Design and Deployment of Capstone Project Process

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Group-06

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Abstract

For many years in every trimester, there are students who face many problems in completing FYDP process such as students don't have any group to do FYDP course or have less members in the group and require members or have no idea of how to contact with a mentor and what type of projects that mentor has available for FYDP course etc. Keeping all these problems in mind, we've come to an optimal solution and designed our project in such a way that a student can easily create their own group, join a group, see mentor lists with their contact info and the projects available for FYDP course etc.

Acknowledgements

First of all thanks to ALMIGHTY ALLAH for giving us the ability to complete this project.

We sincerely want to thank our respectable mentor sir Prof.Dr. Hasan Sarwar Director of Edusoft Consultants Ltd and Professor of Department of CSE at United International University for giving us the opportunity, help us in every difficulty we faced and to motivate us and come to a solution of the problems that students face while choosing FYDP course.

We would also like to show our gratitude to our respected course teacher Dr. Md. Motaharul Islam Professor of Department of CSE at United International University fo being very kind and generous towards us and teach us so many important things that will help us in the long run of our life.

We would also like to thank all the faculty members who helped us to come this long way and taught us so many important things that helped us to complete this project in a good manner.

We would also like to thank the students for giving us their honest reviews that helped us to find the solution that they are facing.

Last but not the least, we would like to thank our parents and other family members for supporting us all the time and showering us with unconditional love that we all needed to complete our project beautifully.

Publication List

[Optional] The main contributions of this research are either published or accepted or in preparation in journals and conferences as mentioned in the following list:

Journal Articles

1.

Conference Papers

1.

Additional Publications

Following is the list of relevant publications published in the course of the research that is not included in the thesis:

1.

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Chapter 1

Introduction

We will try to give an initial idea of our final year design project in this chapter which will include all our initial thoughts and plans to finish our project.

1.1 Project Overview

In our project, we want to make the whole FYDP process easier. Where students can easily select the FYDP project, members, groups and mentors all through UCAM. Students will firstly create a group of maximum six members and will keep slots empty if the group needs more people to join so that when any student is not ready with a group he/she can join into the group having empty slots by requesting to join. For students' ease there will be a list of groups which will show all the groups' information and will be updating constantly. Also the group creator can reject member requests if he/she doesn't want to add a new member but to delete an already existing member or the entire group the group creator must seek the approval from the administrator. There will also be project proposal lists and mentor lists so that students can take ideas of projects they want to work on and contact the mentors from the list. Students will also be able to upload their weekly journals, reports and presentations on UCAM. They can schedule their meetings with the mentor from the calendar too by direct messaging.

1.1.1 System Already Exists

Our university has already got a website named UCAM which is the primary website of our overall system. It stores student attendance records, payment records, results and does the completion of the section selection and course selection of each trimester. Students, faculties, department authorities and everyone can login to this website and upload notices too.

1.1.2 Problems in the Existing System

UCAM being one of the main websites of our university, still has some problems like- in case of taking the final year design project, there is no platform to record all the mentor names with corresponding project groups and project titles, no records of faculties having how many groups. Being an official site, lack of these records or having one certain platform to have access to everything related to the FYDP can be considered as a flaw.

1.2 Motivation

Often we students who want to take a capstone project for the next two semesters, don't have any idea or get confused while selecting the capstone project for the next two semesters. Because many of us students don't know where and how to find the contact information of the supervisor and may get confused about the topic choosing because it is going to be a real-life-based experience for the student. The problems are also faced by the faculties and department authorities too. As an example we form many groups in every semester but there is no official track record of which group has done which project in which semester and also no record of how many groups are taking FYDP in the current semester, also the reports, journals, final reports, and presentations are currently submitted in a google drive provided by the class teacher but if we create an option where we can upload all of these papers and researches then it will be easier for the faculty, students and also the department personnel to have the record of all the group information and data. These were the reasons we thought there should be a separate option for taking caption projects (FYDP-1 FYDP-2) to ease the difficulties of the students.

1.3 Objectives

Our objective is to ease up the process of the whole process of taking FYDP-1 and FYDP-2 by creating features like -

- Students, Faculties, and Authorities will log in to UCAM.
- Students must have completed 100 credits or more and done the courses System Analysis and Design and Project Management.
- Students will initially select a group creator and the group creator will create the group putting all the information of each member.
- Students will now see the group information in the group list and will also be able to see which groups are vacant to have another member.
- Students will now select a project, name the group and choose a mentor from the mentor list and wait for the mentor's approval to be assigned to the group.

- Admin has the power to delete a group, delete a group member, add members to a group(if a student is unable to find any group from all the given groups in the list then the student shall contact the administrator), delete mentor, edit mentor, edit the title and edit semester.
- Mentors and class Faculties will get the information of the students and their group members from the lists.
- Within the first class, the admin will provide an authentication form in the UCAM so that faculties, mentors, and students can access the form altogether.
- Students will get an email from the administrator approving the mentor.

1.4 Methodology

In our project, we are following "Waterfall Methodology". Why are we using this methodology? In case of other simpler models like "Agile Method" has few iterations throughout the whole process and each iteration produces a well working product but in our project we think every phase or iteration would not be able to produce any working product so we decided to choose Waterfall Model as our methodology. Waterfall Methodology has six phases which are adaptable in the case of our project. The phases are -

1. Requirements Gathering and Analysis – We are now in this phase because we are gathering the requirements and reviews which we need to create our software. We have documented the reviews and features that are to be implemented.

2. System Design – The features and requirements gathered from the first phase will be studied and designed in this phase. The goal is to design a user-friendly interface that will help the students to understand the software.

3. Implementation – As the UCAM is already implemented and deployed, this part of the capstone project will be a unit of which will be integrated into the next phase. This unit will be developed and tested for its functionality, which is called unit testing.

4. Integration and Testing – The unit which is our current project will be integrated into this phase after the implementation. The functionality of the created software will be tested in this phase for any faults and failures.

5. Deployment and System – Once the functional and non-functional testing is done, the whole software will be ready for deployment to the students, department personnel, administrations, and faculties(customer).

6. Maintenance – Maintenance is done to deliver changes in the customer environment. Here the linear ordering of these activities is critical. End of the phase and the output of one phase is the input of the other phase. The output of each phase is to be consistent with the overall requirement of the system. Some of the qualities of the spiral model are also incorporated after the people concerned with the project review completion of each of the phases of the work done. "Waterfall Model" was being chosen because all

requirements were known beforehand and the objective of our software development is the computerization/automation of an already existing manual working system.

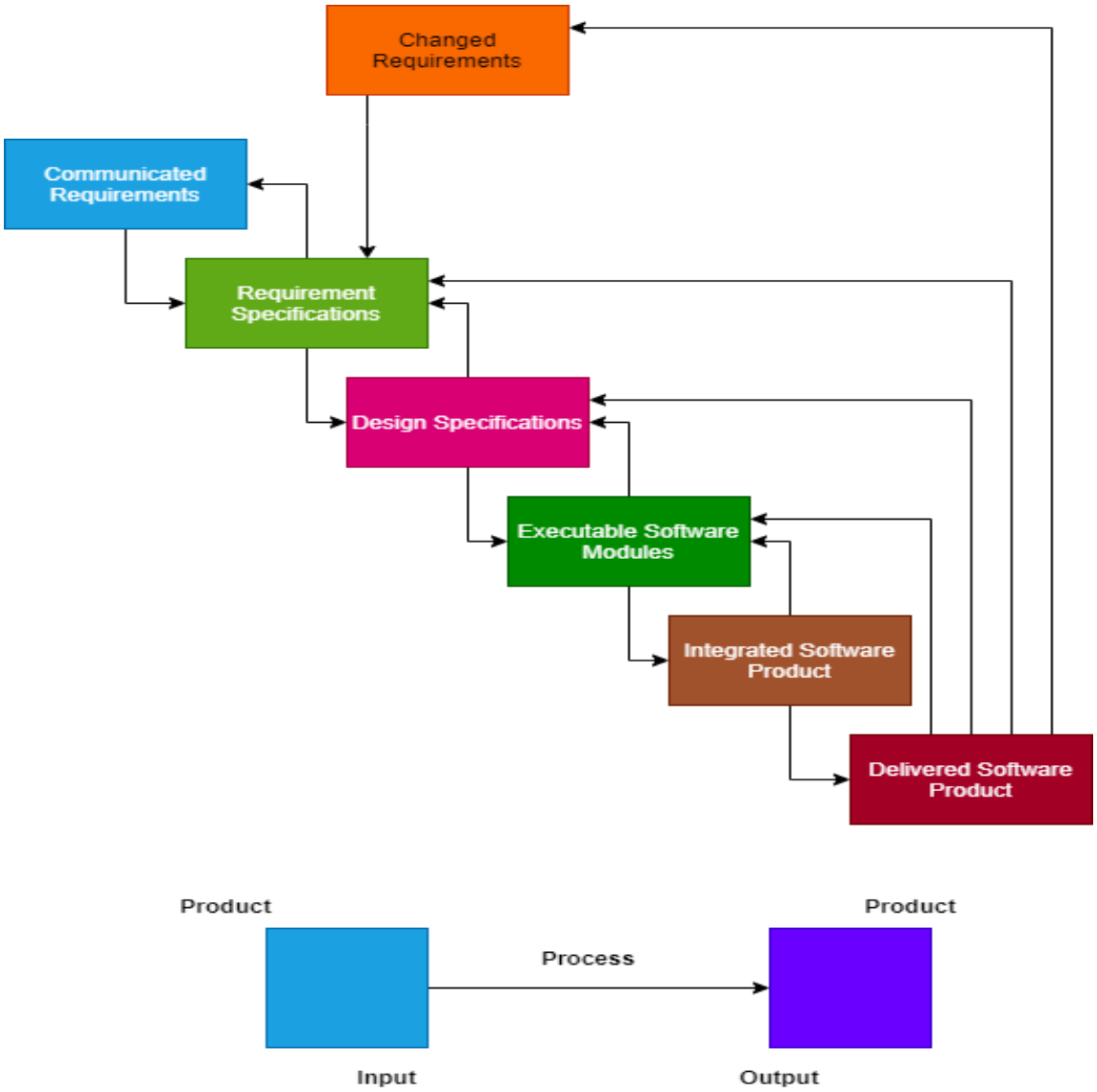


fig 1: Waterfall Model

1.5 Project Outcome

In this project, we will get so many benefits. First of all, the department will have records of how many groups were created. There will be a history of the current semester and how many students took the project, which group did which project under which mentor in the semester so that other mentors can have an idea of all the projects, students will get an idea of what other students are doing, students who have taken FYDP newly will get an idea of what type of project is done in the FYDP course in previous trimester.

1.6 Contribution

The contributions we are planning to add to this project are:

1.We will implement an option on UCAM where all the students who are to take FYDP in their next semester will be given a group, mentor and project proposal lists.

2. The students who have already chosen the group and mentor can give their details on the FYDP portal and students who don't have a group will request for the group to the group creator.

3.The group creator will have the power to create, update/add members to the groups, edit group name and select a mentor.

4. There will be a mentor list or database where mentors will notify the admin about their availability of taking more groups.

5.We also want to make a calendar schedule where students can request for meetings with the mentor on ucam.

6. The students will be able to upload all their documents with corresponding group names, trimester and project titles on the system so that there will be an official record for every capstone project.

1.7 Reference

1. https://easystudy.info/Thread-university-management-system-full-report
2. https://www.academia.edu/36181799/Thesis$_M anagement_S ystem$
3.*https* : *//www.academia.edu*/5568260/$UNIVERSITY_M ANAGEMENT_S YSTEM_f ull_r eport$
4.*https* : *//portal.bazeuniversity.edu.ng/student/assets/thesis*/202102150045078415058 69.*pdf*

Chapter 2

Background

In this chapter, we have discussed several journal papers on the University Admission Management system, Thesis Management System, Final Year Project Dissertation etc. After studying we made a workflow for our project based on the literature we have reviewed. In preliminaries, we have discussed project ideas and in literature, we reviewed a few paper summaries.

2.1 Preliminaries

In this chapter, we're going to cover papers and publications which are relevant to our work. We have selected some of the most insightful journals and conference papers in this section and their techniques of perspective of work outlined.

2.2 Literature Review

In this segment, the literature that we reviewed for our project is given. This includes the papers that we found that are relevant to our study.

1. Final Year Project Dissertation - A Centralized System for an Effective Student Examination Management: The University of Salford wanted to build a web-based system for the students to know about the exams that will be added and updated by the administrators of the university using a web-based system including the details such as exam name, course, module, time, duration and venue which can then be viewed by the students by logging in to the web-based system.

2. Design and Development of University Admission Management System: The "University Admission Management System" is a web-based program aimed to make an easier and more convenient way for the admission process in educational institutes.This system is developed and based on Database Management System.

3. Thesis Management System: The main problem of the faculty, staff and coordinator is how it can be easily accessed by the students who want to borrow or search for those past thesis made. Proponents propose to build a thesis management system that is web

based so that many students can access it without going to the research room.

4. A Software Development Capstone Course and Project for CIS Majors: Accreditation and curriculum development are critical tasks at every university. This paper describes a comprehensive two-level framework for information systems curriculum design, assessment and improvement.

5. University Management System: University Management System(UMS) deals with the maintenance of university,college, faculty and student information within the university. UMS is an automation system, which is used to store the college,faculty, student, courses and information of a college.

2.3 Summary

In conclusion we didn't find any publication or project which is directly related to our project but we have gathered some information and techniques from these papers and publications that helped us understand our project workflow and some solutions we needed based on our project problems.We have found some diagrams, sequence diagram, activity diagram, flowcharts and use cases which helped us create diagrams in perspective of our project. We have also learned about the deployment of a project.

Chapter 3

Project Design

In this chapter we are going to talk about the Design, Methodology Ideas we have so far discussed based on our project. We have done some requirement analysis too.

3.1 Requirement Analysis

We have mainly created and analysed some Use Cases in perspective of our project which we thought would help us get better ideas to proceed further in our project. The requirement analysis we did so far are given below along with the Use Case diagram

1. Students can view the group list with members, mentor list and project lists: In the FYDP portal there will be an option to view list and the student can click on the list he wants to view like the mentor list, group list and project proposal list

2. Faculty and mentors can view the group list with members, mentor list and project lists: Along with the students, faculties and mentors and the administrators can also view all the group and group members information and the lists throughout the trimester.

3. Group creator(creator from group members) can add members to the group: There will be a student chosen from the group by the students from that group who will be like the leader of the group. He will have the power to create the group by giving all the other members information. Also if his group is vacant to have a member and if a student requests to join the group then will have the power to add that member or reject him if he wants.

4. Administrator can delete groups and members and edit trimester: However the group creator will not have the power to delete any member from the group or delete the entire group. If a member is added already and the group creator wants to remove him or if he wants to delete the entire group then will have to contact the administrator and the member or the group will be removed only if the administrator approves it.

5. Mentors can notify their availability in the list to keep updating the list: Mentor list will be updated constantly because the mentors will be notifying about the availability of him to be assigned to a group so that if any group wants to contact the mentor, he/she can contact him by seeing his availability in the list.

6. Mentors will approve group assignation requests from group creator: The group creator will then request a mentor to be added to his group after seeing his availability. After that the mentor will only be assigned to that group if the mentor sends an approval or confirmation message to the group members.

7. Students can request to a group for adding him/her into the group: Students will initially create groups having maximum members of 6 people but there is a high chance that some students will be left out and will not find any group beforehand. So in that case students can request to be added to a group by seeing the group list. Students will get an approval message if he/she is added to the group.

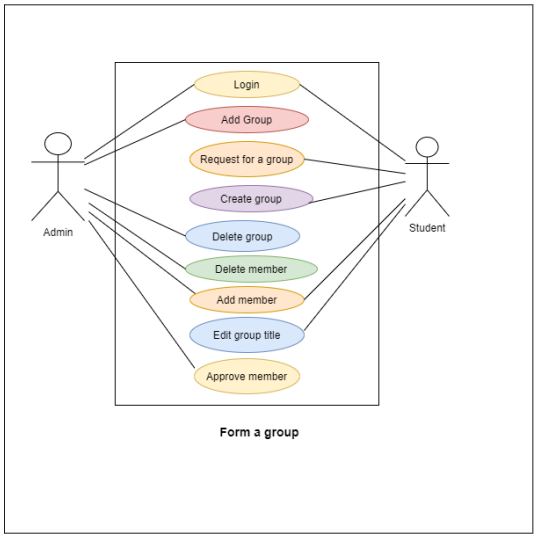


fig: 1

In the Use Case of Form a Group, there are two actors and they are Student and Admin

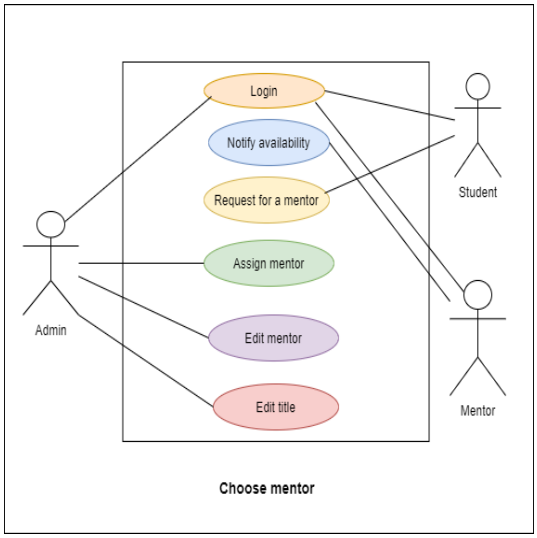


fig: 2

In the Use Case of Choose a Mentor, there are three actors and they are Student, Admin and Mentor.

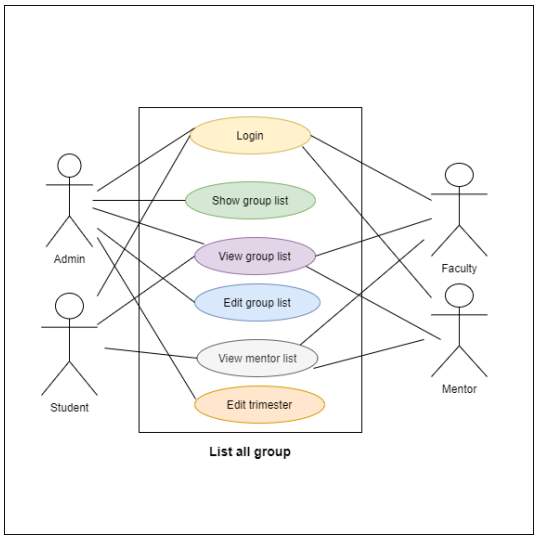


fig: 3

In the Use Case of List All Groups, there are four actors and they are Student, Faculty, Admin and Mentor.

3.2 Methodology and Design

We have divided our project analysis and design procedure in some steps. We have firstly created some flowcharts which helped us go into deeper analysis and ways of doing our project in a systematic way. We have created three flowcharts and they are given below:

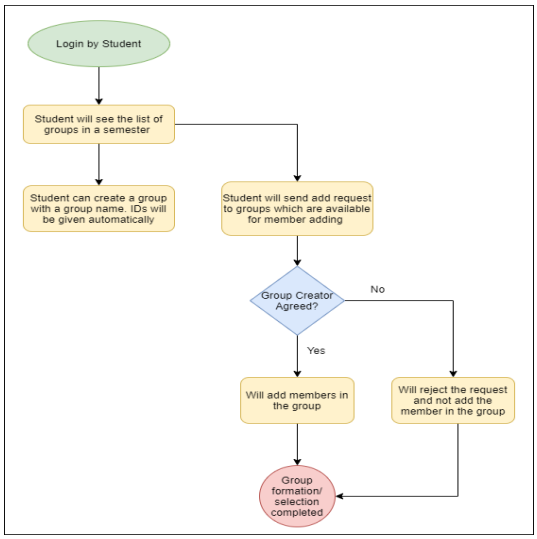


fig: Group Selection/Formation

Flowchart of Group Formation/Selection: Students will login to the UCAM website first. After that the students will create a group and the IDs will be given automatically. They can also send requests to be added to a group. If the group creator approves the request then he/she will be added to the group and thus the group formation process will

be completed otherwise the group creator will reject the member request and he/she will have to look for another group to be added into.

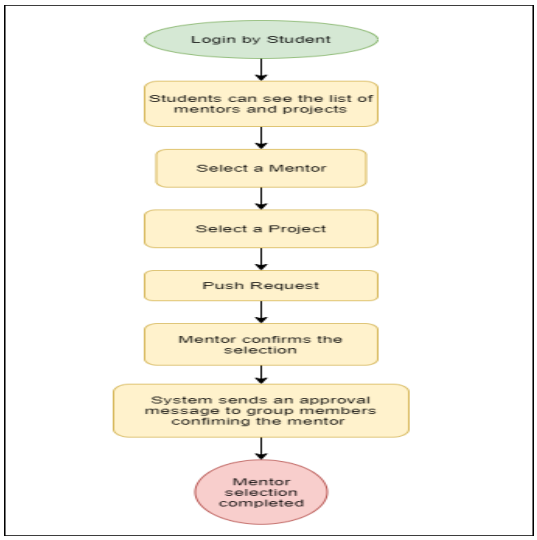


fig: Mentor Selection

Flowchart of Mentor Selection: After logging into the UCAM FYDP portal, students will be able to see the mentor list and the project proposal list. He will then select a mentor from the list, push request and wait for mentor confirmation. If the mentor confirms his request then the mentor will be selected successfully.

Updated Flowchart:

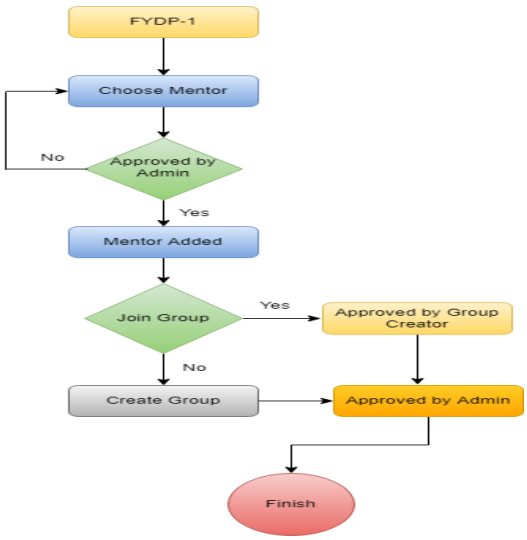


fig: Updated flowchart

According to this flowchart the student will go first to fydp portal. Now they will choose a mentor from mentor list and wait for the admin's approval. If the admin approved the mentor request then the mentor selection will be done. Otherwise he has to request for another mentor. After that the student will join into a group and wait for the group

creator and admin's approval. The student can also create his own group and will wait for admin's group creation approval. In both case after getting the approval from the admin, the student will either get into a group or will have his own group where other students will be able to joining

3.2.1 User Interface

We have created some tentative user interface diagrams which may help our project easier to understand. The UI diagrams are given below:

This is the look for FYDP 1 student portal.

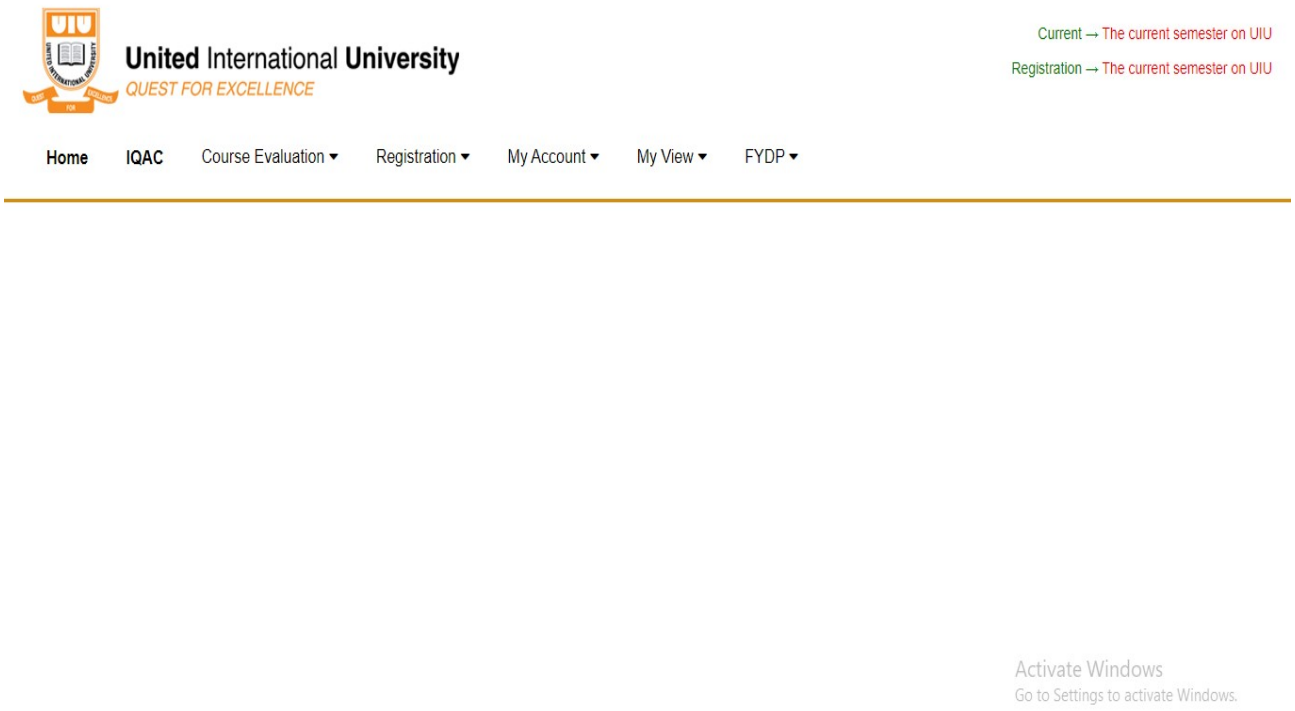


fig: UI - 01

First of all, after logging into the UCAM website, the student will click on the registration portal and then there will be the FYDP portal beside the MY View portal which we will be making for our whole FYDP enrollment process.

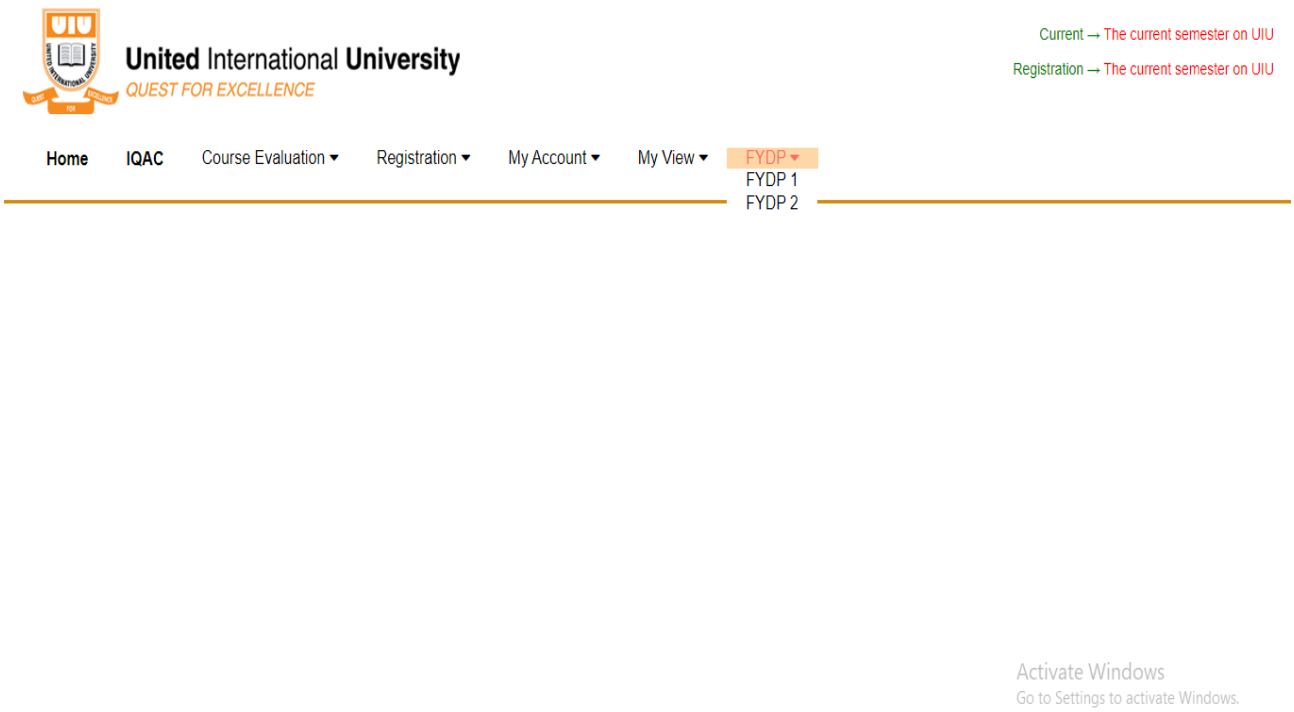


fig: UI - 02

If we hover over that FYDP portal and click on it, we will see that there will appear 2 options FYDP 1 FYDP 2. Students who have completed 100 or more credits and done the System Analysis and Design and Project Management courses as a prerequisite can only see the options inside these two modules.

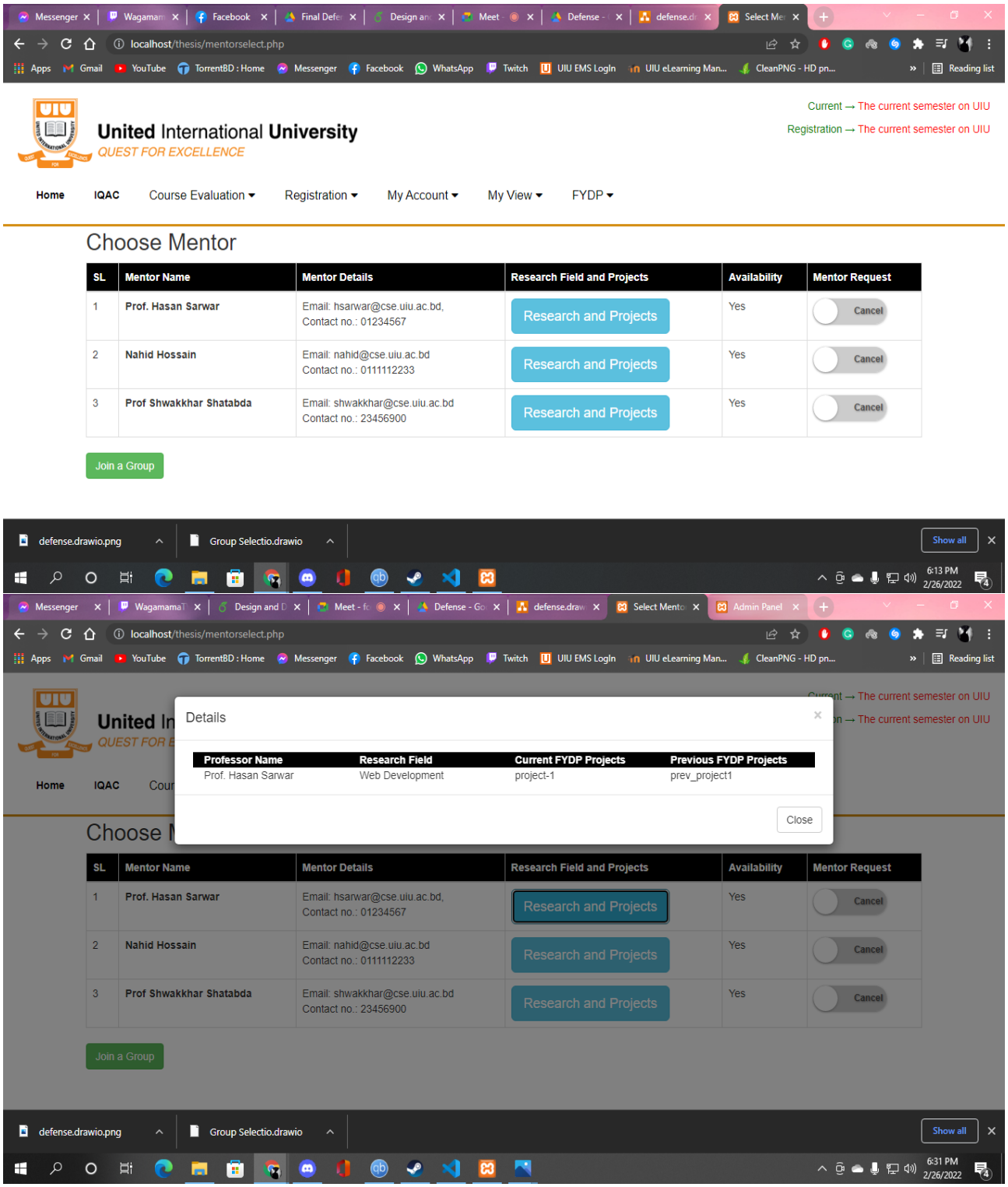


fig: UI - 03

If a student clicks on FYDP 1 then the page would look something like this. Here the students can see mentor list if the mentor is available or not, projects and researches and then can send mentor request to work in any of that mentors project. If the student want to join a group then that student has to click on Join a group.

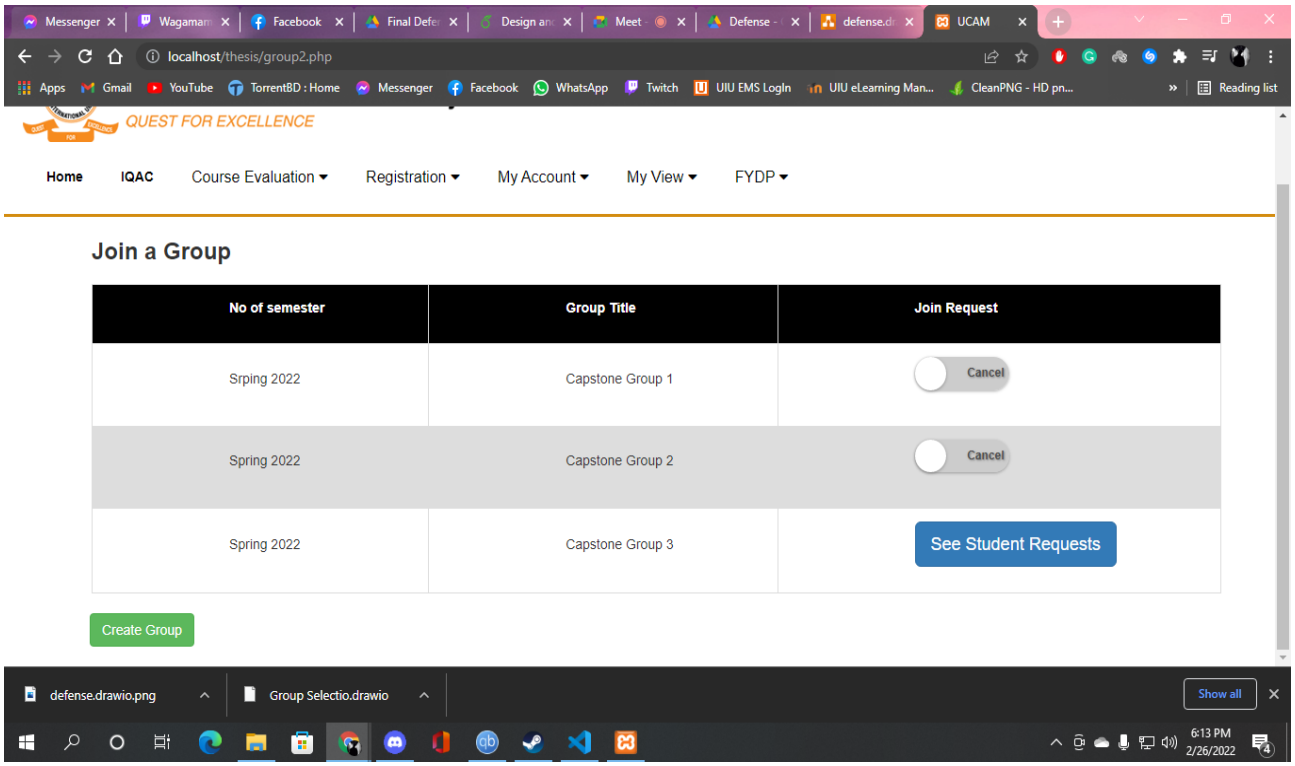
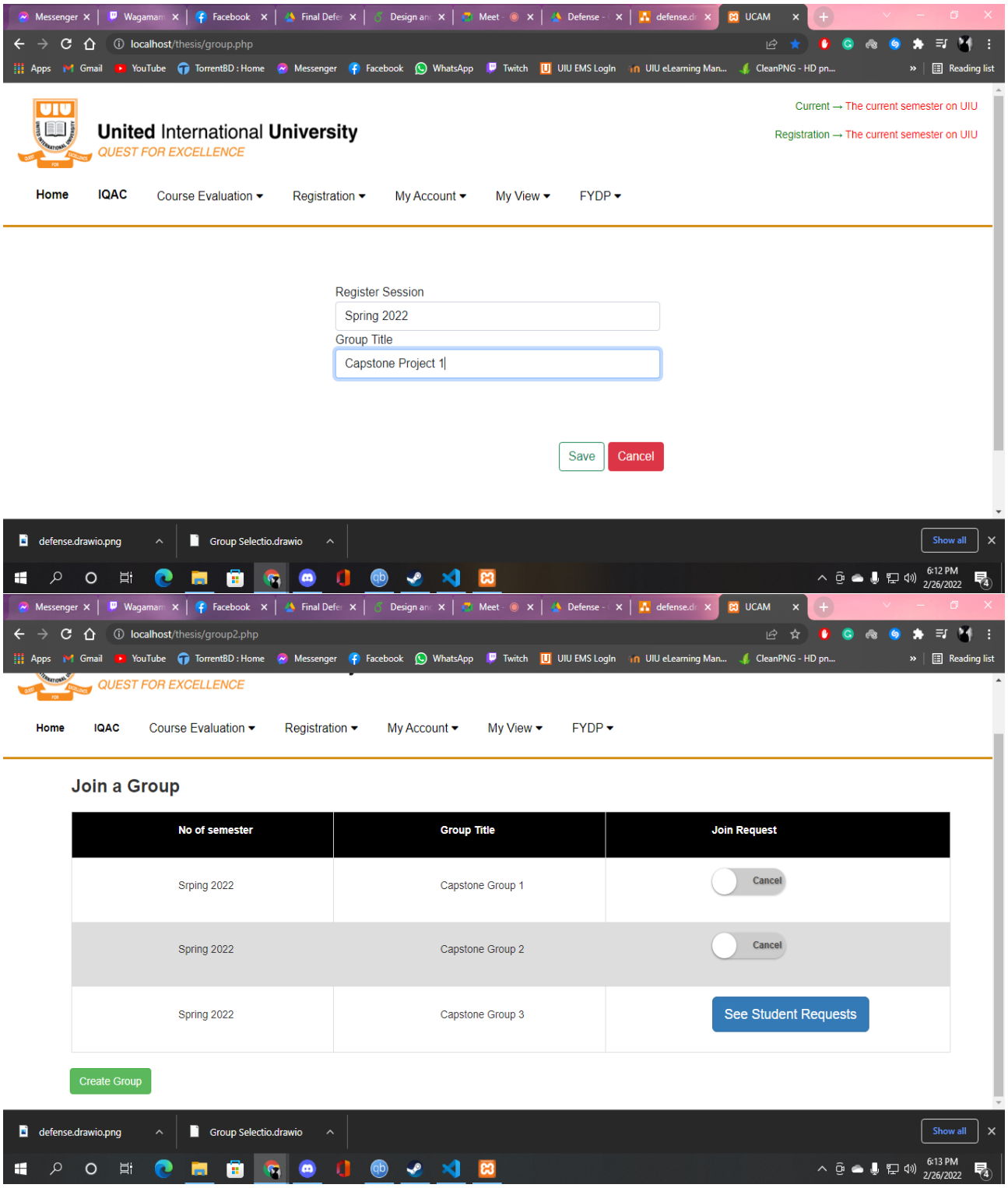


fig: UI - 04

After clicking Join a Group, students will see this interface where there is a list of group that need members. Student who does not have any group, can send join request to any of the groups.


localhost/thesis/group.php
United International University
QUEST FOR EXCELLENCE
Current → The current semester on UIU
Registration → The current semester on UIU
Home
IQAC
Course Evaluation
Registration
My Account
My View
FYDP
Register Session
Spring 2022
Group Title
Capstone Project 1
Save
Cancel
defense.drawio.png
Group Selectio.drawio
Show all
6:12 PM
2/26/2022
localhost/thesis/group2.php
Join a Group
No of semester
Group Title
Join Request
Srping 2022
Capstone Group 1
Cancel
Spring 2022
Capstone Group 2
Cancel
Spring 2022
Capstone Group 3
See Student Requests
Create Group
6:13 PM
2/26/2022

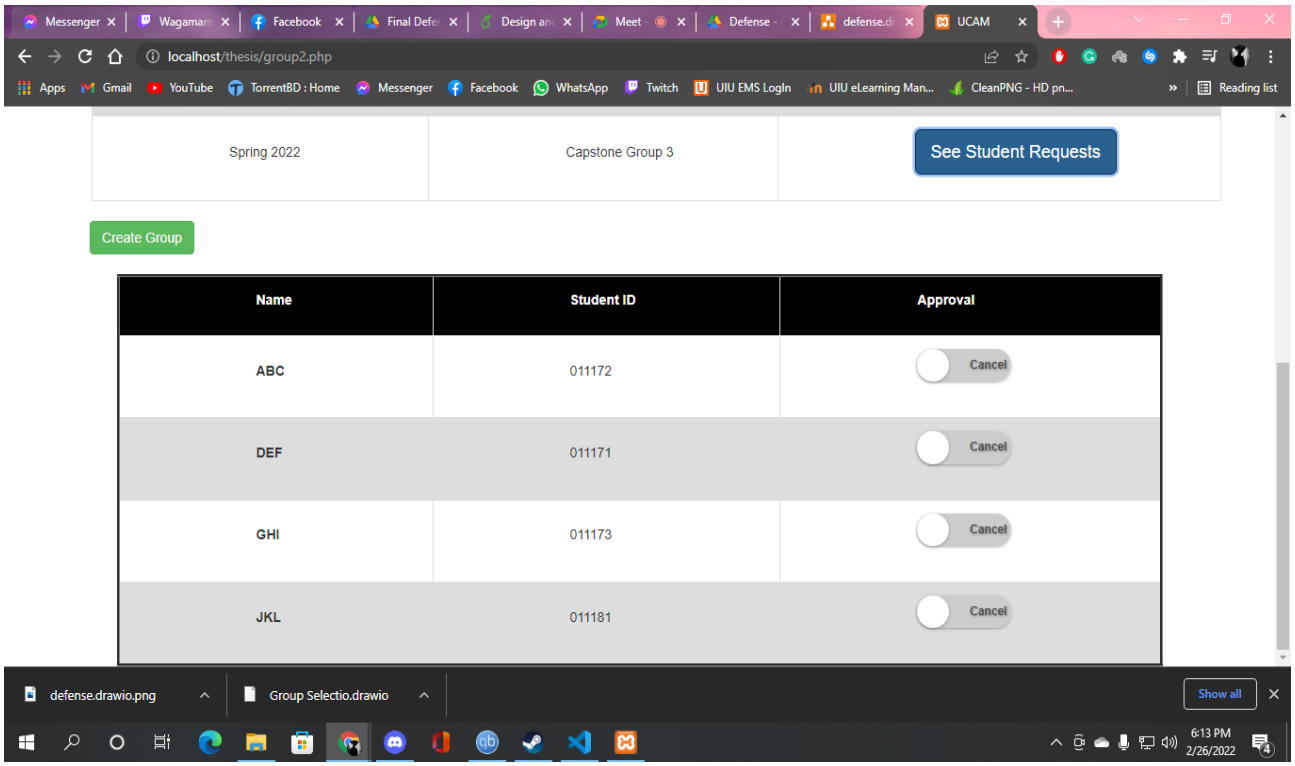


fig: UI - 05

Here students can create a group.To create a group students need to give their project name and save it. After creating the group, students of that particular group can see member requests or in short they can see who wants to join their group as a group member and can approve him/her.

This is the look for FYDP 1 admin portal.

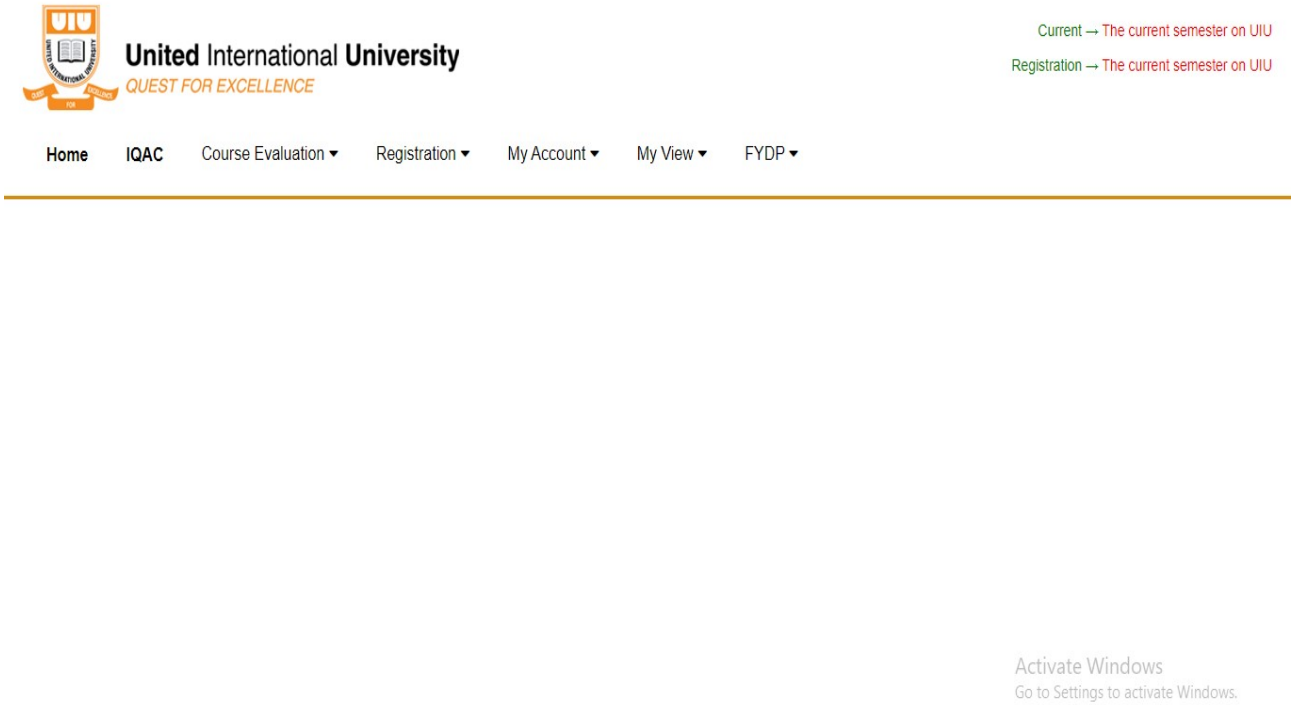


fig: Admin UI - 01

Admin will see FYDP portals. If the admin hover over the FYDP portal, admin will see FYDP-1 and FYDP-2 portals.

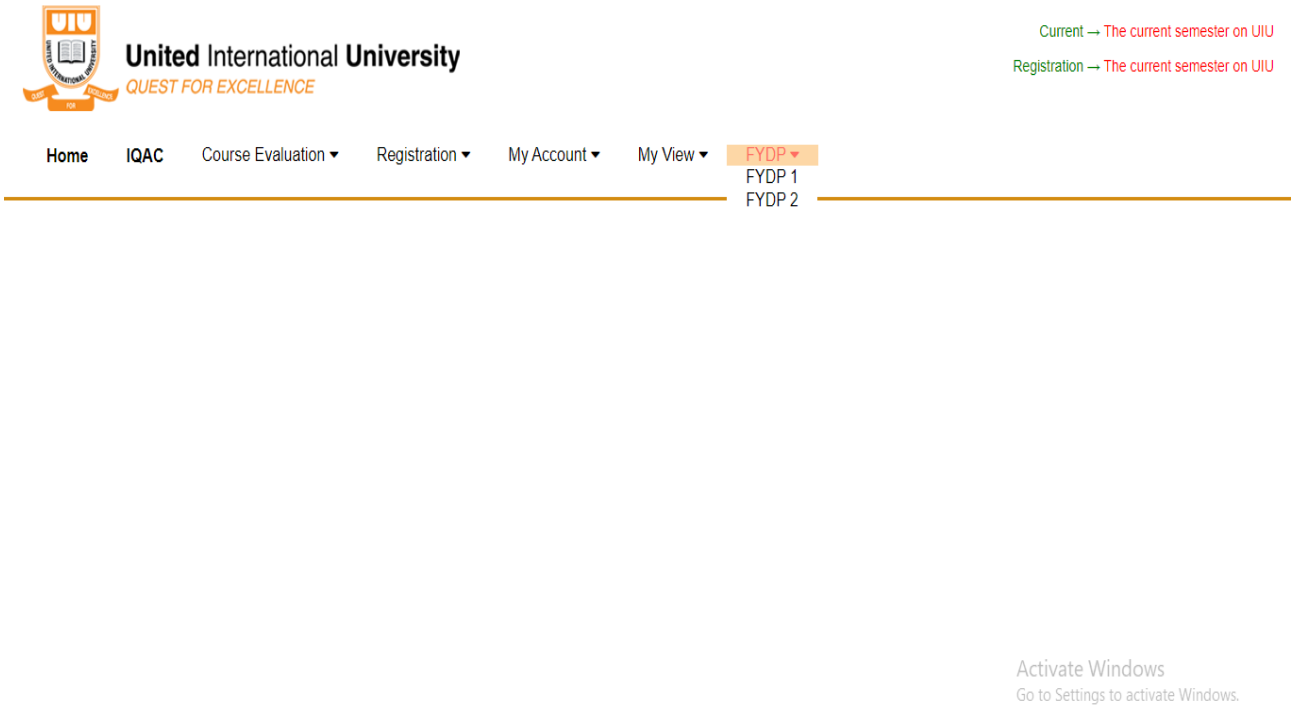


fig: Admin UI - 02

Admin will click on FYDP-1 portal.

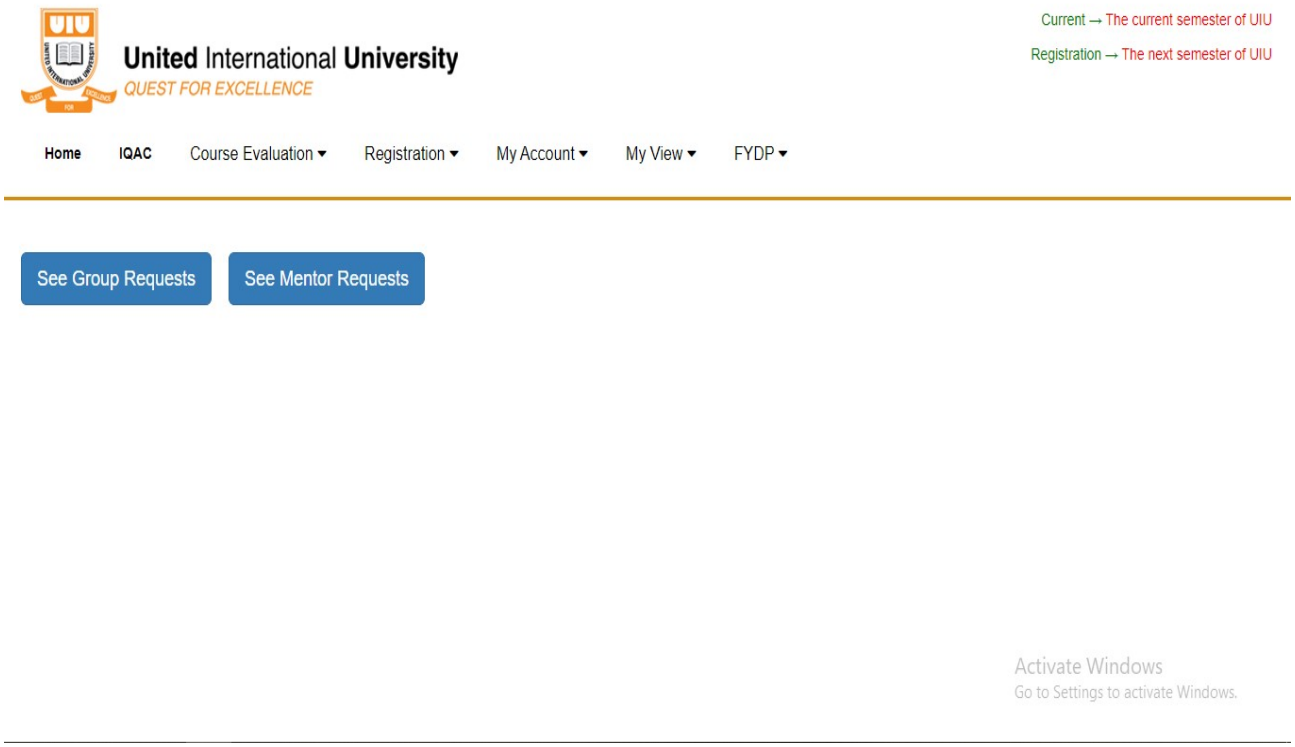


fig: Admin UI - 03

After clicking on FYDP-1 portal, admin will see this interface where there are two buttons. 1. See group request and 2. See mentor request.

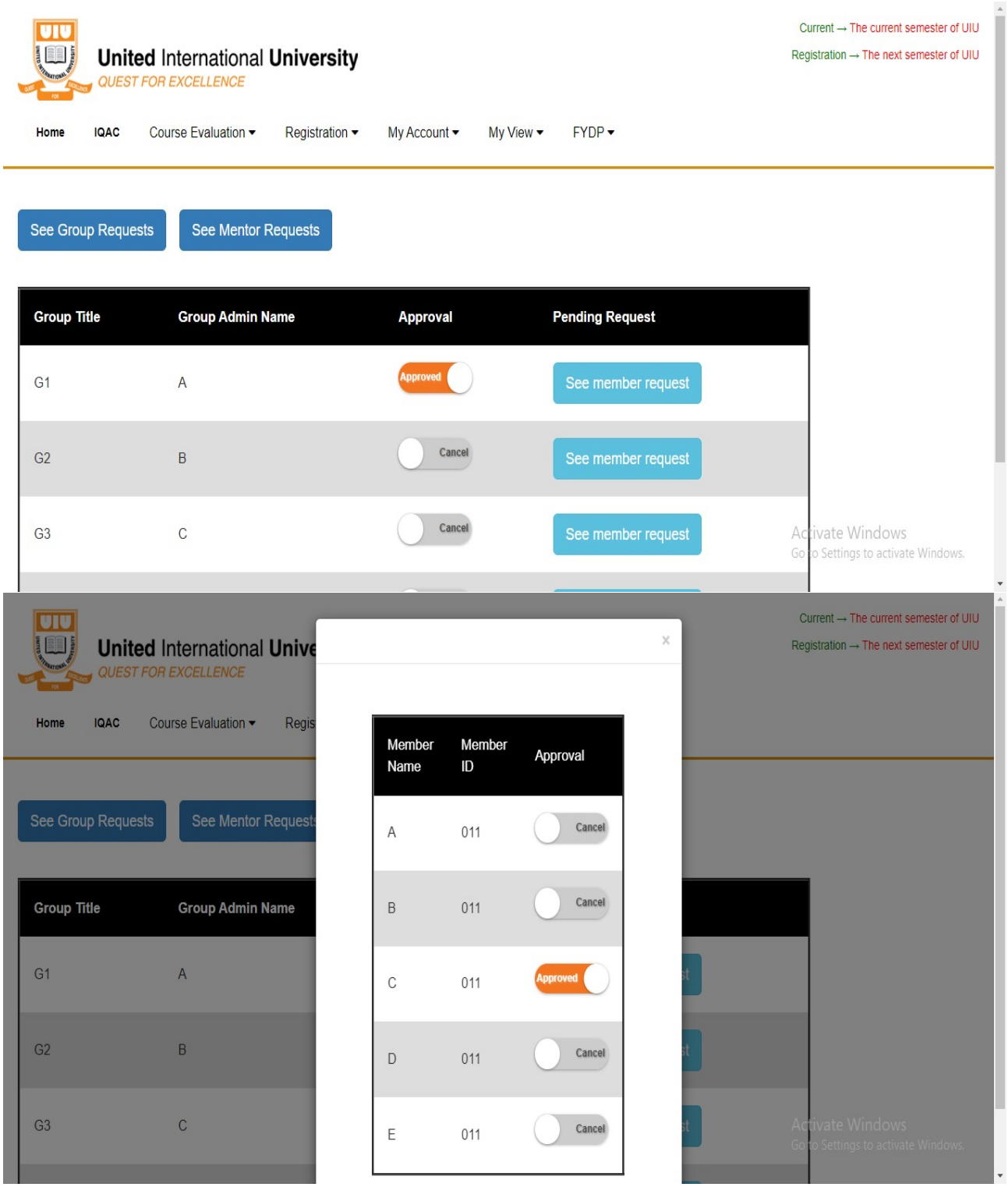


fig: Admin UI - 03

If the admin click on group request, admin will see group request along with member request. If the admin approves group request then the group will be created and if the admin approves the member request then that particula member will be able to join that particular group.

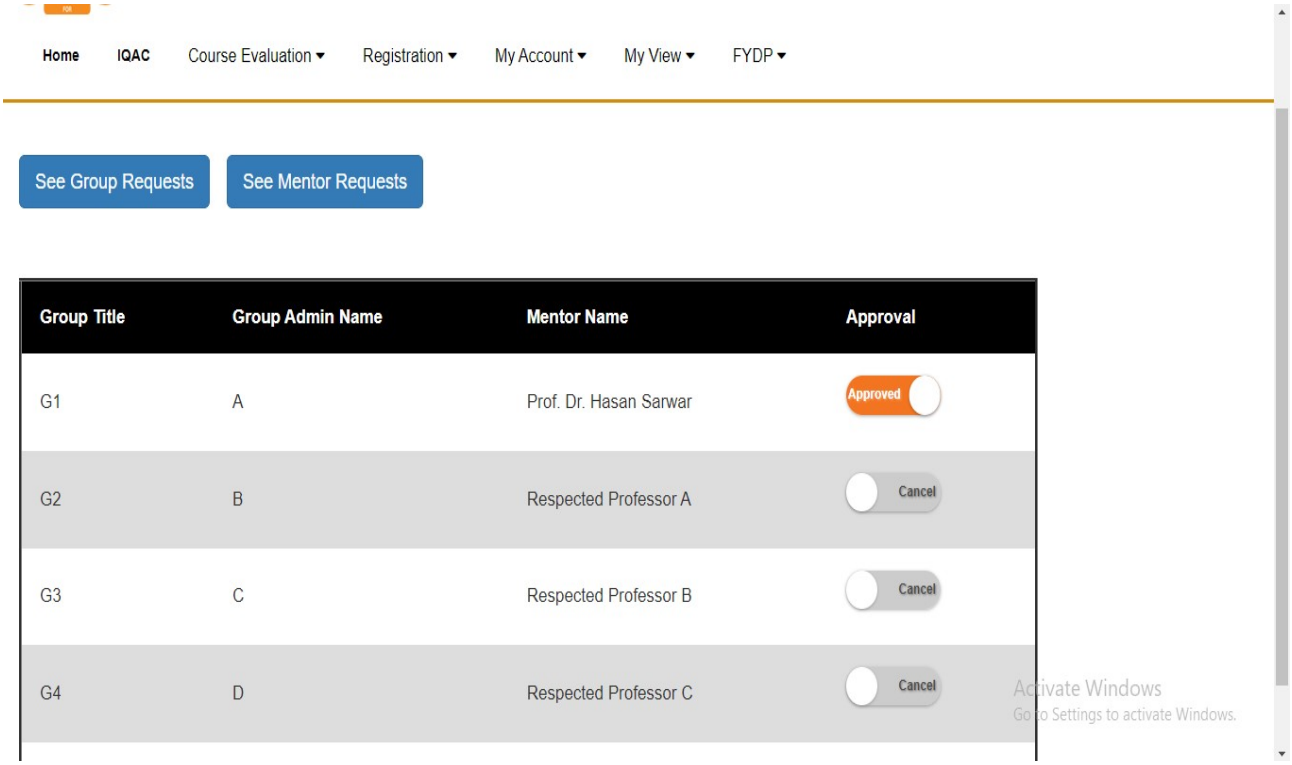


fig: UI - 02

If the admin clicks on See mentor request group, then admin will see this interface where it will show which group want to join which mentor.If the admin approves mentor request, then that particular group will get the opportunity to work under that particular mentor supervision.

Since FYDP 2 has less work related to the site there is no issue for creating new groups, this module will look somewhat like FYDP 1 having the options like before.

3.3 Summary

In conclusion, we want to create a feature where students can easily upload their important papers such as weekly journals, presentation slides, reports etc into one place and can access them whenever they want. They will also be able to communicate with the mentor and faculty from one place. As a whole they will be able to complete the whole FYDP in a systematic way.

Chapter 4

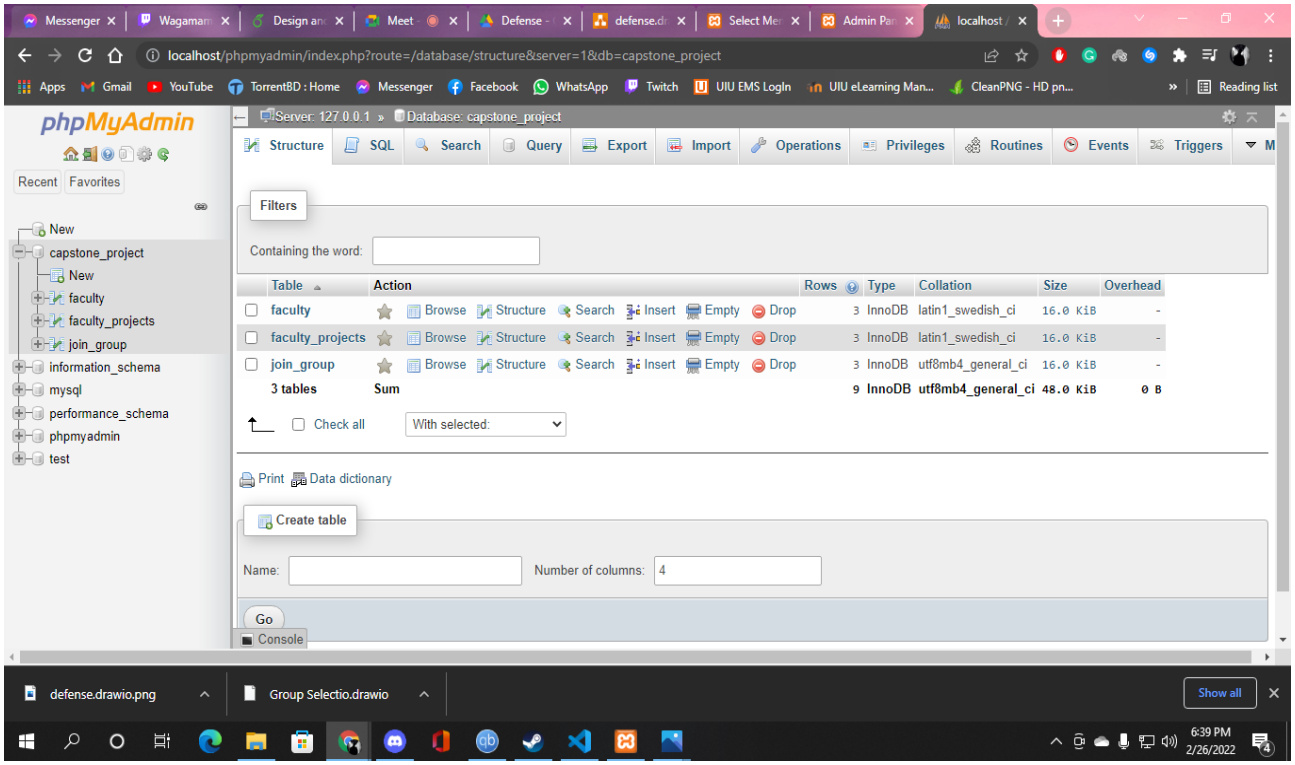
Implementation and Results

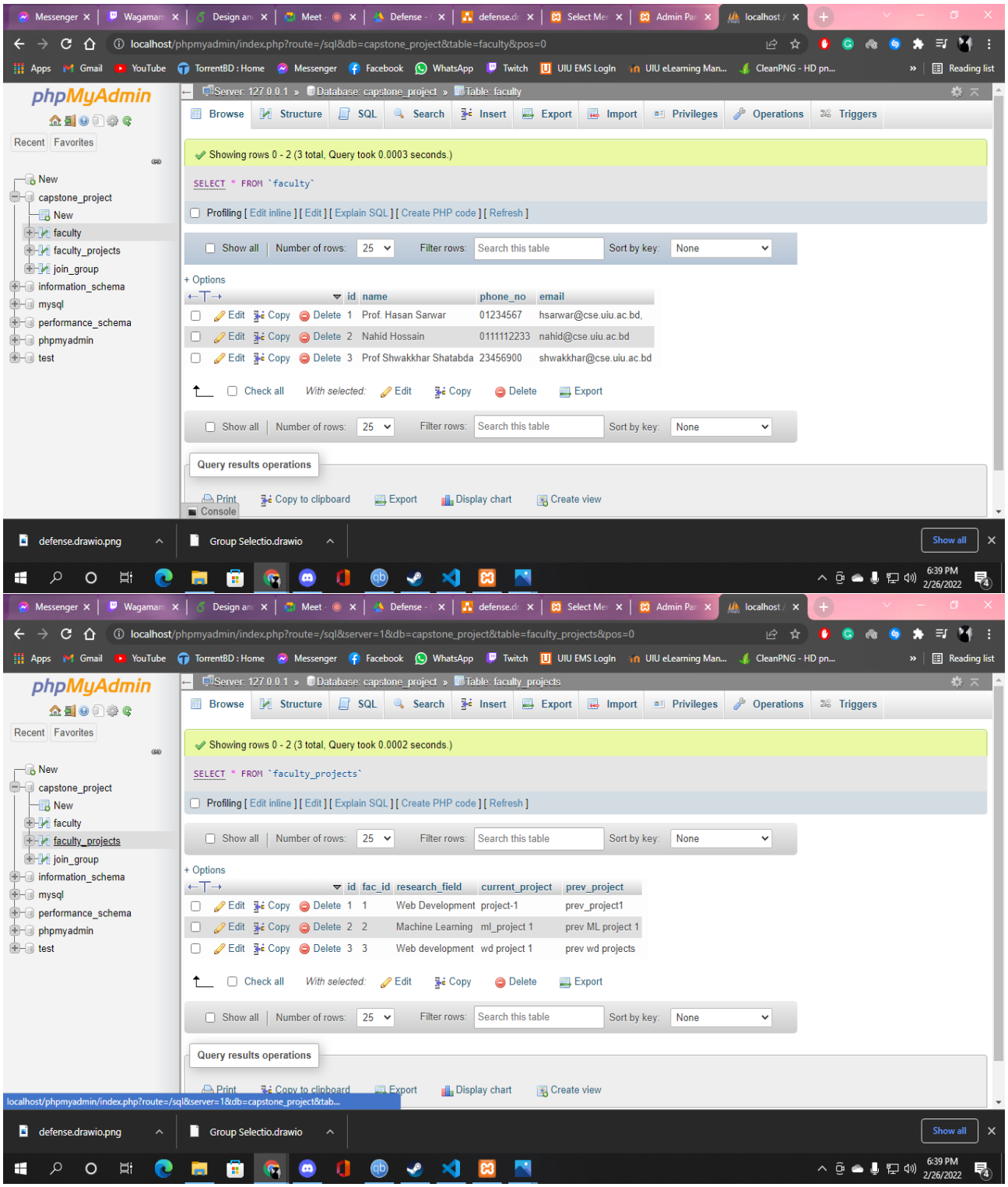
In this chapter we will discuss how we have implemented our Capstone Project

4.1 Environment Setup

We used Html,css,bootsrap for frontend part and used php for back-end part and the databases are connected by Mysql. We created a localhost through xampp.

4.2 Evaluation




phpMyAdmin
Server: 127.0.0.1 » Database: capstone_project » Table: faculty
Browse Structure SQL Search Insert Export Import Privileges Operations Triggers
Showing rows 0 - 2 (3 total, Query took 0.0003 seconds.)
SELECT * FROM `faculty`
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
Show all Number of rows: 25 Filter rows: Search this table Sort by key: None
+ Options
id name phone_no email
Edit Copy Delete 1 Prof. Hasan Sarwar 01234567 hsarwar@cse.uiu.ac.bd,
Edit Copy Delete 2 Nahid Hossain 0111112233 nahid@cse.uiu.ac.bd
Edit Copy Delete 3 Prof Shwakkhar Shatabda 23456900 shwakkhar@cse.uiu.ac.bd
Check all With selected: Edit Copy Delete Export
Query results operations
Print Copy to clipboard Export Display chart Create view
Console
phpMyAdmin
Server: 127.0.0.1 » Database: capstone_project » Table: faculty_projects
Browse Structure SQL Search Insert Export Import Privileges Operations Triggers
Showing rows 0 - 2 (3 total, Query took 0.0002 seconds.)
SELECT * FROM `faculty_projects`
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
Show all Number of rows: 25 Filter rows: Search this table Sort by key: None
+ Options
id fac_id research_field current_project prev_project
Edit Copy Delete 1 1 Web Development project-1 prev_project1
Edit Copy Delete 2 2 Machine Learning ml_project 1 prev ML project 1
Edit Copy Delete 3 3 Web development wd project 1 prev wd projects
Check all With selected: Edit Copy Delete Export
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defense.drawio.png
Group Selectio.drawio
Show all
6:39 PM
2/26/2022

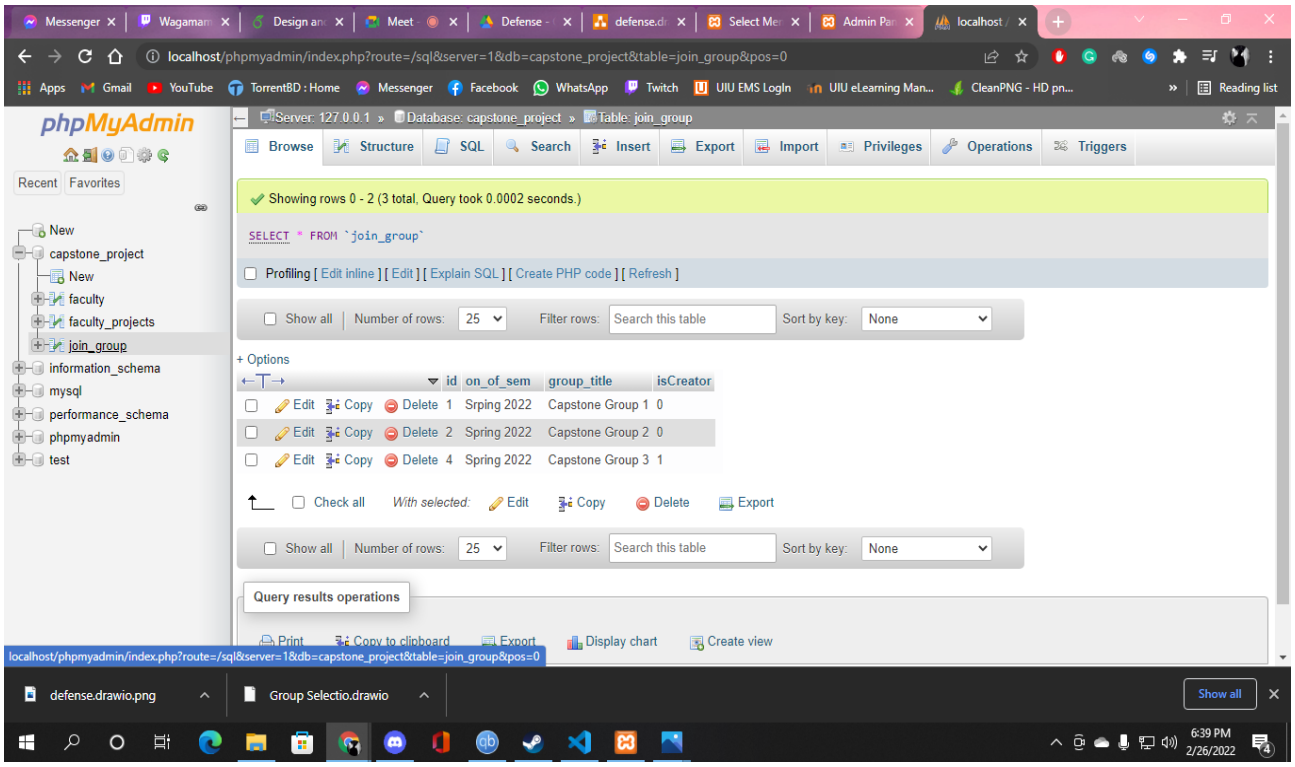
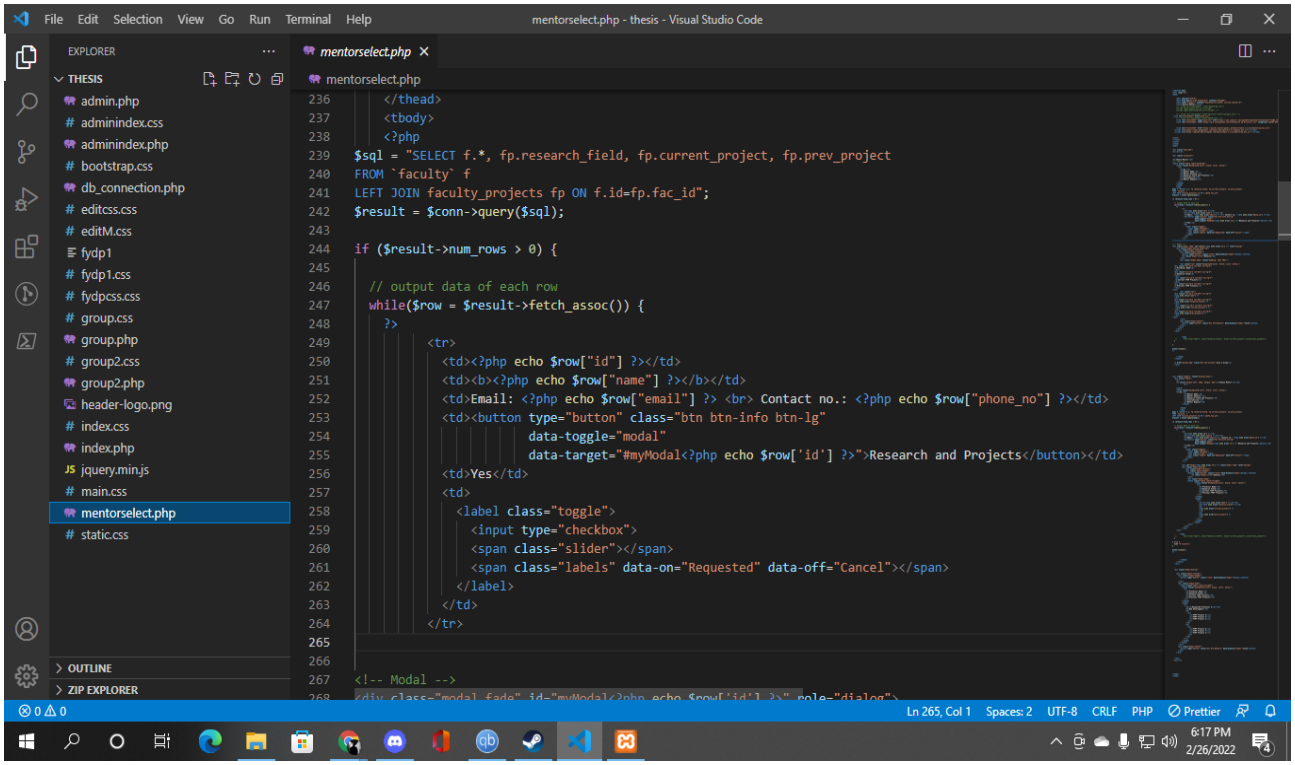
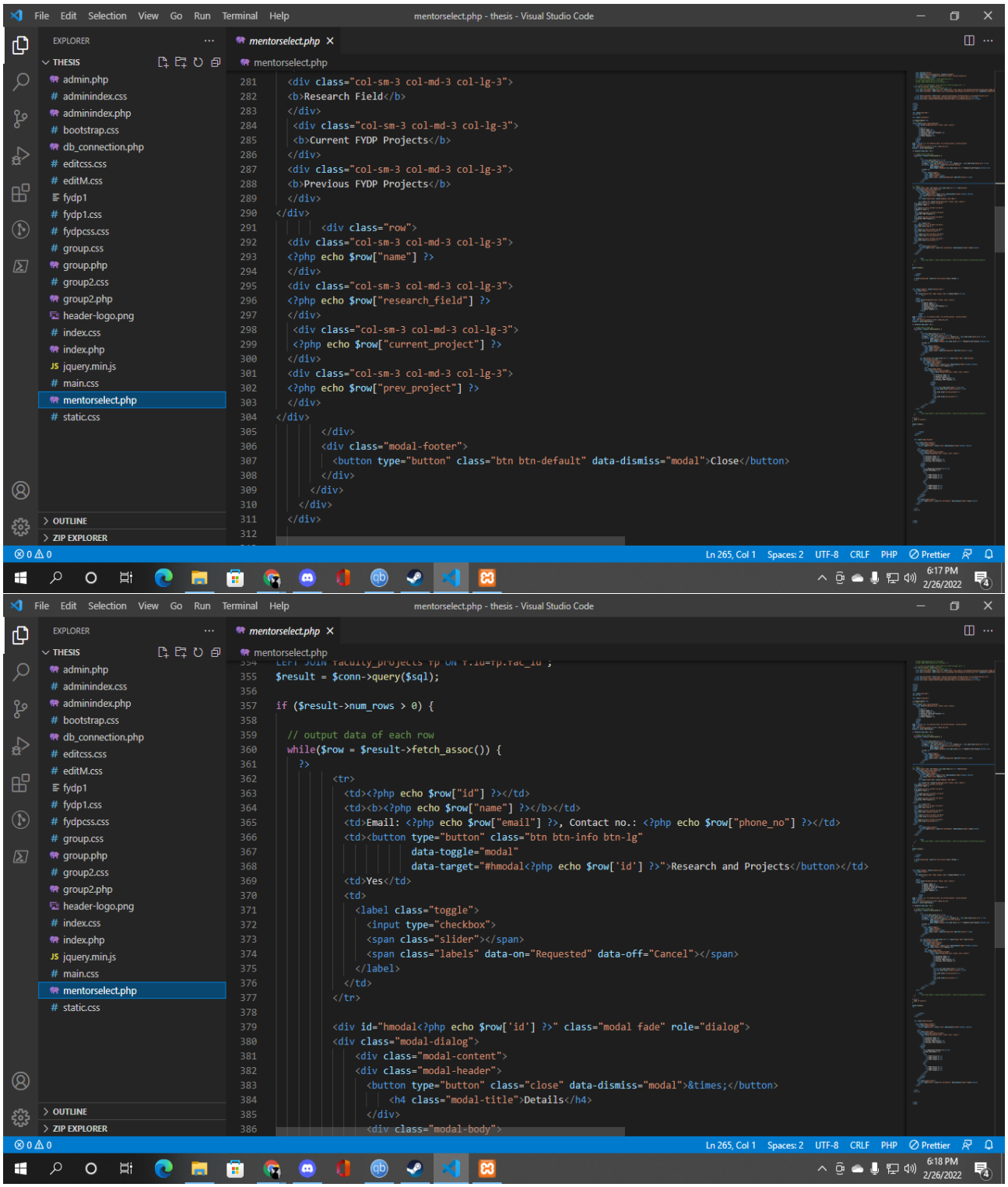


fig: PHPMyadmin

These are the database we have created just to demonstrate the project.




File Edit Selection View Go Run Terminal Help
mentorselect.php - thesis - Visual Studio Code
EXPLORER
THESIS
admin.php
adminindex.css
adminindex.php
bootstrap.css
db_connection.php
editcss.css
editM.css
fydp1
fydp1.css
fydpcss.css
group.css
group.php
group2.css
group2.php
header-logo.png
index.css
index.php
jquery.min.js
main.css
mentorselect.php
static.css
OUTLINE
ZIP EXPLORER
mentorselect.php

Research Field

Current FYDP Projects

Previous FYDP Projects

<?php echo $row["name"] ?>

<?php echo $row["research_field"] ?>

<?php echo $row["current_project"] ?>

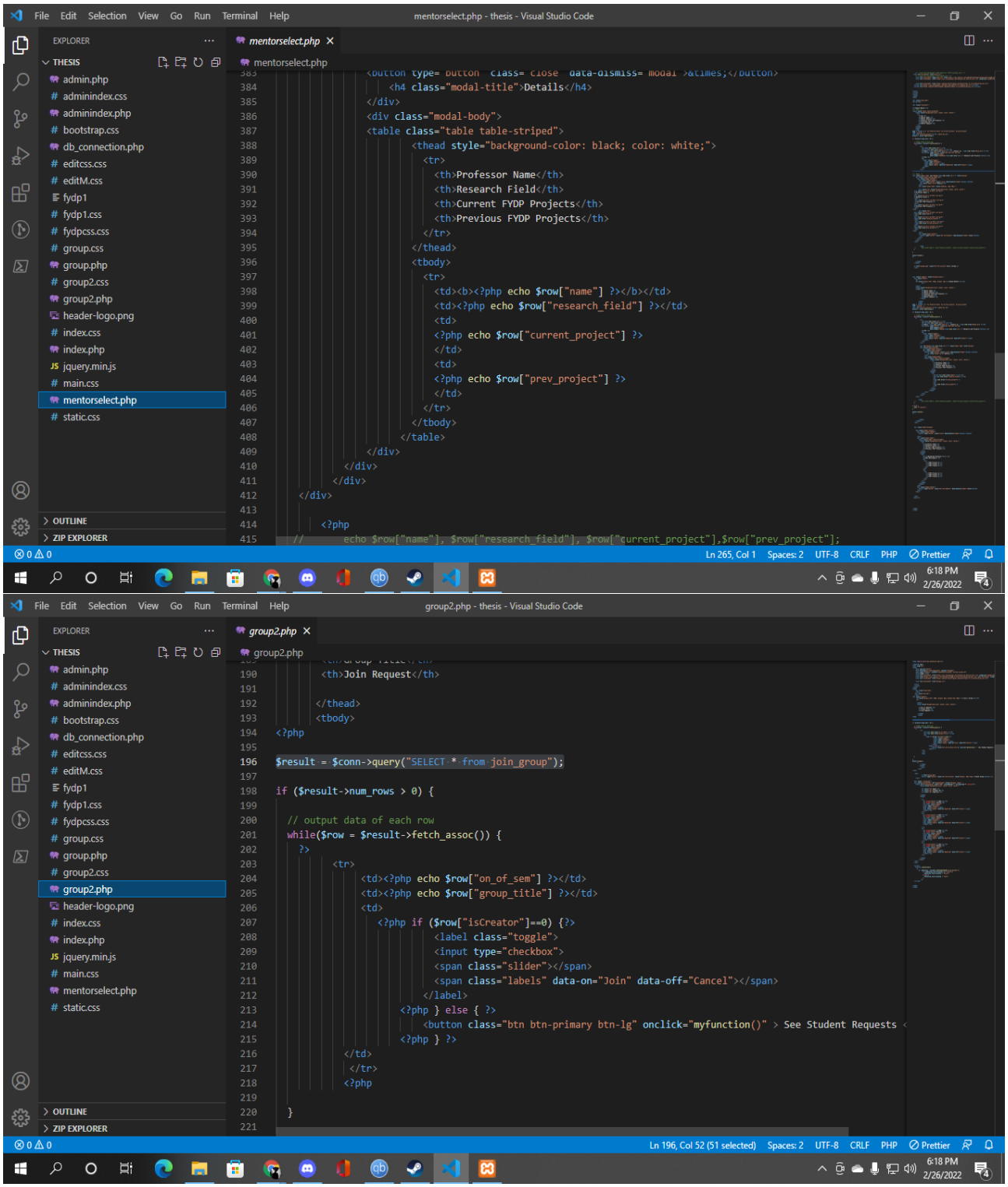
<?php echo $row["prev_project"] ?>

<button type="button" class="btn btn-default" data-dismiss="modal">Close</button>
Ln 265, Col 1 Spaces: 2 UTF-8 CRLF PHP Prettier
6:17 PM
2/26/2022
File Edit Selection View Go Run Terminal Help
mentorselect.php - thesis - Visual Studio Code
$result = $conn->query($sql);
if ($result->num_rows > 0) {
// output data of each row
while($row = $result->fetch_assoc()) {
?>
<tr>
<td><?php echo $row["id"] ?></td>
<td><?php echo $row["name"] ?></td>
<td>Email: <?php echo $row["email"] ?>, Contact no.: <?php echo $row["phone_no"] ?></td>
<td><button type="button" class="btn btn-info btn-lg"
data-toggle="modal"
data-target="#hmodal<?php echo $row['id'] ?>">Research and Projects</button></td>
<td>Yes</td>
<td>
<label class="toggle">
<input type="checkbox">

</label>
</td>
</tr>
<div id="hmodal<?php echo $row['id'] ?>" class="modal fade" role="dialog">

<button type="button" class="close" data-dismiss="modal">×</button>
<h4 class="modal-title">Details</h4>

Ln 265, Col 1 Spaces: 2 UTF-8 CRLF PHP Prettier
6:18 PM
2/26/2022


File Edit Selection View Go Run Terminal Help
mentorselect.php - thesis - Visual Studio Code
EXPLORER
THESIS
admin.php
adminindex.css
adminindex.php
bootstrap.css
db_connection.php
editcss.css
editM.css
fydp1
fydp1.css
fydpcss.css
group.css
group.php
group2.css
group2.php
header-logo.png
index.css
index.php
jquery.min.js
main.css
mentorselect.php
static.css
OUTLINE
ZIP EXPLORER
mentorselect.php
<h4 class="modal-title">Details</h4>
<table class="table table-striped">
<th>Professor Name</th>
<th>Research Field</th>
<th>Current FYDP Projects</th>
<th>Previous FYDP Projects</th>
<td><?php echo $row["name"] ?></td>
<td><?php echo $row["research_field"] ?></td>
<?php echo $row["current_project"] ?>
<?php echo $row["prev_project"] ?>
Ln 265, Col 1 Spaces: 2 UTF-8 CRLF PHP Prettier
6:18 PM 2/26/2022
File Edit Selection View Go Run Terminal Help
group2.php - thesis - Visual Studio Code
group2.php
<th>Join Request</th>
<?php
$result = $conn->query("SELECT * from join_group");
if ($result->num_rows > 0) {
// output data of each row
while($row = $result->fetch_assoc()) {
?>
<td><?php echo $row["on_of_sem"] ?></td>
<td><?php echo $row["group_title"] ?></td>
<?php if ($row["isCreator"]==0) {?>
<label class="toggle">
<input type="checkbox">

</label>
<?php } else { ?>
<button class="btn btn-primary btn-lg" onclick="myfunction()" > See Student Requests
<?php } ?>
Ln 196, Col 52 (51 selected) Spaces: 2 UTF-8 CRLF PHP Prettier
6:18 PM 2/26/2022

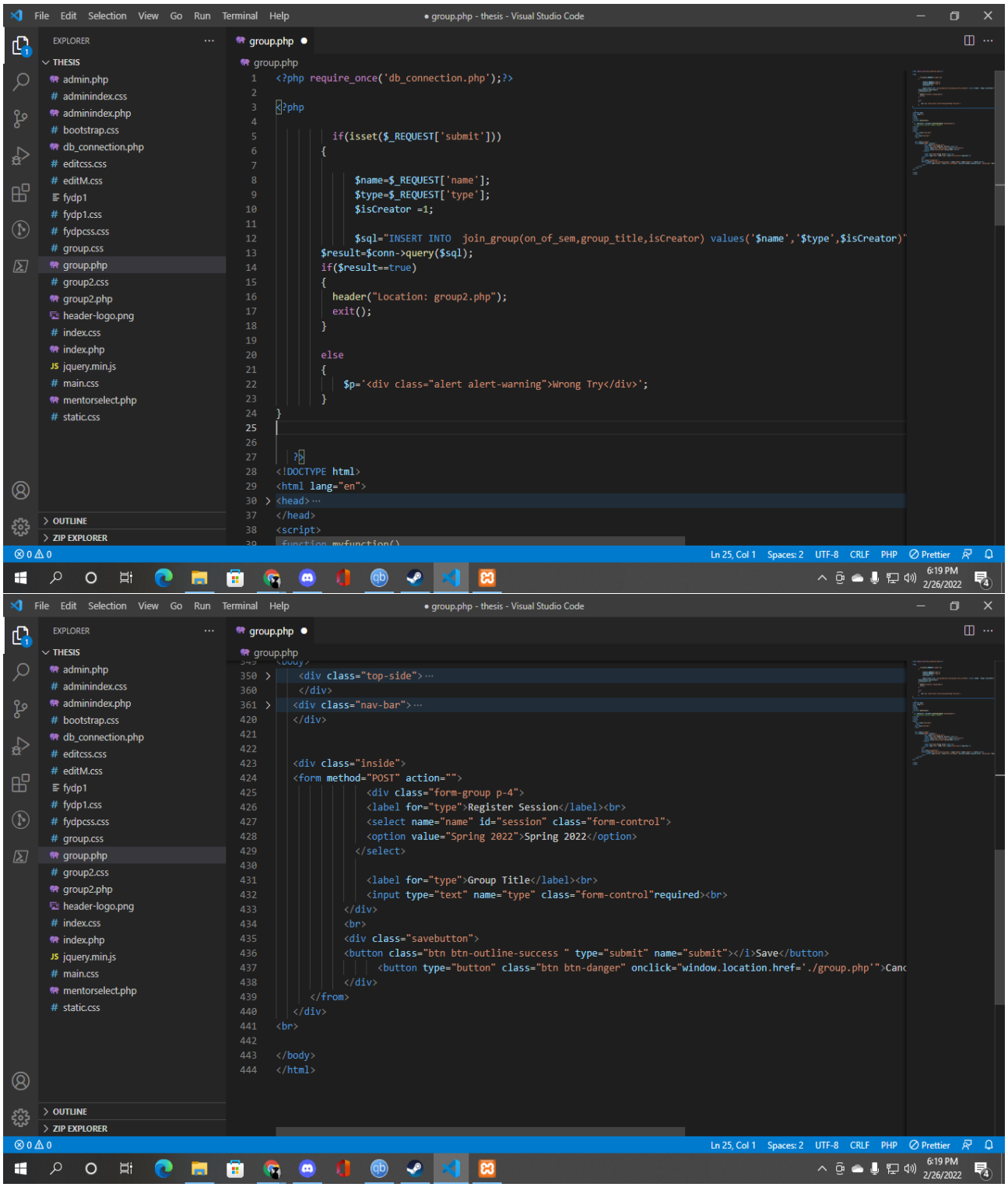


fig: UI-Code

For Fig: UI-03 , UI-04 , UI-05 we have used these codes.

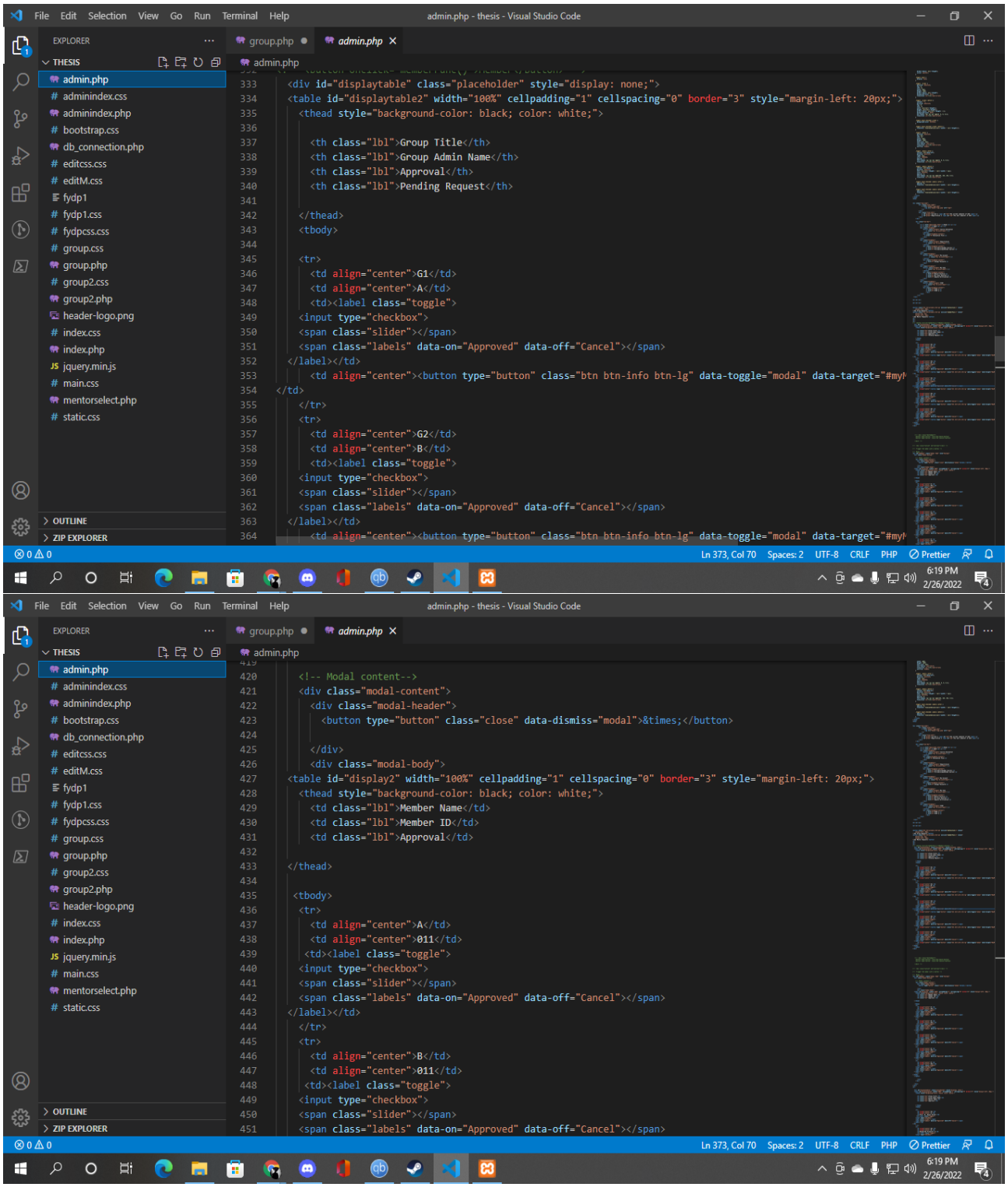


fig: Admin-Code

For fig: Admin UI-02 and Admin UI-03 we used these codes

4.3 Results and Discussion

Here (fig:UI-01) is the first page the student will see after completing the registration. Now the student will go to the fydp-1 portal and the mentor list containing mentor details(fig:UI-03) will be shown. Here if the student clicks on the research and projects field modal, he will see the research interests, current and previous projects of that mentor to get an idea about the project the student will do on that semester. Now the student will click on the toggle switch to request a mentor and wait the admins approval. next the student will click on the join group button, here all the group names and group creator's name will be show as a list. At this point a student will have two options, one is to hit the toggle switch beside any group to request to join into that group and two is to create his/her own group by clicking on the create group button. If the student requests to join into the group then he has to wait for the group creator and admin's approval to get into that group but if he wants to create his group then he will be rendered to the next page where the current trimester name will be automatically given and he has to give the input of his group title. After saving the data he will now wait for the admin's approval for create group request. if the admin approves the request then he will now be the group creator and now other students will be able to join into his group, to see the other students' join request he will have to click on the modal name see student request. Here is a note to remember that if he approves any students' request for joining his group, the approval will finally come from admin's portal so to join in any existing group, a student has to wait for 2 approvals. Now this is the view for admin's portal. The first page will be same as the student's portal, then admin will go to fydp-1 portal and see two modals named see mentor request and see group request. In mentor request modal, the admin will see the mentor and group creator's name who has sent the request to choose that mentor, admin will now hit the toggle switch to assign the mentor to that group. In the group request, admin will see the group creator and group title name and will approve the group creation request by clicking the approval toggle switch. In this modal there is also another modal named see member request, here the admin will see the member's request sent in by students who wants to join into that group so the admin will have to individually approve their requests too. In this process a student will either create a group or will be able to join into a group successfully

4.4 Summary

We've listed the required environments, development workflow, testing, and deliverable for our project in this section. We explained the necessary programming languages as coding environments, discussed the work flow of our project, used raw HTML, CSS as a design environment, and described Git as a project management tool. We've summarized the project evaluation of our project. We also described how we tested our features. Finally, after evaluation, we have found the deliverable.

Chapter 5

Complex Engineering

5.1 Project Overview

We want to create a software where students can take their final year project design (FYDP-1 FYDP-2) directly from UCAM. Students won't have to contact every mentor or authorities individually to get the approval of their project idea, rather the students will create the groups and choose mentors. Students will also be able to upload all their journals, presentations and reports in one site and faculties and mentors will have access to those files. We also wish to implement a direct message option with the mentor because right now there is no way to contact the mentor without having any appointment via email. Our university has already got a website named UCAM which is the primary website of our overall system. It stores student attendance records, payment records, results and does the completion of the section selection and course selection of each trimester. Students, faculties, department authorities and everyone can login to this website and upload notices too. UCAM being one of the main websites of our university, still has some problems like in the case of taking the final year design project, there is no platform to record all the mentor names with corresponding project groups and project titles, no records of faculties having how many groups. Being an official site, lack of these records or having one certain platform to have access to everything related to the FYDP can be considered as a flaw.

5.2 Benefits of our new process of taking FYDP

The benefits of our project, that means creating a new portal of FYDP are given below:

- Students will be able to see mentor list
- Students will be able to see the projects offered by every mentor
- Students can see the free member slot in each group
- Students will be able to see realtime information of all the group member from the group list

- Students can see which groups are connected under which mentors
- Students will get the facility to upload weekly journals, documents, reports, presentation slides on a single site
- A complete visibility and transparency of all the group members and mentor information
- Administrator will have the power to delete group members and the entire group
- The department can update mentor list, project list
- A complete visibility and transparency of all the group members information and mentor information
- Central document management system
- Faculties will get all the group information in one place
- Central document management system
- Faculties will be able to know which group is connected under which mentor

5.3 Why is our project a Complex Engineering Problem?

Washington Accord(IEA-2015) has defined some terms which are followed internationally and according to those terms why our project is a Complex Engineering Problem is given below :

- We cannot resolve our project without in-depth knowledge of engineering and range of resources.(P1,K3,A1)
- Our project involves wide range of conflicting technical and engineering issues.(P2)
- We only have abstract thinking but no absolute solution for this project.(P3,K5)
- We couldn't find any familiarity of issues in our project.
- We are currently not having the extent of applicable codes in our project.
- Has different users like students, department, administrators etc with different requirements as stakeholders.(P6, K4 K8) High level problems that students face while choosing, communicating with faculty and mentor.(P7)

5.4 Mapping of Complex Engineering Activities

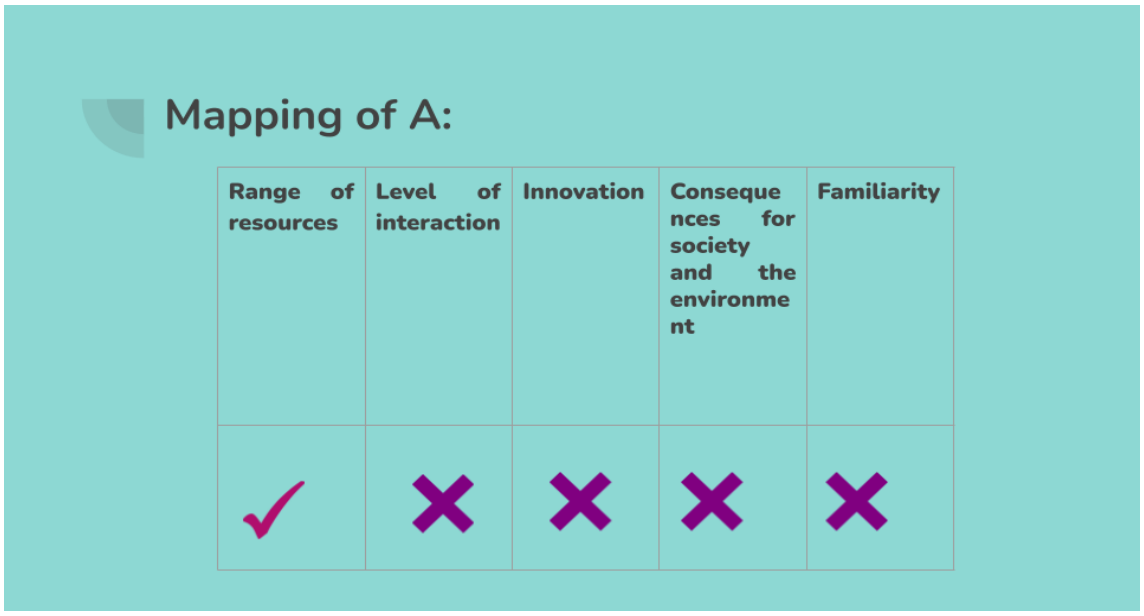
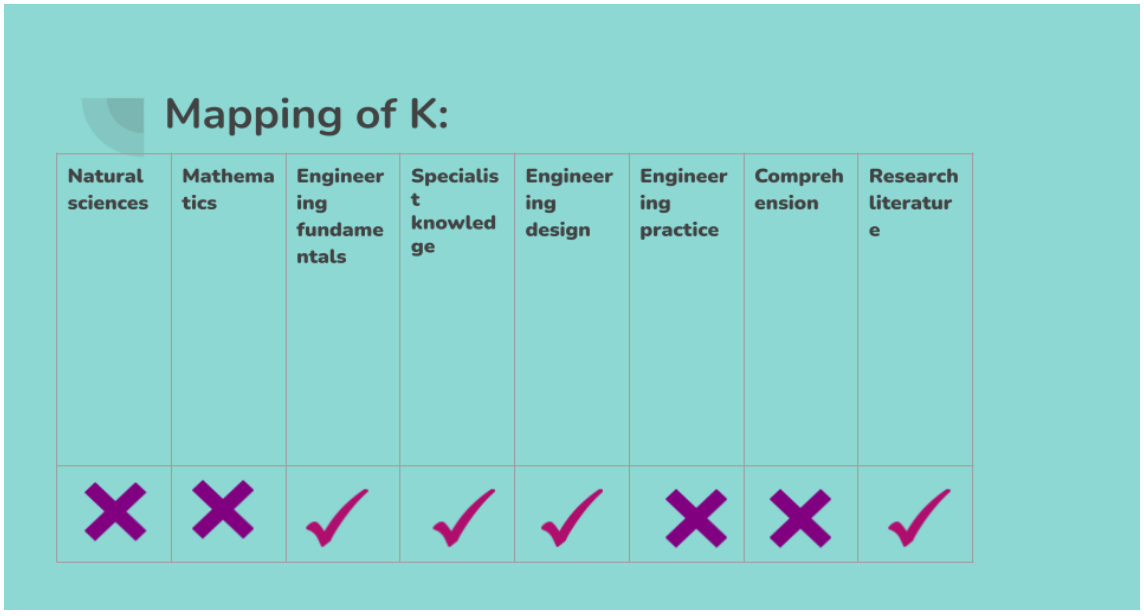


fig: Mapping of Complex Engineering Activities

5.5 Mapping of Complex Engineering Knowledge Profile



: Mapping of Complex Engineering Knowledge Profile

5.6 Mapping of Complex Engineering Problem Solving

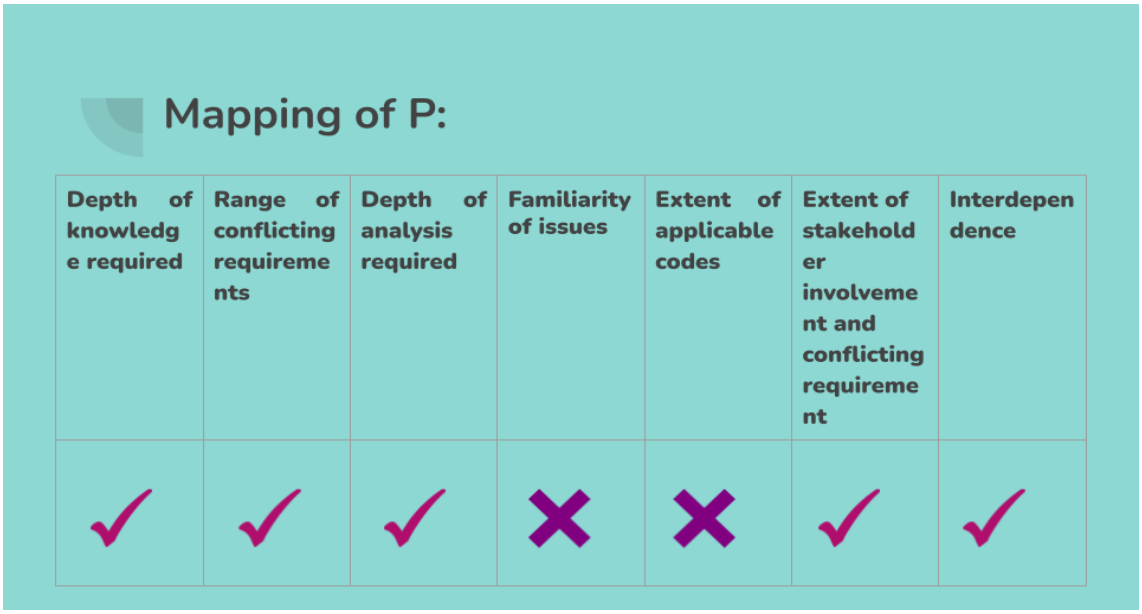


fig: Mapping of Complex Engineering Problem Solving

5.6.1 Depth of knowledge required

- Adequate knowledge about system analysis and design
- Programming Languages
- Engineering Design
- Knowledge about project management
- Interpersonal Skills
- Research Literature

5.6.2 Range of Conflicting Requirements

- Whether the system will be developed in OBE or in the UCAM?
- Is the pre-advising going to be before or after the formation of groups?
- Will the grouping be done by the students or the administration?

5.6.3 Depth of Analysis Required

So far no solution for taking or managing capstone projects is available, so it doesn't have any solution at this moment. Since no automated model is available, so we have to select a model where there are involvement of students, administrations, mentors and has scope for each of the stakeholders through proper analysis

5.6.4 Extent and Stakeholders Involvement and Needs

- Students
- Administrators
- Mentors
- Department
- University
- Accreditation Body

5.6.5 Interdependence

- Pre-advising/Advising
- Billing
- Outcome Based Education (OBE)
- Result

5.7 Objective/Goals

Our goal is to develop a simplified FYDP course taking method so that students don't face any difficulties on choosing FYDP course and also after choosing FYDP course they will be able to keep all their documentations, journals, presentation slides in one place throughout the whole FYDP course.

Chapter 6

Conclusion

In this chapter, we have discussed the list of works we have completed in our Final Year Design Project, also the limitations that we have in our project and future work regarding this project.

6.1 Summary

In this project we implemented the whole FYDP process into UCAM so that students can complete every process of FYDP easily. We did our implementation on the student and the admin portal. As this is an existing system and our project is a part of UCAM so we had to do many discussions with UCAM developers and also with our respected mentor sir. We also took reviews from the people who are connected to UCAM. Firstly we took reviews from students, secondly we took reviews from admin and finally we did. After getting all the reviews from admin and students, we finalized those process points :

- Student must have completed 84 or more credits to apply for capstone (will have a option to verify this).
- Student will form a group (can even apply if he/she doesn't have a group).
- Student will select a mentor (all the mentor details will be given to contact with them).
- Student will select a section.
- Student will have a form to fill up about the details of topic and group and submit to the department.
- Student will get approval email from the department.
- Student can upload weekly journals on the site (.docx, .pdf format).
- Student can upload presentation (.pptx format).

- Faculty/mentor sending groupwise presentation time via notification/mail (optional).
- Direct message option with mentor (optional)
- Students who don't have group can request for access in groups which have less than 6 members.

  Newly added features:

  1. Mentors can upload project proposal list after joining with a group of students.
  2. Mentors can make meeting schedule from the calendar
  3. Students can upload research paper of the following project

  *2. Students who don't have a group will be redirected to a page where they can fill up about the interested topics and field on which they want to do the project Students who have already formed a group will be redirected to a page where they can proceed for further details.

But still some problems remained such as students facing problems in mentor choosing, available mentors and available projects, to know if any group has an empty slot or not, how to create a group and approve it from the admin etc. We discussed all these problems that remained and final process points with our mentor and tried to solve those problems in such a way that it fulfills process points in an easier way.

Our project holds two stakeholders- students and admin. So we had to do our work in both the student portal and the admin portal.

In the student portal, students who have taken the FYDP course and completed registration will see the FYDP portal. After clicking the FYDP portal, two portals will be shown named FYDP-01 and FYDP-02. Students will go to FYDP-01 and will be able to see a list of groups that has empty slot. If the student wants to join any particular group, then that student will click on the join button. After clicking the join button, the group admin will get a join request, if the group admin approves the request then the admin will get an approval request. If the admin approves it, then the student will be added to the group. But if the group admin rejects the join request then the student has to send a request to another group to join. Students can see mentor lists in a tabular form which includes previous project list, research fields, currently available FYDP projects of every mentor.. Students can also see mentor availability. Students can send requests to the mentor to join and work on a project under that particular mentor.

In the admin portal, admin will receive students group join request, group create request, mentor request. If the admin approves member request of a particular student, then that student will be able to join that group otherwise that student will have to send a request to another group. If any student or group chooses their mentor, that student will send a mentor request and the admin has the authority to add that or group to that particular mentor. If any student wants to create a group, that student will require

admin approval. Students have to do group creation part from their portal, admin will get students group create requests and then either approve it or decline it.

We used raw HTML,CSS,JavaScript and Bootstrap Version 3 for frontend design and got approval from our respected mentor sir. As UCAM is already an official platform and our project is a part of UCAM, so we had to do our project according to the UCAM system.

We used Git Bash and GitHub to modify our works done by every individual member and merged them altogether.

6.2 Limitation

After getting all the reviews from admin and students, we finalized some process points where we mentioned that students will have all the control of making a group, choosing mentors, adding themselves into a group, creating a group, adding or removing a member from the group etc. But in this case we faced many challenges such as if students have the control to create a group, then every student will create a group individually if they don't have any group and it will create a lot of dummy groups in the database which will make the system work slow. If any group member has any problem with another member then he/she can remove that member but in this case the problem arrives that if he/she removes that member from the group in the middle of the FYDP-01 then it will be a serious issue. After facing those challenges we decided to give all the approval power to the admin. So we had to shift the control power from students to admin and this one of our limitations that we had to change the control power from students to admin. Secondly due to limited time, we could not complete the work of meeting schedule calendar, upload document and also we couldn't do our work in the main database of UCAM as it will require more time to discuss with the developers of UCAM about working on the main database, that's why we had to create a secondary database and used it as our backend.

6.3 Future Work

In the future work we want to implement the meeting calendar and upload document features. We have already started working on the diagrams of the meeting calendar. After completing the meeting calendar feature implementation we will start working on the document upload feature. After finishing all the implementation we will have discussions with the UCAM developers about working on the main database of UCAM. Due to the short time we couldn't do all of them but our plan for the future work is to complete all the works that are mentioned above and provide it to the students of UIU as soon as possible.

References

[1] https://www.researchgate.net/publication/334726157

[2] http://www.computerscijournal.org/vol11no1/design-and-development-of-university-admission-management-system/?fbclid= IwAR076dEBV3SYK3I8zJVZANAOdWXL3-SLlOWvmhEz92iEZ3MbE$_X C8rQ_V Y8$

[3] https://www.academia.edu/36181799/Thesis$_M anagement_S ystem?fbclid = IwAR3H5U$kWGpP0ngRfSbdOG8PkUJh8$_k vtcFJx6vppdRV5fNGUF10FfO8Ddq8$

[4] https://www.researchgate.net/publication/255666386$_{AS}oftware_D evelopment_C apstone$Course$_a nd_P roject_f or_C IS_M ajors$

[5] https://www.academia.edu/38205295/DESIGN$_A ND_D EVELOPMENT_O F_U NIVERSITY$MANAGEMENT$_S YSTEM_T HESIS_F ALL_p df?fbclid = IwAR0dccR4I90568$GpgVkt$_U rh3NNcy2s62e6qIGjrm1lndWjSOeoSWVVrE0I$

[6] https://easystudy.info/Thread-university-management-system-full-report?fbclid=IwAR0UEcw1qYnoYJKAueUjr7zk3RlUanfZRqLppQqFzkOuZr29HCpwI5gR9hY

[7] https://www.researchgate.net/publication/315666067$_{AV}ery_S hort_C apstone_P roject$Design$_M anagement_a nd_D esign_T actics$