in the universal resource center.	UC_Post_Universal_Resource
14	Teacher Shall generate a quiz for the students	UC_Generate_Quiz
15	User Shall send their messages to the universal chat.	UC_Universal_Chat
16	User Shall communicate to each other via p2p chat.	UC_P2P_Chat
17	Admin Shall login into the system via separate Admin login.	UC_Admin_Login
18	Admin Shall Add a course in the course list	UC_Add_Courses
19	Admin Shall generate a specific course class and assign an instructor and enrolls the student in.	UC_Generate_Class
20	Admin Shall add a timetable of the class	UC_Add_Timetable
21	User will report a message for sensitive content.	UC_Report_Message
22	Admin Shall send the Campus Announcements to all users.	UC_Campus_Announcements
23	User Shall logout from the system	UC_Logout
24	User Shall Delete his own post	UC_Delete_Post

25	This will allow the user to report a post for sensitive content.	UC_Report_Post
26	The admin will have the option to review all the reports made by users.	UC_Review_Reports
27	User shall edit their profile	UC_Edit_Profile

1.8.9 Priorities Requirements

No	Rank	Initial Requirements	Use Case Id	Use Case Name
1	High	User Shall create account for app	UC_1	UC_Register
2	High	User shall login to account	UC_2	UC_Login
3	Medium	System Shall provide all the posts posted by the Users.	UC_3	UC_Get_User_Posts
4	Low	User User Shall add comments to the post	UC_4	UC_Post_Comments
5	Medium	User User Shall post/upload a post to the timeline	UC_6	UC_Post_Timeline_Show
6	Low	User Shall like, share the post.	UC_5	UC_Post_Like_Share
7	High	System Shall provide a list of classrooms in which the user is enrolled in	UC_7	UC_User_Classrooms
8	Low	User Shall start/initiate and follow-up a discussion against some post or resource in classroom	UC_9	UC_User_Discussion
9	Medium	Teacher Shall upload the resource in the class resource center	UC_10	UC_Upload_Class_Resource
10	Medium	User Shall access the individual user profile page where user	UC_11	UC_User_Profiles

		external profile links and posts are given.		
11	Low	Teacher Shall add a question to the question pool for the specific course	UC_12	UC_Add_Questions
12	Medium	User Shall post a resource in the universal resource center.	UC_13	UC_Post_Universal_Resource
13	High	Teacher Shall generate a quiz for the students	UC_14	UC_Generate_Quiz
14	Low	User Shall send their messages to the universal chat.	UC_15	UC_Universal_Chat
15	Low	User Shall communicate to each other via p2p chat	UC_16	UC_P2P_Chat
16	High	Admin Shall login into the system via separate Admin login.	UC_17	UC_Admin_Login
17	Medium	Admin Shall Add a course in the course list	UC_18	UC_Add_Courses
18	High	Admin Shall generate a specific course class and assign an instructor and enrolls the student in.	UC_19	UC_Generate_Class
19	Medium	Admin Shall add a timetable of the class	UC_20	UC_Add_Timetable
20	High	User will report a message for sensitive content	UC_21	UC_Report_Messages
21	Low	Admin Shall send the Campus Announcements to all users.	UC_22	UC_Campus_Announcements
22	Low	User Shall logout from the system	UC_23	UC_Logout
23	Low	User Shall Delete his own post	UC_24	UC_Delete_Post

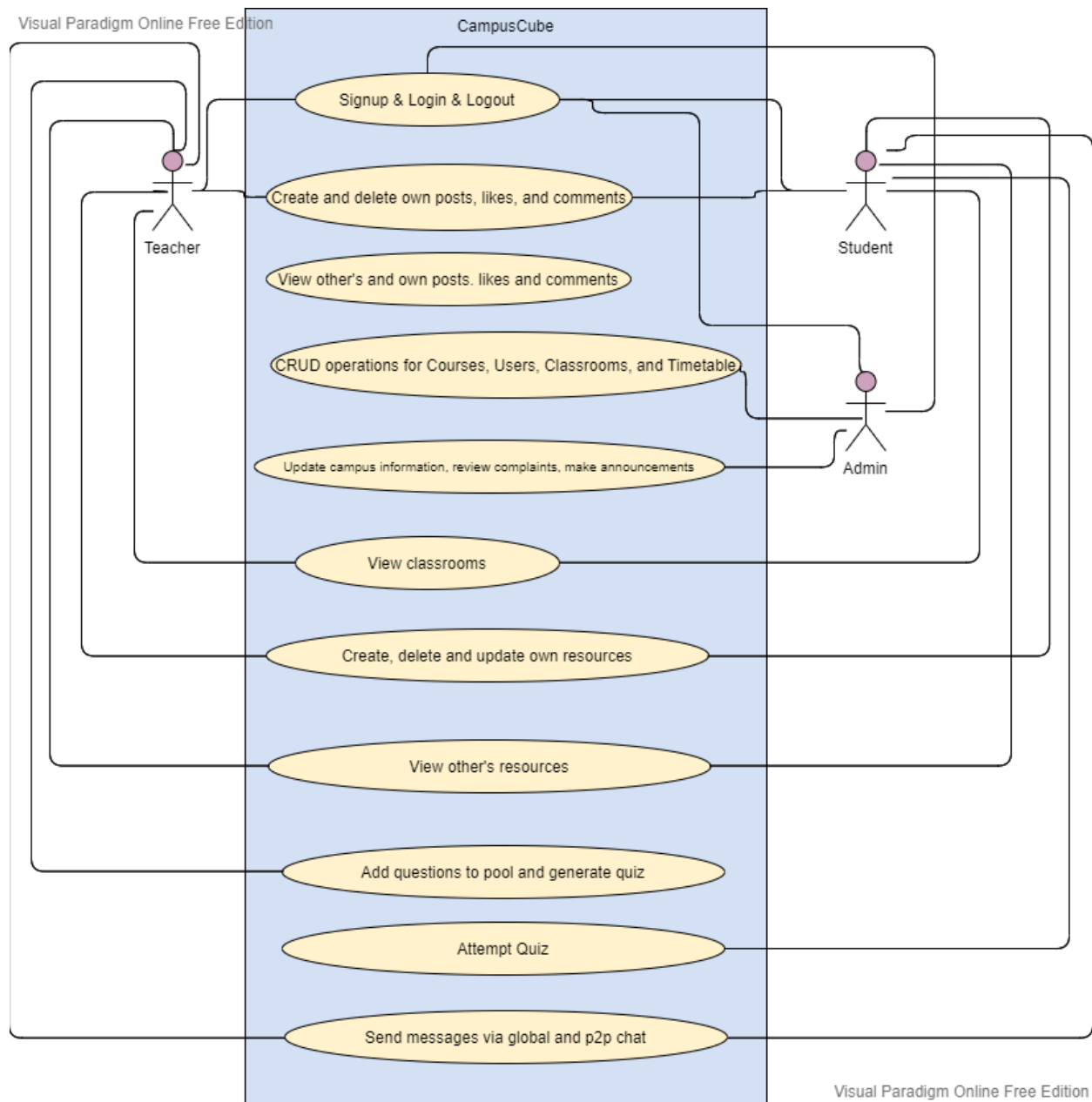
24	Medium	User Shall access the content (classroom post and resources) related to that classroom.	UC_9	UC_Access_Classroom_Content
25	Medium	This will allow the user to report a post for sensitive content.	U_25	UC_Report_Post
26	High	The admin will have the option to review all the reports made by users.	U_26	UC_Review_Reports
27	Low	User shall edit their profile	U_27	UC_Edit_Profile

1.8.10 Requirements Traceability Matrix

No	Build	Initial Requirements	Category	Use Case Name
1	B1	User Shall create account for app	Functional	UC_Register
2	B1	User shall login to account	Functional	UC_Login
3	B2	System Shall provide all the posts posted by the Users.	Functional	UC_Get_User_Posts
4	B2	User User Shall add comments to the post	Functional	UC_Post_Comments
5	B2	User User Shall post/upload a post to the timeline	Functional	UC_Post_Timeline_Show
6	B2	User Shall like, share the post.	Functional	UC_Post_Like_Share
7	B3	System Shall provide a list of classrooms in which the user is enrolled in	Functional	UC_User_Classrooms
8	B3	User Shall choose Class from the My classrooms tiles	Functional	UC_Select_Class
9	B4	User Shall start/initiate and follow-up a discussion against	Functional	UC_User_Discussion

		some post or resource in classroom		
10	B3	Teacher Shall upload the resource in the class resource center	Functional	UC_Upload_Class_Resource
11	B2	User Shall access the individual user profile page where user external profile links and posts are given.	Business	UC_User_Profiles
12	B4	Teacher Shall add a question to the question pool for the specific course	Business	UC_Add_Questions
13	B5	User Shall post a resource in the universal resource center.	Business	UC_Post_Universal_Resource
14	B4	Teacher Shall generate a quiz for the students	Business	UC_Generate_Quiz
15	B2	User Shall send their messages to the universal chat.	Functional	UC_Universal_Chat
16	B2	User Shall communicate to each other via p2p chat	Functional	UC_P2P_Chat
17	B1	Admin Shall login into the system via separate Admin login.	Functional	UC_Admin_Login
18	B6	Admin Shall Add a course in the course list	Business	UC_Add_Courses
19	B6	Admin Shall generate a specific course class and assign an instructor and enrolls the student in.	Business	UC_Generate_Class
20	B6	Admin Shall add a timetable of the class	Business	UC_Add_Timetable
21	B6	User will report a message for sensitive content	Functional	UC_Report_Messages

22	B6	Admin Shall send the Campus Announcements to all users.	Functional	UC_Campus_Announcements
23	B1	User Shall logout from the system	Functional	UC_Logout
24	B2	User Shall Delete his own post	Business	UC_Delete_Post
25	B3	User Shall access the content (classroom post and resources) related to that classroom.	Functional	UC_Access_Classroom_Content
25	B2	This will allow the user to report a post for sensitive content.	Functional	UC_Report_Post
26	B6	The admin will have the option to review all the reports made by users.	Functional	UC_Review_Reports
27	B2	User shall edit their profile	Functional	UC_Edit_Profile



1.9 Risk List

Following are the risks in the development of the proposed application.

1.9.1 Risk related to the Requirement Engineering

- The rate of change of requirement is unpredictable.
- The change in requirements changes the scope of the application.
- In our project, there is a great possibility of requirement change at any point in development phase.

- During the course of our process, a requirement can deviate from our team's original vision of the requirement and may need review and modifications.

1.9.2 Risk related to the Cost Estimation

- The time required to develop the software is underestimated.
- Cost estimated is low

1.9.3 Risk Related to Tech Stack Change

- Risks associated with technology are more challenging because learning a new technology requires fresh training and it may result in delays in completing task according to schedule.

1.9.4 Risk Related to Scope Creep Risk:

- Almost all projects face this risk, and sometimes it poses an irreversible challenge because some of the added functions are significant to the project and desirable to the project's success

1.9.5 Risk Related to Market Risk:

- When a project fails to meet the stated results, market risk is likely to occur. Competitors might take the advantage to cripple the business and eliminate it from the market.

1.9.6 Risk related to the System

- Estimated size may varies from actual size.
- Security risk
- Tools & requirements are incompatible.

1.9.7 Risk related to the team

- Effective and timely communication is a significant work ethic that must be strictly observed when working on a project.
- Setting up meetings with team members helps you track any changes, reassign tasks and foster a cohesive team environment.

1.9.8 Risk related to the Size Estimation

- The size of the system has been underestimated. This problem might occur in FYP because at the time of the proposal you can't estimate the size of your project or the module which you think trivial at the time of proposal might become difficult during implementation or development phase.