Faculty of Engineering and Technology

Department of Computer Science and Technology

COMP4200: First Semester Project Report 2018/2019

PorTaj

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Abstract

In the final year of every student's educational journey, they have to make a graduation project that demonstrates all the experience, skills, and knowledge they achieved. However, most often, there is no clear guide to help students sort out the process of managing their graduation project milestones. Our project provides the cornerstone for establishing an assistance system that gives the main structure of going on the graduation project, where students, instructors, and coordinators are registered to the platform where they can interact efficiently while accomplishing the different phases of the preparation process of the final project.

The platform we are making consists of several functionalities, mainly an archive for graduation projects. The portal will allow students to search for ideas, topics, and related articles. Another main functionality is the student planner, where it provides the important deadlines of the project phases that the coordinator has set and whether they were done or upcoming. Also, it will provide guidance for students through the steps of creating their project, to ensure that they fully understand and engage in the stages of building the project, including templates of important documents and submissions. Furthermore, the platform will provide the names of every available student and instructors, in order to connect them together and create a team. In addition, the instructor is able to monitor all required tasks, and track the progress of the students. Also, the coordinator of the course can set deadlines for every phase and can monitor the progress of all graduation project’s students, besides the schedule of the final discussion sessions of the graduation projects that will be held.

Contents

Acknowledgments

First of all,we would like to express our gratitude to Almighty Allah to enabling us to complete this report

We are really grateful because we managed to complete our porTaj report within the time given by the coordinator. This report cannot be completed without the effort and co-operation from our group members , Group members' Aseel khalaf , Nada Zalloum and Noor Zalatimo.

we convey our gratitude sincere to our academic supervisor Dr.Bassem sayrafi,for his kind direction ,feedbacks and encouragement .

Last but not least, we would like to thank our friends who motivate and support us and spend some times with us to fill in the questionnaires.

1 Chapter 1. Introduction

1.1 Motivation and Introduction

These days people tend to use online websites or applications to accomplish their several tasks, without being confused in manual scheduling, to save time and effort, and to collect all their work in one place. So in order to ease an important phase of students' academic life we will provide a special access for the students who are working on their graduation project to facilitate their work.

We were motivated to take this project by seeing students confused while preparing their final project because of several reasons: first, they don't have an idea about the sequence of phases, especially for a comprehensive and integrated project like the graduation project so they feel lost flowing between phases without a general idea of how things should happen in advance, second, there is no coherent reference that collects the students work and projects, where others can use them to organize their ideas, work, and get to learn a lot from their experience and methods, third is the lack of a systematic way to connect with their partners, constructors and with the coordinator, in order to program submissions and other important dates, Finally, supervisors suffers from time conflict that happens due to scheduling the final projects discussion sessions.

This platform will combine students, groups with their supervisor, and the whole students with the coordinator of the course, which will ease the communication between them, the system role starts where students could find available partners and supervisors to agree with, then the system will provide a rich

reference for students, where they can find suggested ideas to work on for their project, also it contains mainly an archive that collects the graduated-students projects, which provide good assistance depending on already submitted projects that share the same domain, nearly from students how had the same learning experience, moreover, it contains examples for documents and assignments that the students need to submit through the different phases of project along the year, with their due date and time, which creates an organized system for students that can depend on to accomplish their tasks on time and with no delay or confusion.

For supervisors and coordinators, the discussion scheduler is so important to divide time in suitable way and organize discussion sessions considering students and supervisors available times.

1.2 Problem Specification

When students are required to register for the graduation project's course, they are instructed to provide in their form at least 2 different ideas for their graduation project. Sometimes, they have a hard time searching for ideas, or coming up with a new idea. Also, some students can't find an available supervisor, or they can't find a group to join for the project. After registration, students often don't know how to start working on the required documents, nor do they have any idea how the workflow will be, or what will be required for the future. They lack of guidance, and have no reference they can relate to.

Usually, students try to connect with previous graduates, to ask them for the documents, and how the journey of making the project will be, so that they could get a glimpse of what they are supposed to do throughout the year, and how do they begin on the documents. Though, not all students can get previous documents for several reasons.

As for the supervisors, from their point of view, they are tired of having projects' reports scattered around their desks. They can't keep track of what has been done before, and it would be a waste of projects if they didn't have somewhere to store them in it. Furthermore, supervisors often have problems tracking their groups' work and progress.

For the coordinator of the course, he usually face problems in scheduling discussion dates that suits all teachers of the department.

1.3 Goals & Objectives

This project aims to facilitate communication between students' and departments' staff, and mainly we will achieve many things via our system as follows:

1. Archiving old, current, and future graduation projects.
2. Demonstrate suggested ideas for capstones.
3. Connect students' without partners with each other.
4. Inform students about any available supervisors.
5. The ability of the supervisor to track the progress of his students,

and for the students to communicate with him.

6. Notify group members with the deadlines were set by the coordinator.

7. Schedule discussion sessions.

8. The ability to search for ideas, concepts, or related work.

1.4 Overview of the technical area

For the client-side

Angular is a javascript based web application framework used for building single-page web apps, that was released in late 2010 - was named angular js -, the

main difference between angular js and the earlier releases that angular turned to be written with Typescript instead of javascript. scripting with Angular uses HTML to build webpages, CSS to style these built pages, Typescript and Javascript to make these pages dynamic and easy to use (Chivukula and Iskandar, 2019). Angular uses the Model-View-Controller (MVC) architecture, which consists of:

- Model: describes the data structure which directs the information and receives input from the controller
- View: is the representation of information
- Controller: responds to input and interacts with the model

Angular main architecture consists of:

1- Components

2-templates

3-directives

4-modules

5-Services

6-Routing

Angular

For building the database

MySQL is an Oracle-backed open source relational database management system, written in C and C++, it uses Structured Query Language, MySQL is flexible where it runs on all platforms e.g.: Windows, UNIX and Linux, and it can be used in a wide range of applications.

MySQL is based on a client-server model. The core of MySQL is MySQL server, which handles all of the database commands.

As a project with an archive as the main feature it needs a responsive, flexible, free, efficient, and secure database, and all of those are included in MySQL database (Dev.mysql.com, n.d.).

For server-side:

PHP (Hypertext Preprocessor),is an open source, server side, general-purpose scripting language that is especially suited for web development.

PHP supports different databases including MySQL –that we will use- they will be connected using PHP Data Objects MySQL library.

PHP will be used for creating RESTful APIs in addition to make CRUD operations on the database (Morris, 2020).

For the webserver:

As a web server, Apache will be used, Apache is the most widely used web server software, it is an open source software and cross platform (function on both Unix and Windows), it establishes a connection between bowsers (of website visitors') and a server and the browsers, meanwhile exchange files back and forth between them (client-server structure), Apache is considered as so customizable web server, as it has a module-based structure. This module gives the capability for administrators to control a lot of functionalities, these modules include caching, security, URL rewriting, password authentication, and more (G., 2019).

1.5 Overview of the report

Chapter One: this chapter contains 5 sections, the first section talked about why we were motivated to carry on this project, attached to a brief introduction, the second section focused on the problem to be solved in the project, the third outlined the goals and objectives, the fourth section is about the technical area, and information about the platforms and programming languages that will be used, and finally the fifth contains the overview of the report.

Chapter two: this first section in the chapter covers some of the read articles about the context of the project, starting with choosing a web page project, passing through portals details, finally using angular as the main framework.

Chapter Three: for the first section, the product is described in details, starting with the system objectives, defining functional and non-functional requirements , the second section covers the use case, describing each actor, description of each use case, the third section covers UML diagrams, from the class diagram that contains the classes and their relations in the system, to the sequence diagram that describes how the user interact with the system through time sequences, then an activity diagram and a state chart diagram that shows the states that the system might go through, the third section focuses on the architecture of the system, software architecture, the final section is about the data model and relational mapping.

Chapter Four: contains a conclusion for the work described in the report, with the work that will be achieved in the next semester.

Chapter 2. Background

Here holds the summary of the articles we read that were related to our project in different ways.

2.1 Details of relevant theory & Review of past/reported work

As **[Government of the HKSAR-2009]** says: “building and setting up a website is not a fixed one-time project, where, websites have to be maintainable and updatable due to the dynamic nature of modern business”.

A web content management system (WCMS), is a web application that eases the communication and collaboration of a gathered users whether they were from different departments, or even the same department but different positions like students, managers, admins and employees, and so on..

Web content may include images, text, video, and audio might include workflow features that simplify storing, creating and updating processes of websites. Adding extra functions such as check-in/check-out auditing, versioning, will richen the process of directing and tracking the updates of web pages.

Most Web Content Management Systems were developed using Java as a back-end tool and PHP for front-end, some WCMS also contain search engines, workflow engines, and chat modules. Web content systems are essentially supported with a database backbone where different data types are normally

stored, such as MySQL or Oracle, the main web pages then are configured to run on a web server.

During the process of creating web pages, developers work on draft web pages which are not uploaded directly to the web server. Alternatively, users keep copies of these drafts offline until they are approved and ready to be publicized. Finally, a file transfer program used to upload and link the final pages on the desired web server.

For the other paper, talking about a web management system that was made in **[Federal University of Tocantins, Brazil],** they used the “Project Management Body of Knowledge” as a standard for their software, which divides the project into five phases

1. Initiation
2. Planning
3. Execution
4. Control
5. Closing

Consequently, they consider it suitable to apply on academic projects based on educational programs. explaining this by its’ basic structure which could simplify data accession and analysis; this helps in saving time in the initiation and planning phases; in addition to its’ ability to establish unified measures of the control phase.

To be more specific, from **[King Faisal University-College of CS & IT]** point of view, the flow of any graduation project is tracked as follows:

Each student should do a graduation project at the end of his study in university, to prove that they are able to use the knowledge they gained in the previous semesters. Each capstone should be done by a group of students, and have a supervisor from the faculty members to guide them through the project's steps. The project's course is distributed on two semesters: the first part of the course is the proposal of the project, which is usually registered in the 7th semester, consists of 3 milestones; the second part of the course is the implementation of the project, which is usually registered in the 8th semester, consists of 2 milestones. The purpose of the milestones is to get feedback, guidance, and progress evaluation from the committee members to facilitate the comprehension of the project and the preparation of the next step, which leads to a successful implementation of the project.

After finding the idea and the partners then the department checks if the graduation project possesses these multiple characteristics:

1. Comprise significant realistic challenges and constraints: their idea should be something that wasn't done before (a new idea), or a very simple.

2. Provide an opportunity to apply knowledge from several courses in the curriculum: graduation project should be applying knowledge that was gained from the past semesters, as well as creating new ideas for solving the problem.

3. Be Creative: creative solutions should be given.

4. Emphasize design, experimentation and hands-on skills: graduation projects efforts in planning, designing, and implementing.

5. Provide challenges in the fields of planning, analysis, design, implementation, comparison, and validation

6. Reflect scientific and technical methodology and approach throughout: in the process of doing the graduation project, the students should be committed to professional practices so that they can show that they are ready to work in professional positions.

7. Allow teamwork among students: group work is important in graduation projects, because it prepares them for the future when they work in companies in big teams.

8. Required resources must be available or supported by the university or sponsor: the department or the sponsor should provide the main resources so that the students can finish their projects successfully with all the resources they need.

9. Community Engagement: graduation projects should be useful for the community.

Students begin working on their projects, following the specified milestones.

Milestone 1 is supposed to ensure students' right understating of the project and the determination of the problem proposed. In Milestone 2, students should establish some progress in the computing requirements, and what's suitable for the problem proposed. By Milestone 3, students should prove their ability to analyze and design a computer-based solution to match their requirements. After successfully finishing, and evaluating these 3 milestones, students begin implementing the project, which is the second part of the graduation project.

At Milestone 4, students should make major progress in implementing and designing the computer-based solutions using specific technologies, and tools. Students should take into consideration the legal, ethical, and security issues and responsibilities. When they arrive at Milestone 5, the overall evaluation of achievements takes place.

After explaining the flow of an example graduation project, a detailed system design is needed to reflect some major features of a system; in **[Amjad F. & Imran M.-2010]** we found the characteristic, which were relevant to our project idea:

They designed a portal that connects pages together and get information from different places, and display it in one place. According to them, a portal should at least include the following features:

1- Communicate by email: This feature lets users to email each other using the portal. They can read, write, delete, and send folders using the email.

2- Announcements: Here teachers or admins can make a new announcement (However in students' preview, there will only be an announcement tab).

3- Calendar: This feature allows students to add alerts for some future events, like certain deadlines. At the time of these events, alerts are to be generated to the referred persons in form of emails. Users can create, delete and modify existing calendar alerts.

4- Class schedule: This feature allows users to view their class schedule. When user opens class schedule tab system identifies his identity through his profile like class, semester, section and depending upon that it renders the class schedule.

Finally, **[Khelifi, Adel, etc..- 2011]** published a paper about how did they implement a portal, especially for the graduation projects, and how it works. They demonstrated what the system includes, which they considered as a solution to improve the graduation project tasks organizing, for all the actors involved,

through implementing a software that allows students to organize their tasks and deadlines with the least possible effort and time, and to facilitate the tracking of the students progress from the supervisors' side, and ultimately permits graduation project responsible members to monitor all transactions to ensure that everything is under control.

The methodology, which was acquired in this project, was a combination of the case study and the personal interview. The aim of making interviews to be aware of the many details that might not be observable; these details will be taken from the interviewee. So they made interviews then they defined the stakeholders of this project, as were their impacts and responsibilities. Then the system deployment environment was defined and the tools needed to develop the system were described.

Also, they did an analysis to determine the needs of businesses and users, so, by they determine the functional requirements so they were able to describe what the system must do. To collect the requirements a set of questions was prepared aimed to understand the difficulties faced through the graduation process, and the needs of the supervisors to help the projects progress smoothly. Meetings were held involving supervisors from different faculties, interviewees filled out a questionnaire and their responses were collected during those meetings. Those responses expressed the needs and demands of the professors, and also highlighted the issues that had to be addressed.

So, they decided to provide these features through their system:

- a tips section for students will be in the system, supervisors could post clues and tips.
- Allow supervisors to create a list that contains all of the tasks, which could be used as a referenced template.
- Focuses on the authentication and security, e.g hashing the password before it being sent to the server
- Create a news bar, where students find updates or changes on the project timeline.
- Hold more meetings with stakeholders, in order to establish new and clear requirements.
- Implement a students calendar that contains reminders, appointments, memos, etc.
- Give the Head of the Graduation Committee the privilege to post any progress reports for students and the supervisors to make out and send back over the system;
- Implement the automated event handler subsystem.

After reading these articles we decided to develop our system using angular, which according to **[Web Development with Angular and Bootstrap 3rd Edition-2019]**, is javascript based web application framework, capable of building single-page applications, the first angular version which was called angular js -which is no more active on development mode-- was released in late 2010, since the releasement, many frameworks like ember.js, backbone.js were released

having almost the same functions as angular, although angular remains the most powerful of them all, about 8 full versions were launched after Angular js, the main difference amongst them is that they turned to use typescript instead of javascript.

Angular architectural contains mainly of:

1- Components

2-templates

3-directives

4-modules

5-Services

6-Routing

Angular development environment:

Setting up angular depends on installing Angular CLI (command line), to install it, Node.js and npm (node package manner) have to be installed, and finally, a code editor is needed e.g visual studio.

First program

Writing command in the CLI creates a new angular application, named e,g ‘proj1’, this proj1 could be found in the visual studio in the left panel, which is the project.

2.2 Brief introduction of the proposed work/solution

The proposed solution is to implement a portal that holds various functionalities that’ll help students in their work. Firstly, we will provide a place to archive previous reports that were done by students, by uploading their work when they finish it. Secondly, we are going to facilitate the process of registration for the graduation project course by providing for the students the supervisors’ suggested ideas, and their availability, that will be displayed on the portal, and we will connect students that have no partners together, by providing a section where students can announce that they have no partners, so they could form groups together. Thirdly, the coordinator will be able to add the submission deadlines, which will be displayed on the home page of every student’s account. Fourthly, every student will be required to upload his work that he’s working on according to the plan that the coordinator provide, so that the supervisor can monitor their progress and give them feedback when they meet. Lastly, the coordinator will be able to schedule the discussion dates more easily, and have no problems with the members of the department.

Chapter 3. System Analysis: System Model and System Architecture

3.1 Product Description

Our project provides the cornerstone for establishing an assistance system that gives the main structure of going on the graduation project, where students, instructors, and coordinators are registered to the platform where they can interact efficiently while accomplishing the different phases of the preparation process of the final project.

3.1.1 System Objectives

This project aims to:

● Facilitate communication between students' and departments' staff.

● The ability of the supervisor to track the progress of his students, and for the students to communicate with him.

● Connect students' without partners with each other.

● Notify group members with the deadlines were set by the coordinator.

3.1.2 System Main Features

● Archiving old, current, and future graduation projects.

● Connect students' without partners with each other.

● Inform students about any available supervisors.

● Schedule discussion sessions.

● Demonstrate suggested ideas for capstones.

● The ability to search for ideas, concepts, or related work

3.1.3 Operating Environments

The web application's UI will be designed using Angular Framework, because it has the mvc architecture. Also, it is a single page application, which

helps us in minimizing response time. Also, we will use Apache as the web server. As for the connection between the server and the web application, we will use php.

3.1.4 Constraints

The following is some constraints will be facing in our system:

1. Our technology may not be compatible with all versions of web browsers.
2. The server that we can provide for free is not big enough to hold all files that will be uploaded.
3. Responsiveness view may not be provided in all designs, because we are designing according to a desktop.
4. The server may not accept large data sizes of documents on upload.
5. The speed of the internet may cause drawbacks in response, and retrieving data from database.

3.1.5 Functional Requirements

- The software shall allow the user to Register in the system .
- The software shall allow the user to login into the system .
- The system shall allow the user to find available partners ,
- supervisors and suggested ideas.
- The system shall allow the user to upload each task to the
- supervisor through the system.
- The system shall allow the supervisors to add suggested ideas into the system

- The system shall give access to only students who are registered in the graduation project's course.
- The system shall allow students to view the names of available supervisors.
- The system shall archive students' reports after they are done.
- The students shall be able to search for Previous ideas , suggested ideas.
- The students shall be able to view related websites
- The system shall provides Search in several options by date or year or categories
- The supervisor shall be able to track and document the progress of his students through the system.
- The system shall allow the supervisor to add participation grade,Discussion rate or the final mark for the students.
- Participation grade/disc rate/final mark
- The coordinator shall be able to track the progress of all students.
- The supervisor and coordinator shall be able to send messages to students and vise versa.
- The coordinator shall be able to set a Task table for the registered students
- The system shall notify students when the deadline of any task is approaching
- The system will mark the students who are late for a submission
- The system shall allow the coordinator to add discussion Date ,time and room for each group of students and supervisors.

3.1.6 Non-Functional Requirements

- The web application shall run on all browsers.
- The web application should be fast in posting data searched by the user.
- Privacy of information, the export of restricted technologies,intellectual property rights, etc. should be audited.

- The system shall be usable , students and Teachers needs from 1-2 days to adapt with it.
- The system shall be secure , so no one can access the marks of the other student , each one can only access his/her own marks.
- The system shall have a good performance , as we are using angular so the user will easily move between pages within less than milliseconds.

3.2 Functional Decomposition (Use Case Diagram)

3.2.1 Actors (actor list and description of their roles)

He we are going to list the actors and their roles.

Actors	**Role Description**

Student	The student shall log in to the portal. He can search for available students, available supervisors, or ideas. Throughout the semester, the student can upload the required documents to the portal so the supervisor can view, and evaluate them. Also, they can access the system's archive to view, or download previous documents. In addition to, viewing uploaded templates for the required documents.
Supervisor	This actor should log in to the system to use it. At the beginning of each semester, this actor can suggest ideas, to be posted on the portal. He can also track his students' progress, and view their uploaded work.
Coordinator	This actor should log in to the system to use it. He can track all students', which are enrolled in the course, progress. Also, he can manage the deadlines, schedule project discussion, and make announcements to all students.
Portal	This is the web application that holds all the functionalities that the actors can use. It is the connection between the users and the server.

Server	This is where all the requests goes to, such as searching for a document, or logging in to the system, and return the needed data.

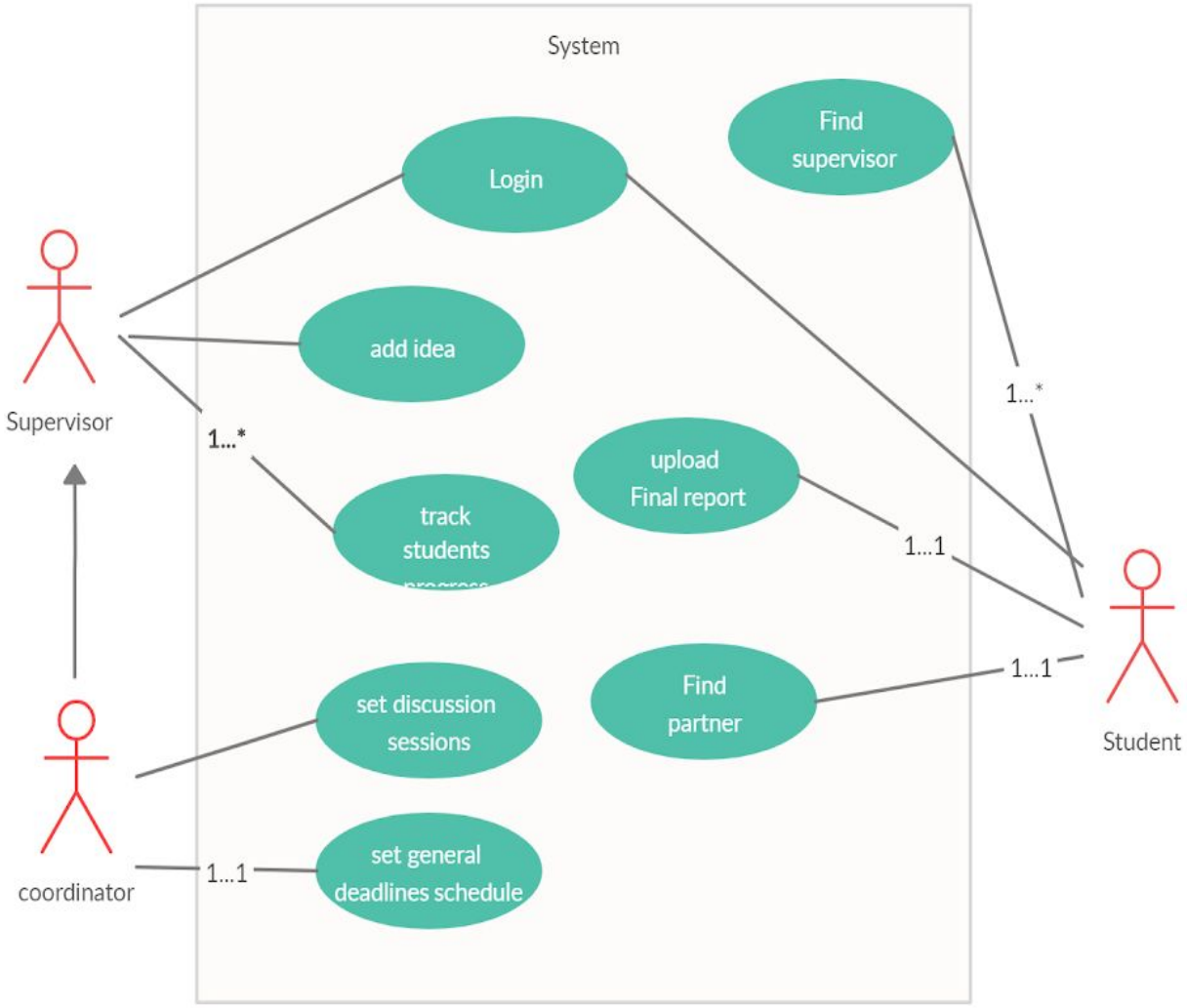
3.2.2 Use Cases

Use case is the actions that are performed by the user or any system, which plays a role in the system. The use cases for the proposed system are described in the following table.

Use case	**Description**
Login	Login process
Find supervisor	Every student could find the available supervisors and contact them
Find partner	Every student could find the available students to create a team
Upload final report	Students will upload their final report to the archive system

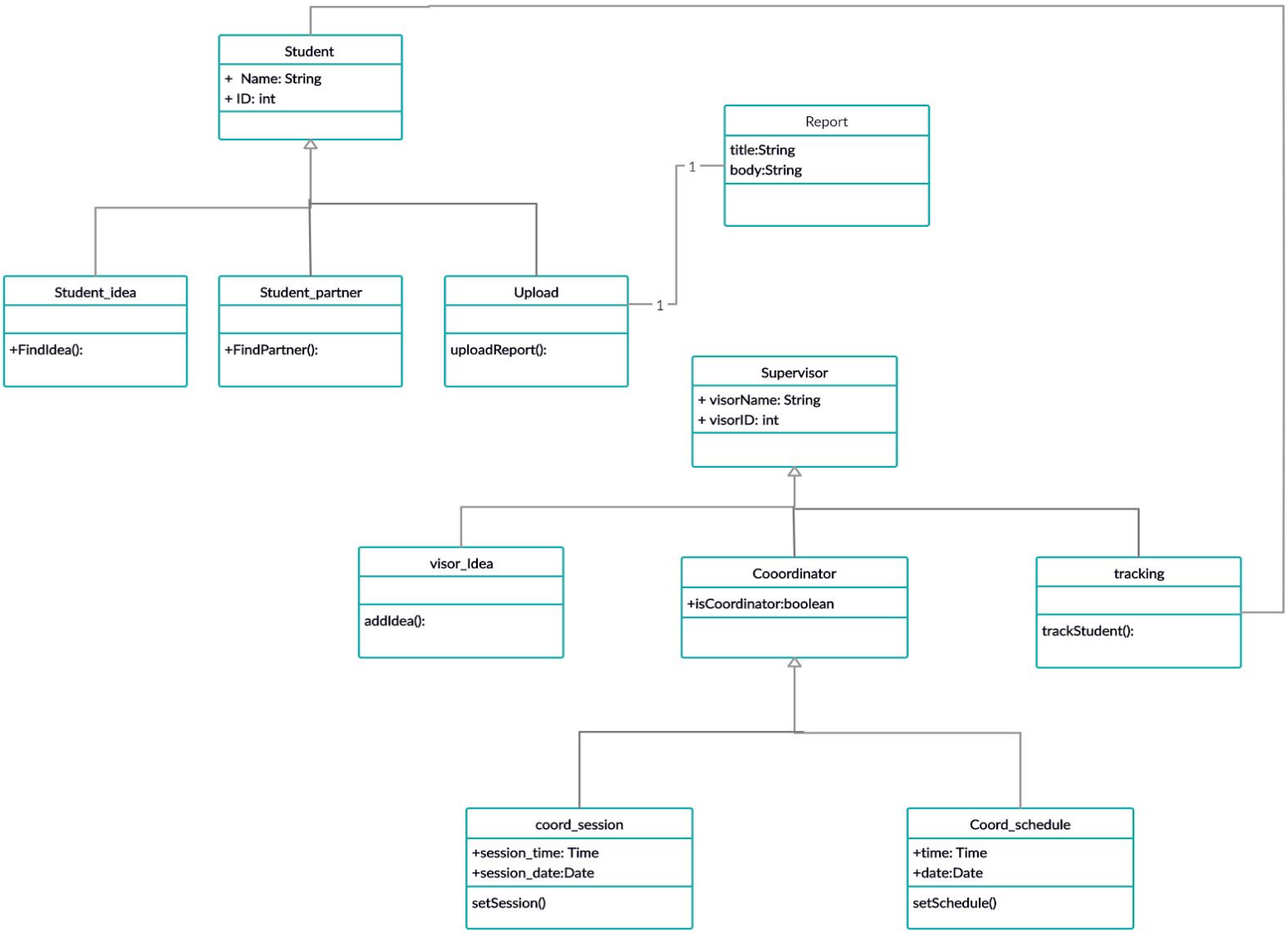
Track students' progress	Supervisors are able to track the students' progress in different project phases
Set discussion sessions	Coordinator will arrange final discussion times, for both students and supervisors
Set deadline schedule	Coordinator will set a general deadline schedule for all the project phases

3.2.3 Use Cases Diagram

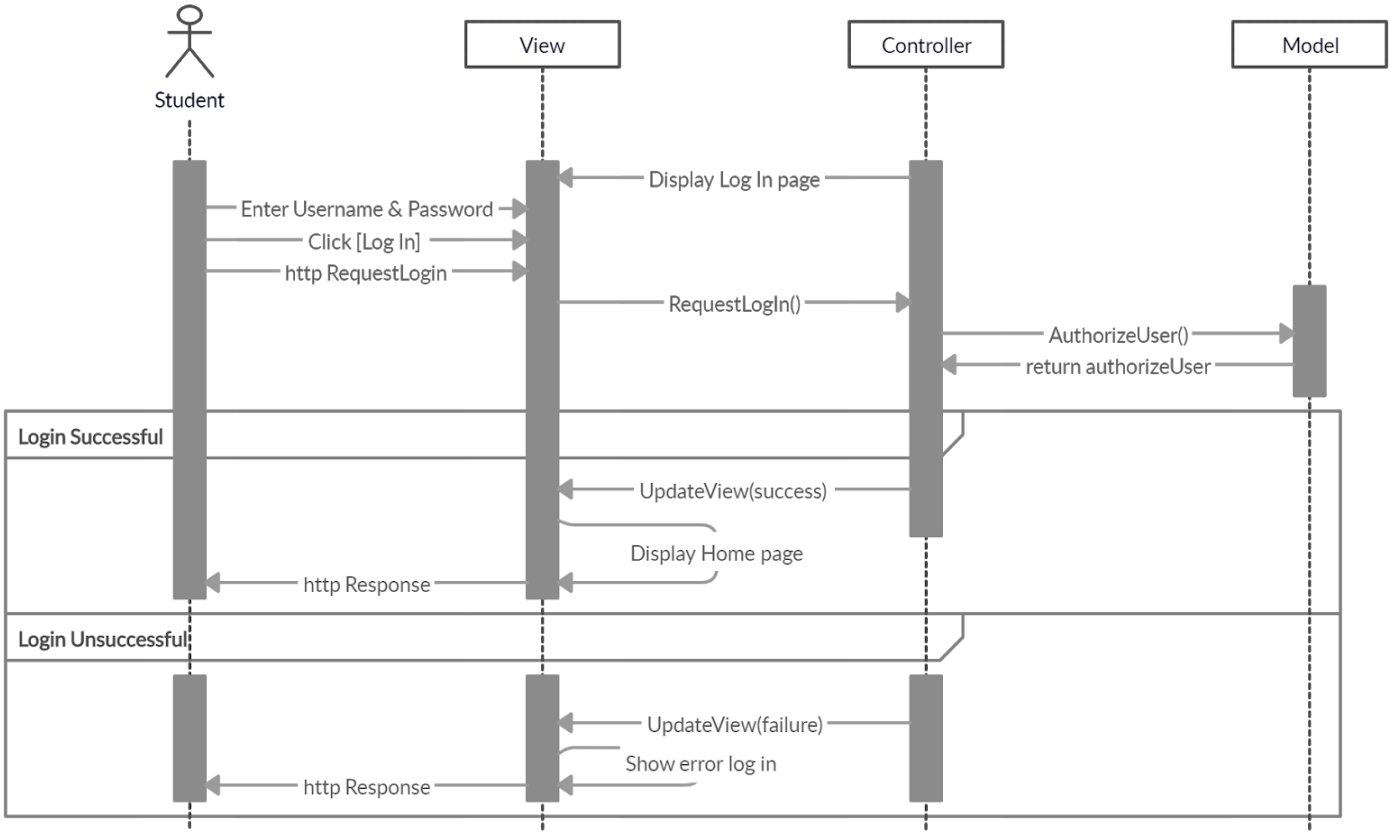


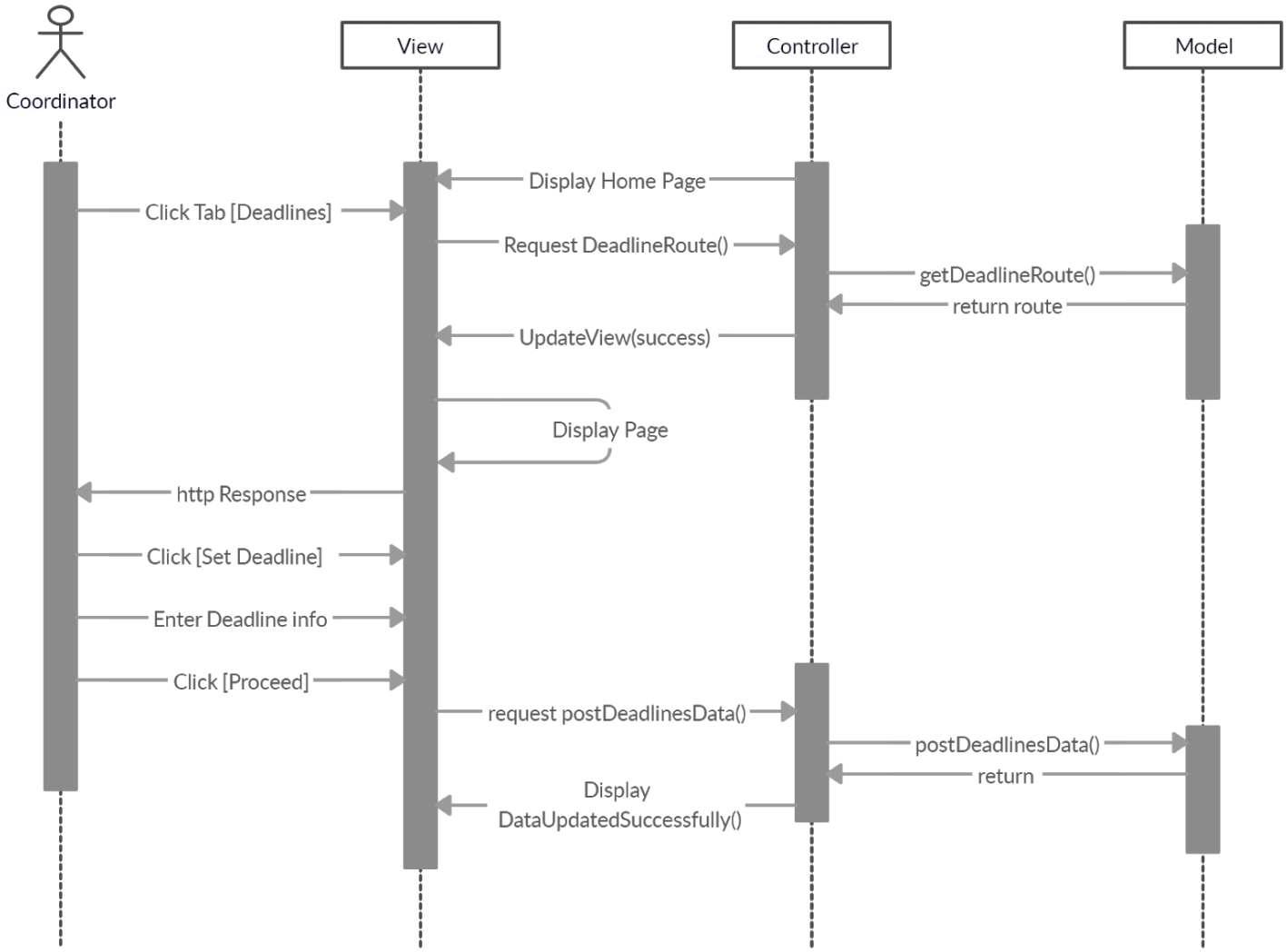
3.3 System Models

3.3.1 Class Diagram

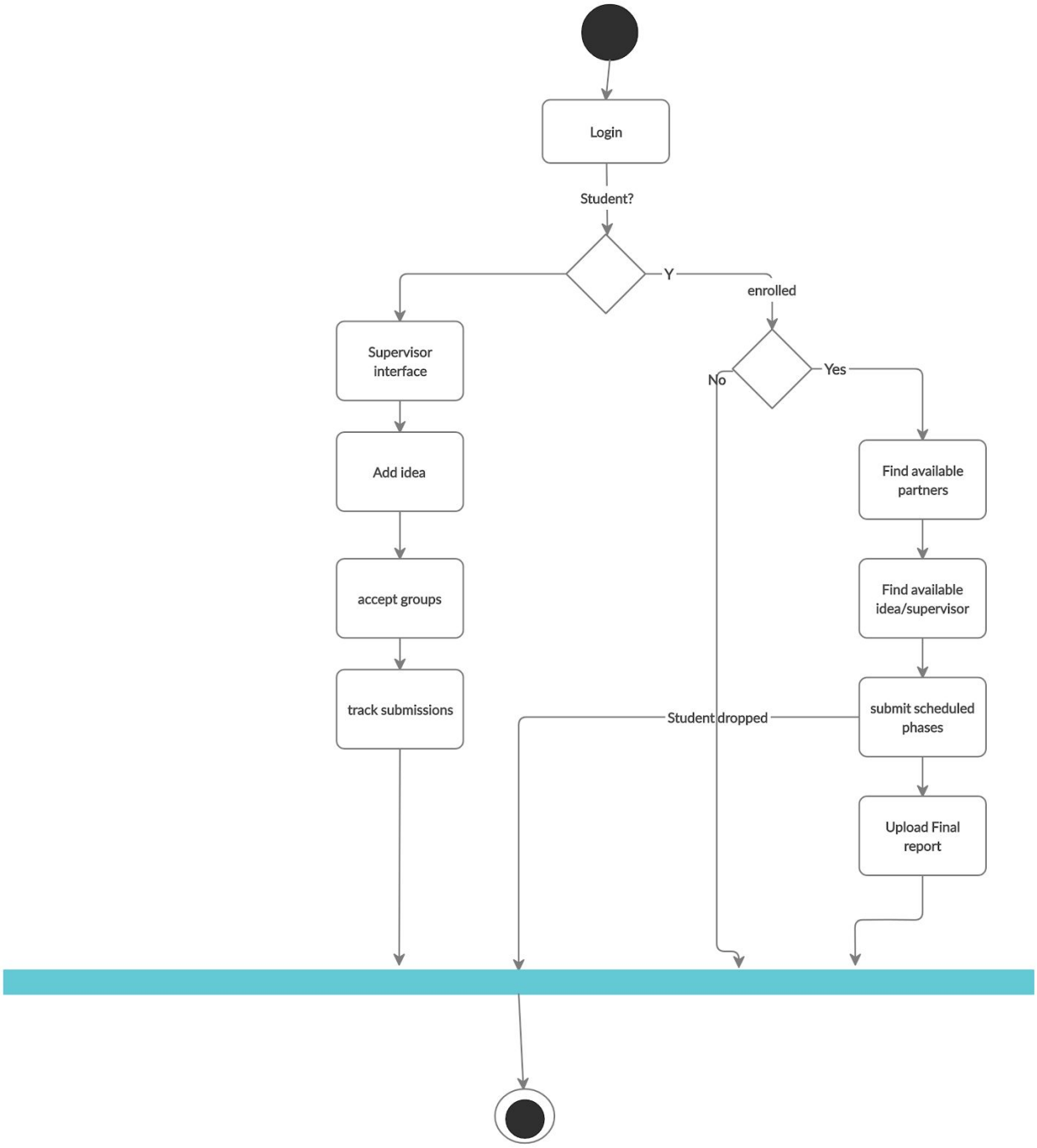


3.3.2 Sequence Diagram



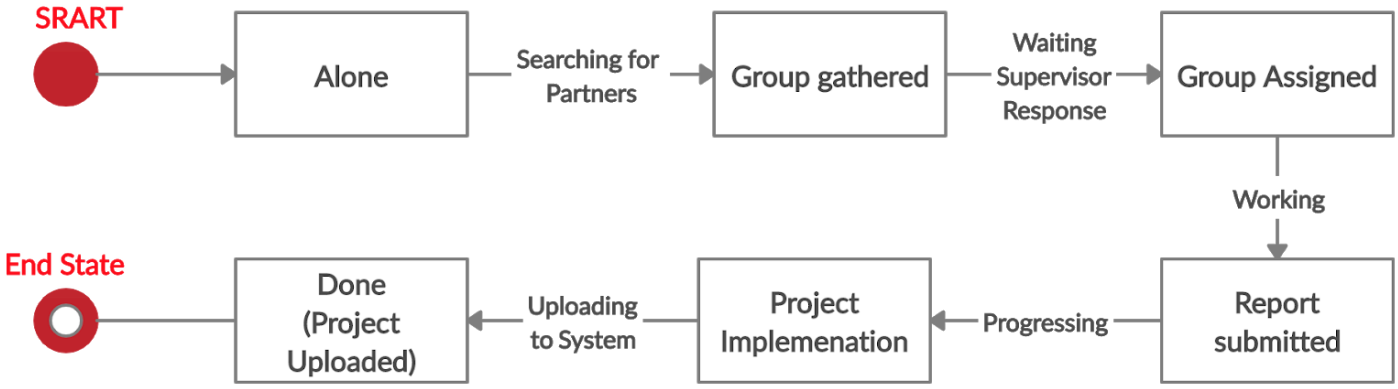

Coordinator
View
Controller
Model
Display Home Page
Click Tab [Deadlines]
Request DeadlineRoute()
getDeadlineRoute()
return route
UpdateView(success)
Display Page
http Response
Click [Set Deadline]
Enter Deadline info
Click [Proceed]
request postDeadlinesData()
postDeadlinesData()
return
Display
DataUpdatedSuccessfully()

3.3.3 Activity Diagram

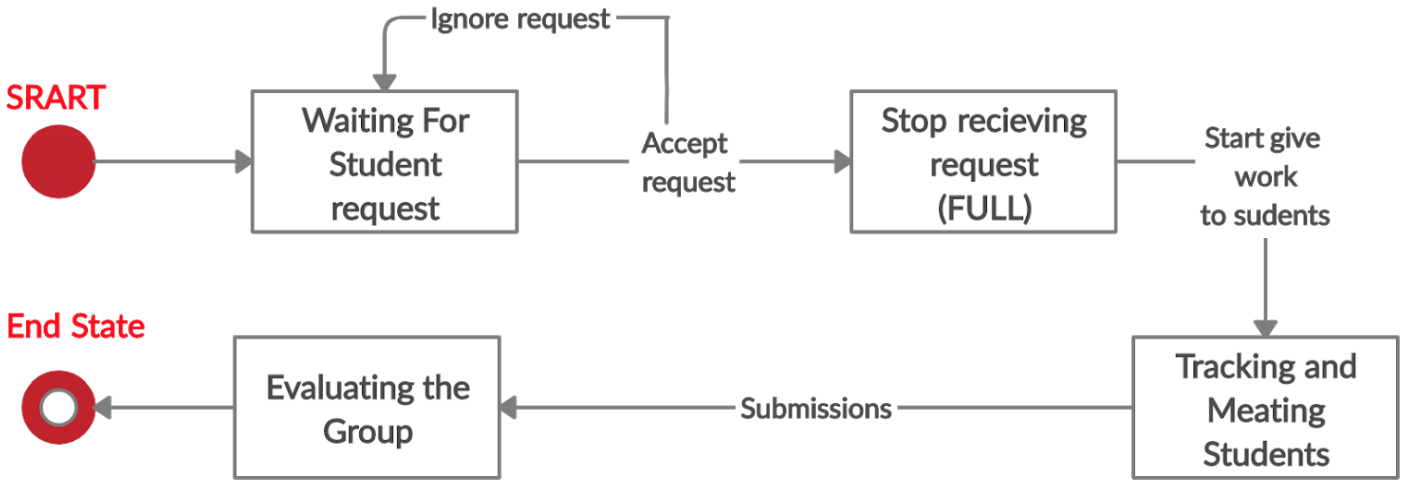

Login
Student?
Y
enrolled
Supervisor interface
Add idea
accept groups
track submissions
No
Yes
Find available partners
Find available idea/supervisor
submit scheduled phases
Upload Final report
Student dropped

3.3.4 State Chart Diagram

Student state diagram



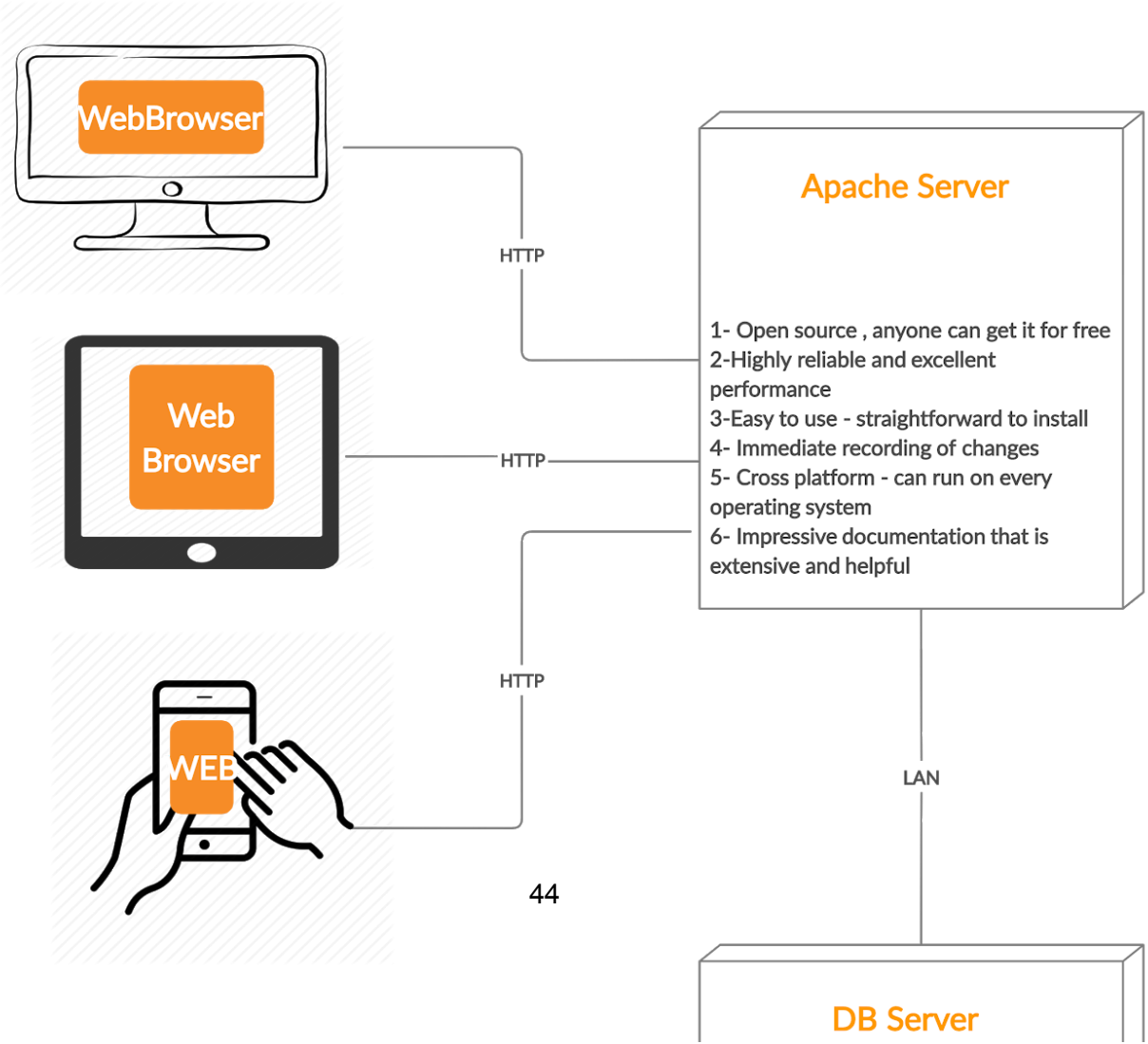
Supervisor state diagram

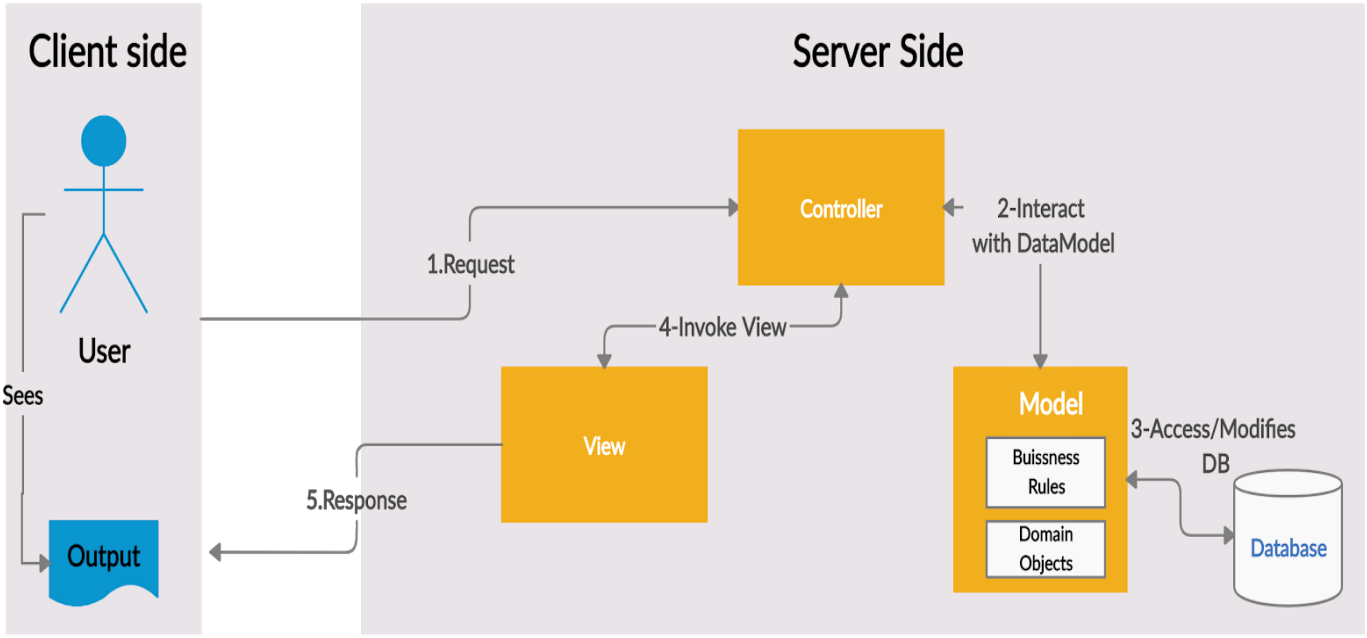


3.4 System Architecture

3.4.1 Descriptions Of The Sub-System

3.4.2 Software Architecture

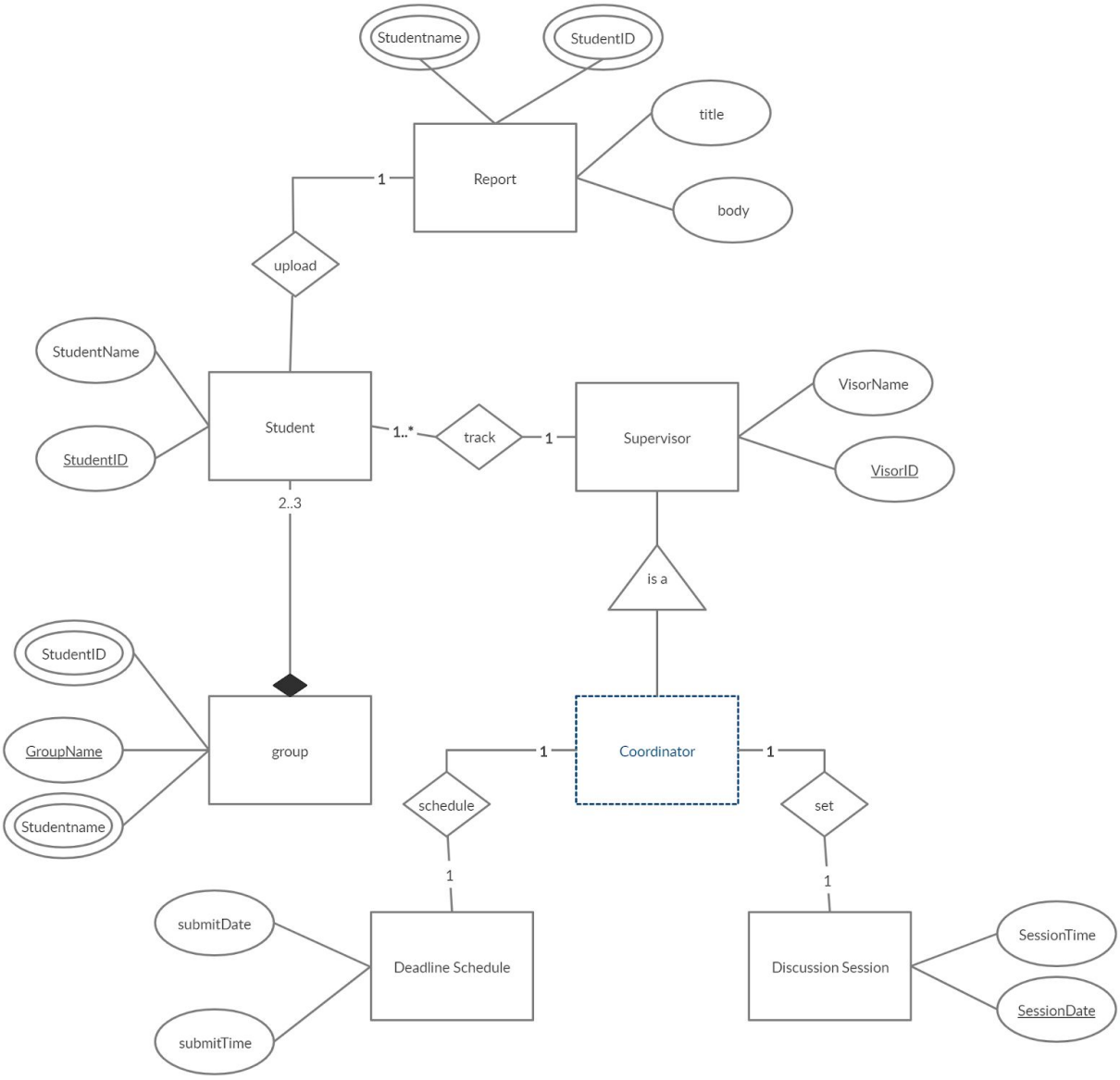

WebBrowser
Web Browser
WEB
HTTP
HTTP
HTTP
Apache Server
1- Open source , anyone can get it for free
2-Highly reliable and excellent performance
3-Easy to use - straightforward to install
4- Immediate recording of changes
5- Cross platform - can run on every operating system
6- Impressive documentation that is extensive and helpful
LAN
DB Server



Deployment Diagram

3.5 Data Management

3.5.1 Data Models (object relational mapping, relational data model, normalization)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Chapter 5:

5.1 Review of the project and redirecting of important findings

Portaj which is a web page based platform will be the extract of what we gained during the past three years, where we decided to leave a footprint and benefit the coming generations, in order to help them in their completion of the different phases of the graduation project, considering the obstacles we faced during the same period, where requirements were gathered depending on different interviews with the faculties' supervisors and from an online questionnaire that was directed to the students -especially IT students-, The technologies that will be adopted in the implementation of this platform are believed to be the most suitable technologies that will provide the best performance and response time.
Depending on the online questionnaire that got 72 response, the main findings were as follows:

- 46% of the students had problems finding partners.
- 55.6% had problems finding a supervisor.
- 58.3% of the students didn't know what is the workflow of the project.
- 70.4% faced difficulties in finding reliable scientific references

- 84.7% of the students have no problem in making their final project available to the public or other students

خلص اه؟ كتير حلو الخط بالعربي
شوي شوي هههههههههه صححح! بجنن!!
جاهز, شوفي منيح؟
بدي اقوم اجهز حالي و البس
ارفعي الملف على درايف
وشيكي عالتلخيص لاني ما بعرف شو اتفقنا نحط وشو نترك, فبس شيكي عليه عالسريع
بدي اقوم عالحمام فرطت باي
يا رب يا نور تتنبهي
وردة الوطن
نطبع بي دي اف احنا؟ منطق؟ ولا بس التسليم بي دي اف؟
تمام
التيرنت ان كمان تنسيش
بدي اقوم بسرعة انا وبرجعلك
سيفت هههههه التلخيص و عملتو بي دي اف
لا طباعه بطلع ارتب
اوك اوك

5.2 The work to be done in the second semester

In the second semester we will start implementing our portal depending on the diagrams and mockups that we designed.
Each diagram will help us with the implementation,

Such as the er diagram which will help on creating our database with its tables and relations using mysql.
after preparing the database, we will connect it with our website using php .
in addition to the server that we will connect with ,which is apache server for the reasons that we mentioned before.
After finishing the back end side , we will jump to front end side ,So the implementation for the interfaces will be mainly designed using angular ,Which includes html css and typescript.
So ,there will be many interfaces such as main page , student profiles page and the page which includes the suggested ideas and the list of available partners ...etc.
Certainly, the supervisor / coordinator will have access on many things that's not allowed for the student to do , such as accessing the marks or adding suggested ideas .
Also ,We will consider our website to be responsive , to fit different sizes of screens.
All of these things will be implemented sequentially, after each sprint we will make a unit testing to make sure everything is going well and no bugs or problems

References:

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Section – B

Project No: 129
Supervisor: Dr. Bassem Sayrafi
First Supervisor Signature:_____
Key Areas: Archive, Web Application, Angular, Graduates

Date Submitted: 25.1.2020
Date Approved: ____ / ____ / _____

In the final year of every student's educational journey, they have to make a graduation project that demonstrates all the experience, skills, and knowledge they achieved. However, most often, there is no clear guide to help students sort out the process of managing their graduation project milestones. Portaj, our project will provide the cornerstone for establishing an assistance system that gives the main structure of going on the graduation project, where students, supervisors and the coordinator of the course are all combined in one platform, the system role starts where students could find available partners and supervisors to agree with, then the system will provide rich references for students, where they can find suggested ideas to work on for their project, also it contains mainly an archive that collects the graduated-students projects, which provide good assistance depending on already submitted projects that share the same domain, nearly from students how had the same learning experience and skills, moreover, it contains examples for documents and assignments that the students need to submit through the different phases of the project along the year, with their due date and time, which creates an organized system for students that can depend on to accomplish their tasks on time and with no delay or confusion, furthermore students have the ability to search for ideas, concepts, or related work.

For supervisors and the coordinator side, the system provide the discussion scheduler facility that divide the wanted submissions on different times in a suitable way, the other facility is discussion organizer, that organize the final discussion sessions considering students and supervisors available times.

During the semester we adopt a working methodology, where we established the software functional and non-functional requirements after creating an online questionnaire directed to the students, about the most difficulties that they face

during the preparation of their final project, besides short interviews that we held with some of the faculty supervisors' asking them about the domain we are working, and about their expectations which helps in clarifying and analyzing the main problems to be solved by the system.

To implement this project as well as we can, we chose the most suitable technologies to work with, to have a comprehensive platform, that responds and acts quickly with the least possible crashes.

For the client-side operations, we will be using Angular 6 framework, which is a javascript based web application framework used for building single-page web apps, Angular includes HTML, CSS, and Typescript. HTML is the language that builds the webpages. CSS is for styling the pages, including CSS Bootstrap Library. Typescript for the development of the pages, to make them dynamic. Angular is the best choice we found, because it is a single page application, and it has MVC architecture; which increases the flexibility and maintainability of the code by binding models.

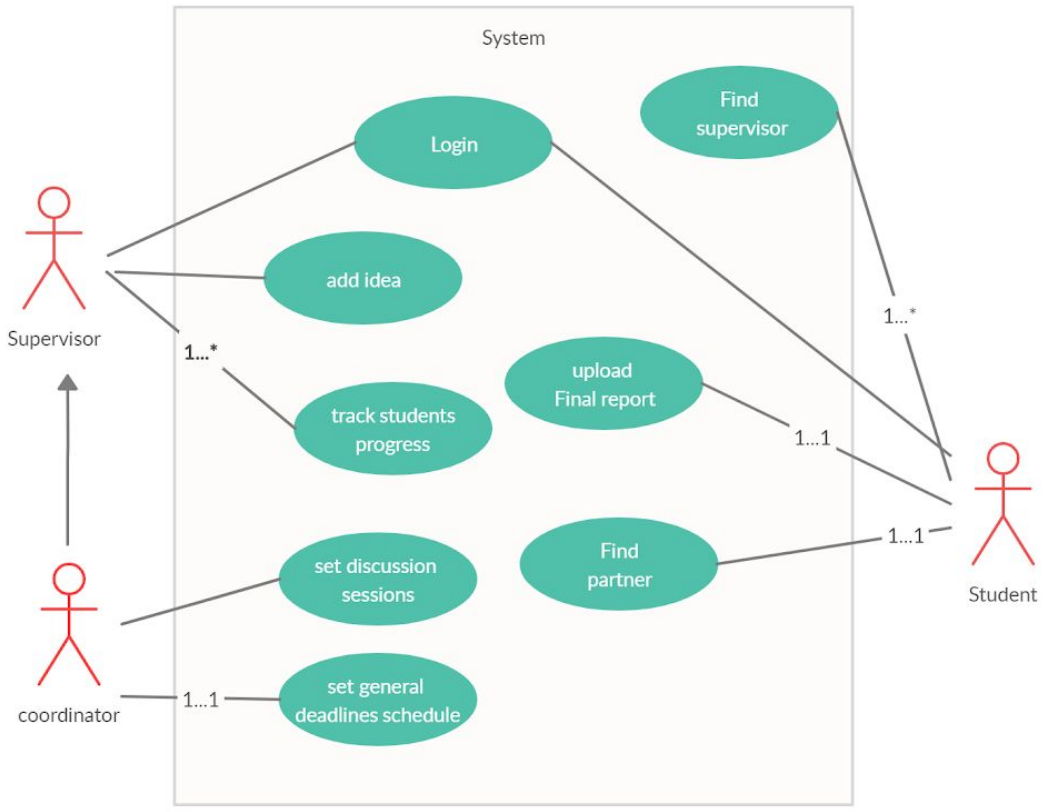
For building the database, we will use MySQL which is an Oracle-backed open source, cross platform, relational database management system, which handles all of the database commands.
As for a platform that has mainly an archive as the main feature it needs a responsive, flexible, free, efficient, and secure database, and all of those are included in MySQL database.

For server-side operations, we will use PHP which is an open source, server side, general-purpose scripting language that is especially suited for web development.
PHP supports different databases including MySQL –that we will use- they will be connected using using the PDO_MySQL library. Also, PHP will be used for creating RESTful APIs. In addition, PHP will be used to make CRUD

operations on the database. We chose PHP as our main language for backend operations because it is easy to learn and use, and it is very well supported online.

For the server side, we will be using PHP Apache webserver which is an open source software and cross platform (function on both Unix and Windows), it establishes a connection between bowsers (of website visitors') and a server and the browsers

USE case:



Deployment diagram