UNIVERSITY OF DAR ES SALAAM

COLLEGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (CoICT)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course: System Analysis and Design (IS 333)

Assignment Title: Final Year Project Methodology

Group Members

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Project supervisor: Mr. Joseph Cosmas

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Chapter 1

Introduction

1.1 Background

Project management has been something of importance in our fast developing academic world. In most colleges students pursuing STEM subjects are expected to carry out projects during their final year of studies. At the University of Dar es salaam, this has no exception, but students handling and carrying out these projects in an easier and less cumbersome manner that involves a lot of paperwork has been a challenge. The FYP Content management system looks into tackling some of the problems that arise in handling Final Year Projects at the College of Information and Communication Technologies (CoICT). It is a web based application that will allow students to create accounts and have a space where they can manage their FYP online while providing a chance for supervisors and the project coordinators to get involved in the process.

1.2 Statement of the Problem

The college requires its students to carry out projects in their final years of Study. This process has always involved a lot of paperwork from the beginning. There is no digital solution that helps students, supervisor and coordinators keep track of the undergoing projects. Students have to manually keep track of their projects or use third party applications which do not incorporate their supervisors and coordinators. The FYP Content Management System looks into solving this problem.

1.3 Objectives

1.3.1 General Objectives

The overall objective of this project is to provide a manner in which students can manage their projects and keep track of their progress and involve their supervisors and coordinators simultaneously.

1.3.2 Specific Objectives

i. To provide a mechanism for students to easily submit and process their concept notes.

ii. To assist the coordinator in allocation of supervisors by providing a digital solution to this process.

iii. To help students keep track of their project progress by using a timeline that they will set at the beginning of their project.

iv. To store deliverables for each project milestone and allow review by supervisors.

v. Provide a communication link for students and supervisors, in which supervisors may be able to see what the students are doing and provide timely feedback and useful input concurrently.

1.4 Significance of the Project

The FYP Content Management System is going to assist the college in managing final year projects and provide a platform for the students, supervisors and the coordinators to share information about particular projects or any arising issues concerning projects. This project is going to help reduce a significant amount paperwork, and save time by ensuring that students and supervisors can communicate right when a progress has been or milestone has been reached. It will also help the coordinator manage well the execution of final year projects and all its constituting processes.

Chapter 2

2.1 Literature Review

Managing projects has been an issue that has been addressed using several approaches we have briefly documented three attempts to do manage projects; with some attempts directly addressing the management of Final Year Projects.

The Project Management and Archiving System was a project carried out in 2013 by a group of students at the University of Dar es salaam. The project covered the development of a web based application with the aim of managing projects and storing them to be accessed by other students.

We reviewed a progress report of a project done at the Universiti Kebangsaan Malaysia (UKM) in 2011. The project was called Final Year Supervision Management System and was meant to act as a monitoring tool for computer science projects. The system provided a number of functionalities that involved appointment scheduling between students and instructors, and schedule monitoring. The system also provided a logbook module where students can upload and store documents on their progress and instructors can view them for evaluation. And lastly students were assigned supervisors by the project coordinators.

We also reviewed myCourses, a course management system that is used at the Rochester Institute of Technology (RIT). The system manages Final Year Projects just like all other courses by providing study materials, discussion forum concerning any particular issue. The system also allows instructors to login and view student progress and submissions and be able to grade the work, the system then generates the final grade for that particular subject and displays it to the students. In the same system Dropbox is also integrated in order to provide cloud storage for all deliverables (documents and other resources) submitted by the students.

2.2 Project Team and Work Division

The team consists of 3 members; George, Jerrold and Nancy, whose roles are explained below.

2.2.1 Database Design and Implementation

As a team a we will discuss the design of the database and George will handle the implementation of the database. He will use SQL as the data language, MySQL as a RDBMS tool for implementing database. The following tasks will fall under his care

- Implementing the database design and test it.
- Maintaining database schema as the development of the system continues
- Manage updates and changes to the schema and testing it
- Provide continuous support to the team and the system concerning the database.

2.2.2 Mark-up and Presentation of Contents

As a team we will take part in the design of the interface, but Nancy will handle the implementation and other tasks that fall under user interface (UI). She will mostly use HTML, CSS, and JavaScript to carry most her tasks. The following tasks will be some of her responsibilities

- Implementing the User Interface Design for the system.
- Develop and test the system across multiple browsers and devices (test for responsiveness)
- Ensure that all user data is validated before being submitted back end.
- Maintain graphics standards for all graphics that will be used in the system
- Ensure that the system provide useful content to its users and in a good and appealing appearance
- Ensure all user interface features function properly e.g. Clicked buttons should deliver what is expected by the user.

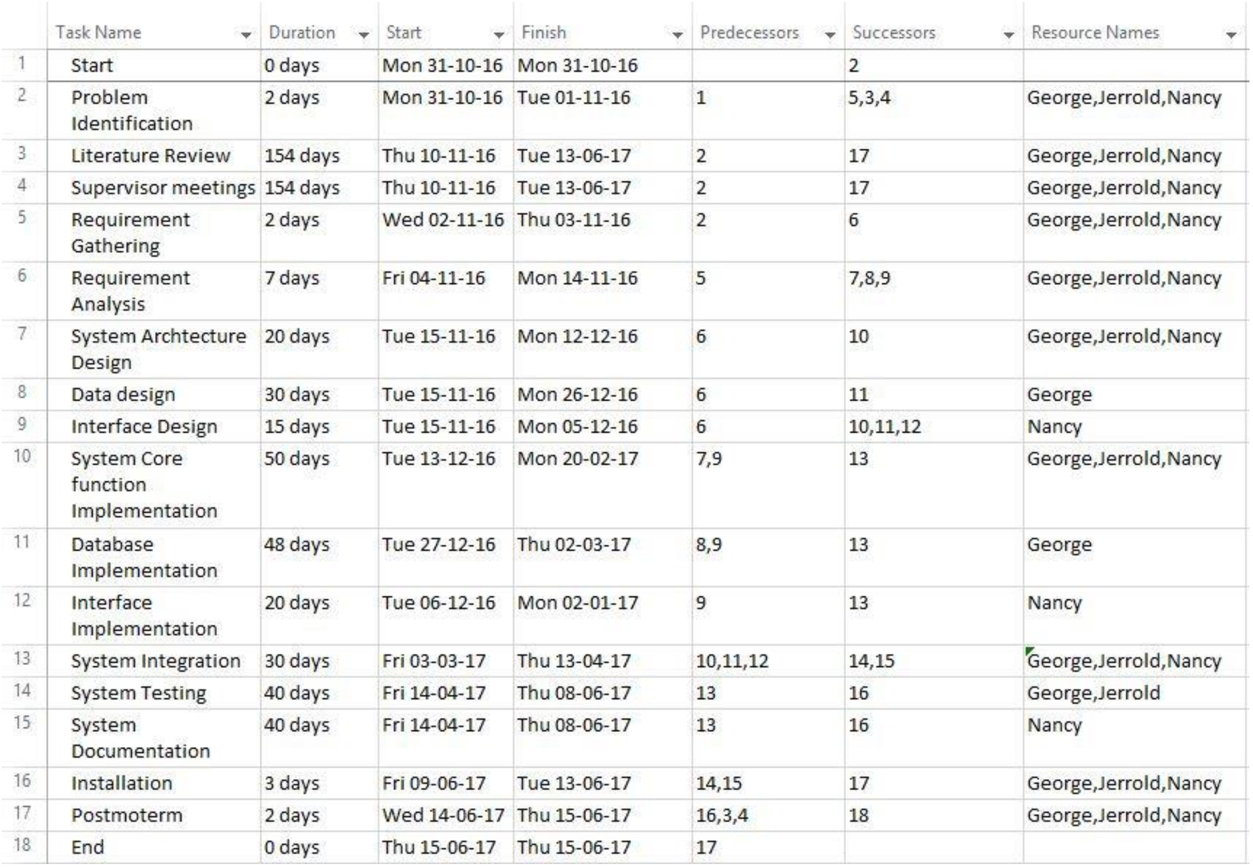
2.2.3 Interactivity and Automation

This forms part of the back-end of the system. All the modules will be discussed in team and the implementation will mostly be carried out by Jerrold. The tools that he might use for his tasks are PHP, Ajax and MySQL. Some of his responsibilities are

- Provide functions that will complement user interface features
- Develop, test and debug the system’s core functions
- Develop server-side scripts that will communicate with the database

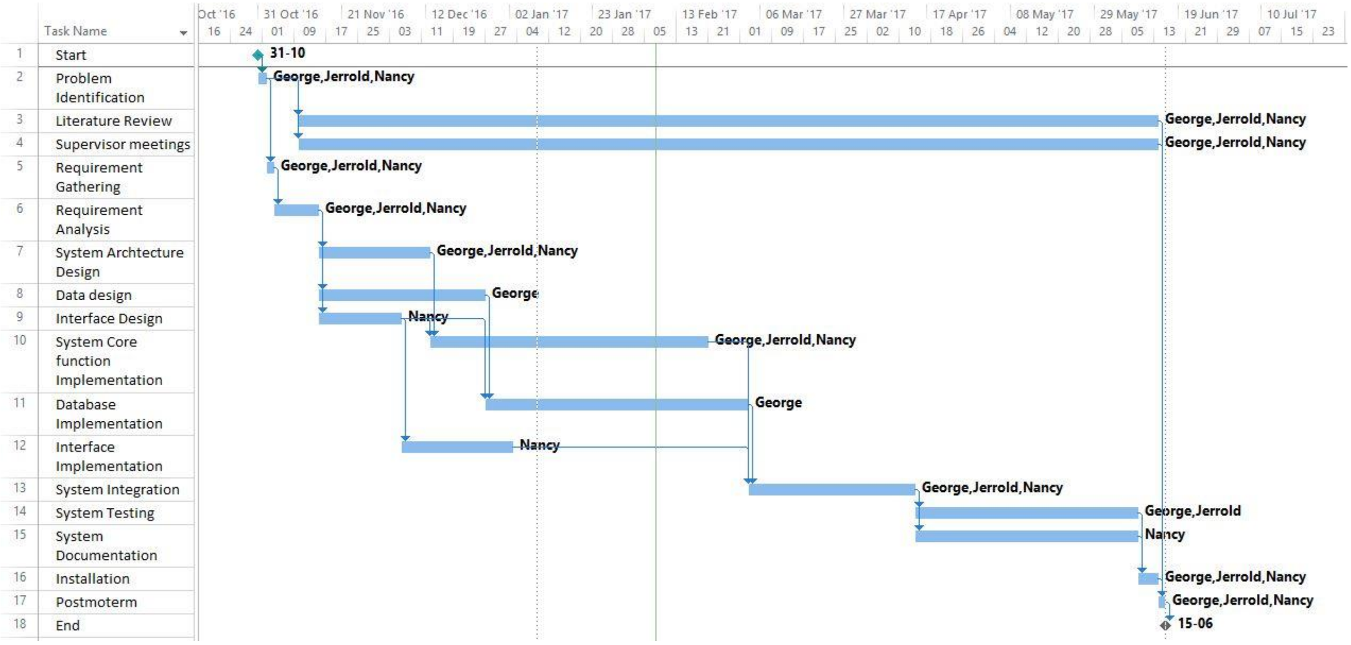
- Work with George to ensure that the database works in a manner that is will ensure efficiency in the system.

2.3 Project Timeline



	Task Name	Duration	Start	Finish	Predecessors	Successors	Resource Names
1	Start	0 days	Mon 31-10-16	Mon 31-10-16		2	
2	Problem Identification	2 days	Mon 31-10-16	Tue 01-11-16	1	5,3,4	George,Jerrold,Nancy
3	Literature Review	154 days	Thu 10-11-16	Tue 13-06-17	2	17	George,Jerrold,Nancy
4	Supervisor meetings	154 days	Thu 10-11-16	Tue 13-06-17	2	17	George,Jerrold,Nancy
5	Requirement Gathering	2 days	Wed 02-11-16	Thu 03-11-16	2	6	George,Jerrold,Nancy
6	Requirement Analysis	7 days	Fri 04-11-16	Mon 14-11-16	5	7,8,9	George,Jerrold,Nancy
7	System Archtecture Design	20 days	Tue 15-11-16	Mon 12-12-16	6	10	George,Jerrold,Nancy
8	Data design	30 days	Tue 15-11-16	Mon 26-12-16	6	11	George
9	Interface Design	15 days	Tue 15-11-16	Mon 05-12-16	6	10,11,12	Nancy
10	System Core function Implementation	50 days	Tue 13-12-16	Mon 20-02-17	7,9	13	George,Jerrold,Nancy
11	Database Implementation	48 days	Tue 27-12-16	Thu 02-03-17	8,9	13	George
12	Interface Implementation	20 days	Tue 06-12-16	Mon 02-01-17	9	13	Nancy
13	System Integration	30 days	Fri 03-03-17	Thu 13-04-17	10,11,12	14,15	George,Jerrold,Nancy
14	System Testing	40 days	Fri 14-04-17	Thu 08-06-17	13	16	George,Jerrold
15	System Documentation	40 days	Fri 14-04-17	Thu 08-06-17	13	16	Nancy
16	Installation	3 days	Fri 09-06-17	Tue 13-06-17	14,15	17	George,Jerrold,Nancy
17	Postmoterm	2 days	Wed 14-06-17	Thu 15-06-17	16,3,4	18	George,Jerrold,Nancy
18	End	0 days	Thu 15-06-17	Thu 15-06-17	17		

2.4 Gantt Chart for the Project Timeline



	Task Name
1	Start
2	Problem Identification
3	Literature Review
4	Supervisor meetings
5	Requirement Gathering
6	Requirement Analysis
7	System Archtecture Design
8	Data design
9	Interface Design
10	System Core function Implementation
11	Database Implementation
12	Interface Implementation
13	System Integration
14	System Testing
15	System Documentation
16	Installation
17	Postmoterm
18	End

Chapter 3: Methodology

3.1 Methodology

In carrying out this project we will use the iterative model. In an iterative process the development starts with the major requirements already defined, then iteratively enhance each iteration's output. The enhancement is done until when the system is fully completed.

The model is suitable for this project because there may be a need for the system to evolve by addition of functionalities due to additional user requirements. It is going to be easy to plan parallel development and measure progress. We will also be able to test and debug each iteration and thus reducing chances of failure or a large debugging work when deploying the final product.

3.2 Project scope

The project involves the automation of all the process involved during the undertaking of final year projects such as allocating supervisors, submission of concept notes, keeping track of project progress and submission of any other paper work that are a result of the projects. The requirements of what the system should incorporate will be obtained through interviewing project coordinator, some faculty members who act as supervisors to students and some of the final year students who are currently carrying out their final year projects. The project will be completed by the last week of the second semester of the academic year 2016/2017.

3.3 Tools and technology

We expect to use HTML as mark-up language, CSS and JavaScript to style and add interactivity to the user interface. For database implementation we will use a SQL database and MySQL as the database management system. One among the reasons for using MySQL is because of its flexibility in developing web applications and that is suitable for small-scale sized projects like ours. We will also use open-source web technologies where necessary in order to implement certain modules. The project will be hosted locally using Apache servers and a backup will be done on GitHub where it would be easy to commit changes, provide access to all members and also secure data in case of any data loses that may happen to any of our devices.

3.4 Requirements Engineering

Requirements engineering is a process in which one finds out, analyses, document and check the services and constraints that are going to be provided by the system. Usually carried out after a solution has been proposed. The requirements are usually collected from potential users. Then later on organized and specified in a document.

In this case, the requirements were collected from the FYPs coordinator. The data collection method that was used is mainly interview, which was conducted in form of an open interview with one main question which was also open-ended. What would you like the FYP Web Portal to do for you? The other method that we used was ethnography, with this the observation was carried out by the development team itself since it is part of the college community.

Figure:

Next, the unstructured gathered data is classified and organized into groups of related requirements and consistent. The organized requirements are then used to develop the architectural design of the system. In this stage the actors of the system are identified and the functional and non-functional requirement of the system were documented.

The system has four actors who are:

- Students
- Supervisor
- Coordinator
- System

Functional Requirements

Depending on the user the following are the functional requirements of the system

1. Student

   i. A student shall be able to login into the system using an ID and password.

   ii. A student shall be able to suggest a project title.

   iii. A student shall be able to write a concept note and submit it.

iv. A student shall be able to choose whether they are doing individual or group projects.

v. A student shall be able to suggest group members.

vi. A student shall be able to submit/save their progress reports.

vii. A student shall be able to communicate with their supervisor using messages.

viii. A student shall be able to view past project titles.

ix. A student shall be able to view announcements posted by the coordinator.

x. A student shall be able to view the list of all available supervisors and their areas of expertise.

xi. A student shall be able to submit their final report at the end of the project.

2. Project Coordinator

i. The coordinator shall be able to login with a user name and unique ID.

ii. The coordinator shall be able to register students.

iii. The coordinator shall be able to register professors and their areas of expertise.

iv. The coordinator shall be able to edit groups suggested by students.

v. The coordinator shall be able to allocate supervisors to students and groups.

vi. The coordinator shall be able to post announcements.

vii. The coordinator shall be able to view the concept notes submitted by student.

viii. The coordinator shall be able to view progress reports submitted by students.

ix. The coordinator shall be able to communicate with students.

3. Supervisor

i. A supervisor shall be able to view students assigned to him/her.

ii. A supervisor shall be able to approve concept notes submitted under his name.

iii. A supervisor shall be able to evaluate/ grade students during presentation.

iv. A supervisor shall be able to view reports submitted by students.

v. A supervisor shall be able to comment on reports submitted by students.

4. The system

i. Generate reminders for announcement deadlines.

ii. The system shall keep track of the number of students that have submitted concept notes to a particular supervisor.

iii. The system shall keep of the number of students supervised by a particular supervisor.

iv. The system shall store gradebooks for each student.

NB: The complete SRS Document has been written separately

Chapter 4: System Design

Introduction

After gathering all the requirements from the potential users, we proceed to the design phase og thee project. Here we lay down the structure of the site, the relationship between entities and how the whole system is going to operate. The end product is diagrams that will act a communication tool between developers, and other stake holders. It is also documented for future references in case a new team of developers would come and continue the work.

The system has 4 major actors; student, supervisor, project coordinator and the system itself. A user is going to access the system by using a browser over the internet. The data is stored in a database that is accessed by the server that stores the system.

Here we have provided data flow diagrams for each actor. The diagrams are subject to change depending on the prototype analysis after each deliverable. Next is database design, the database schema is still under development and here we have provided a schema that is yet to undergo complete normalization.

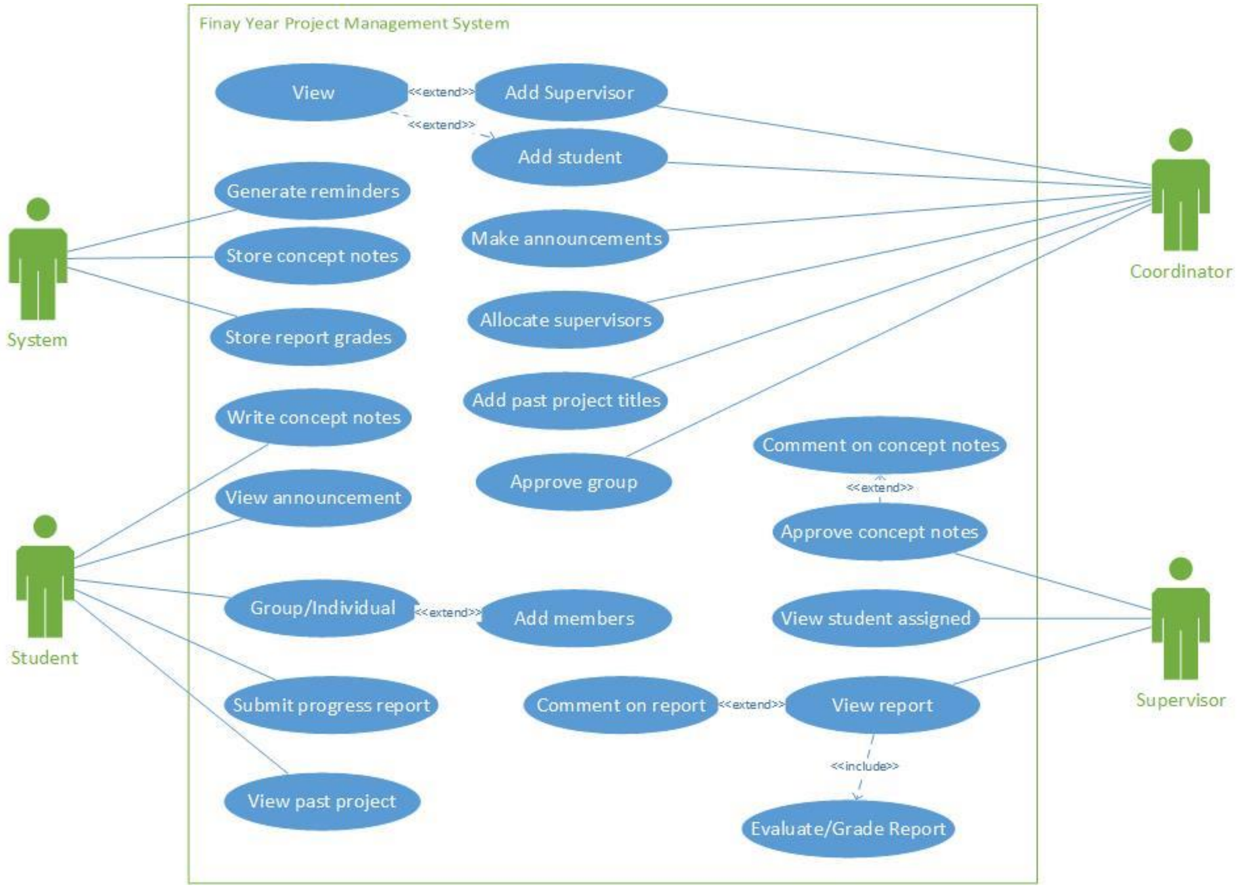


Figure 1 System's Use Case

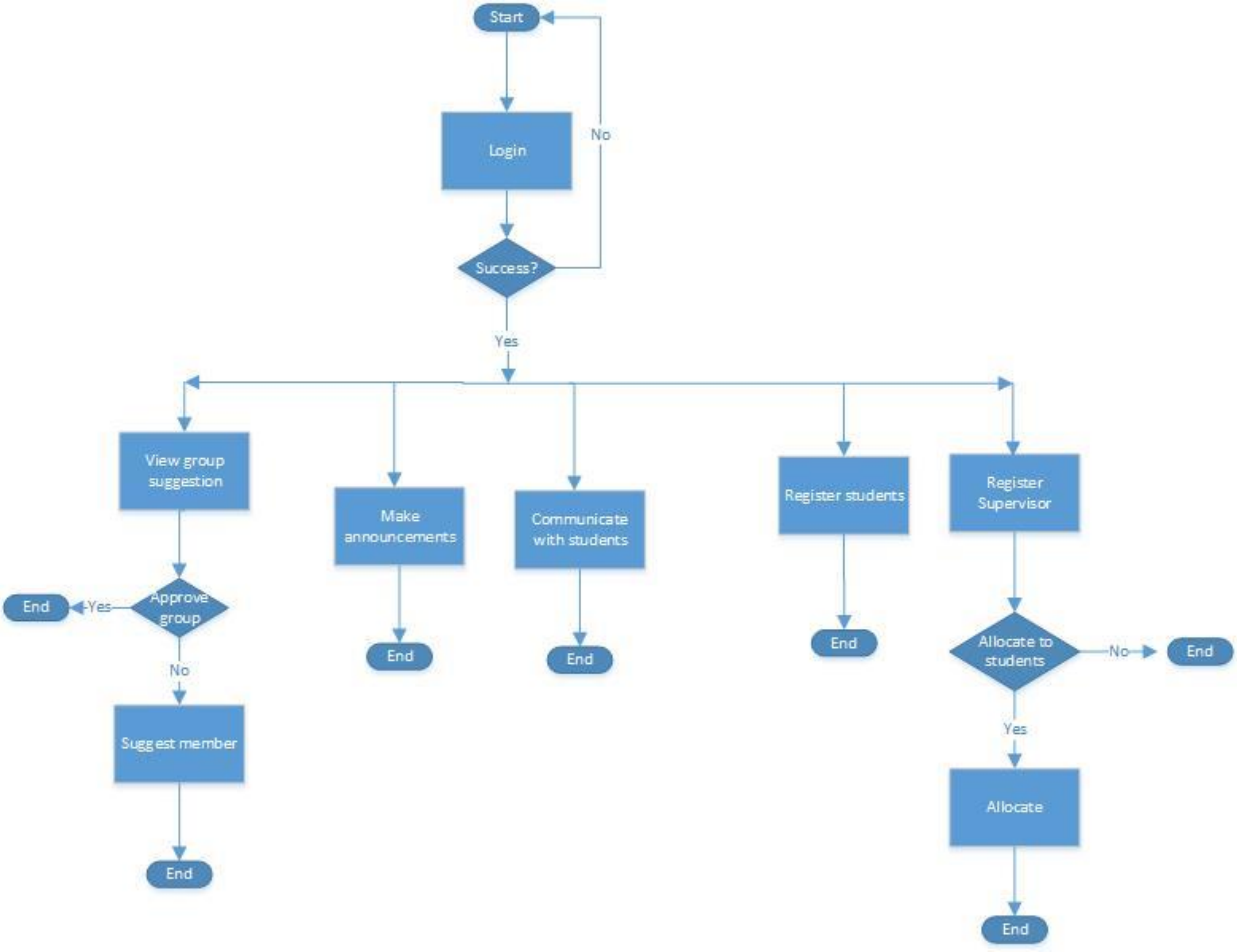


Figure 2: The Coordinator's Data Flow Diagram

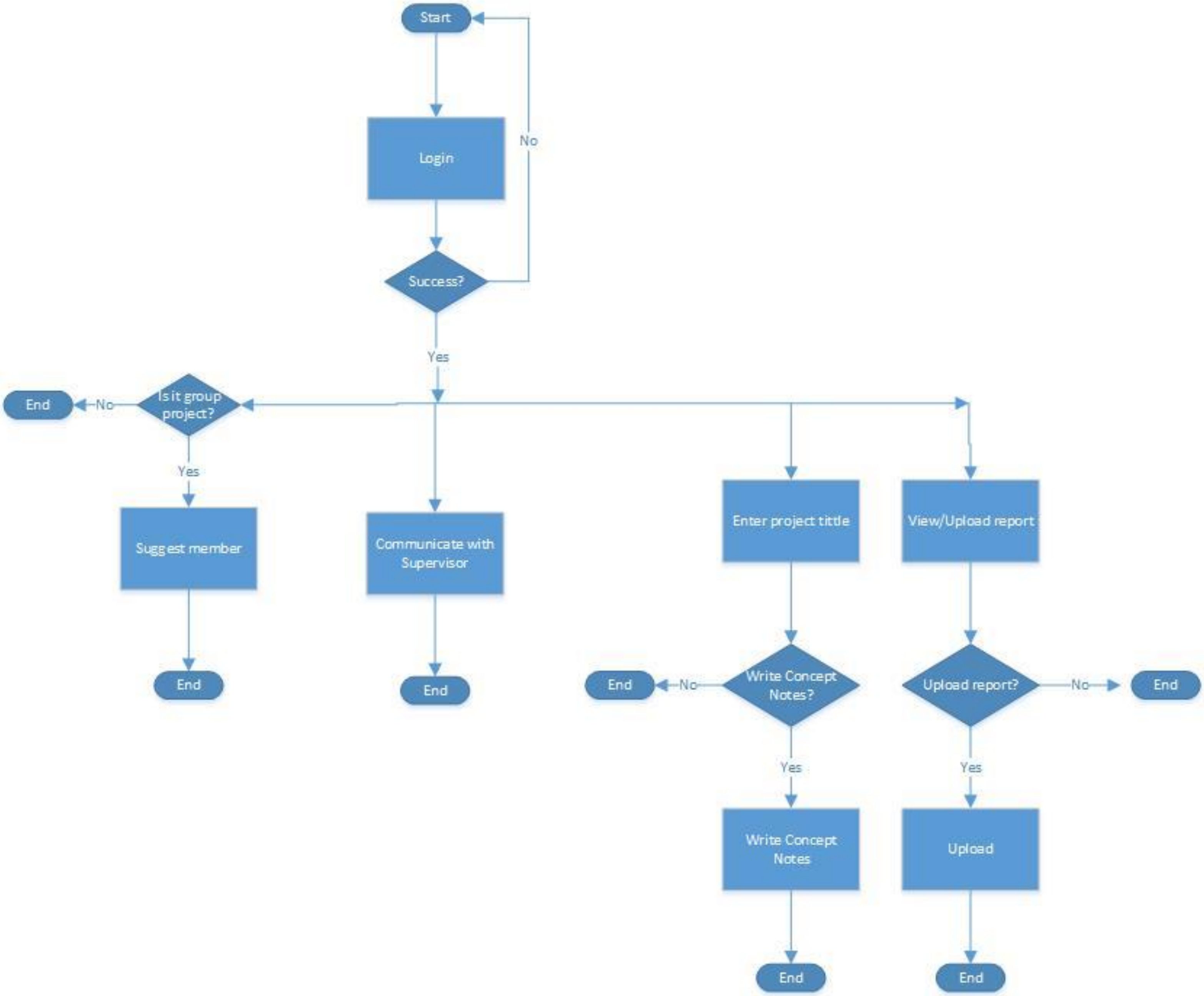


Figure 3: The Student's Data Flow Diagram

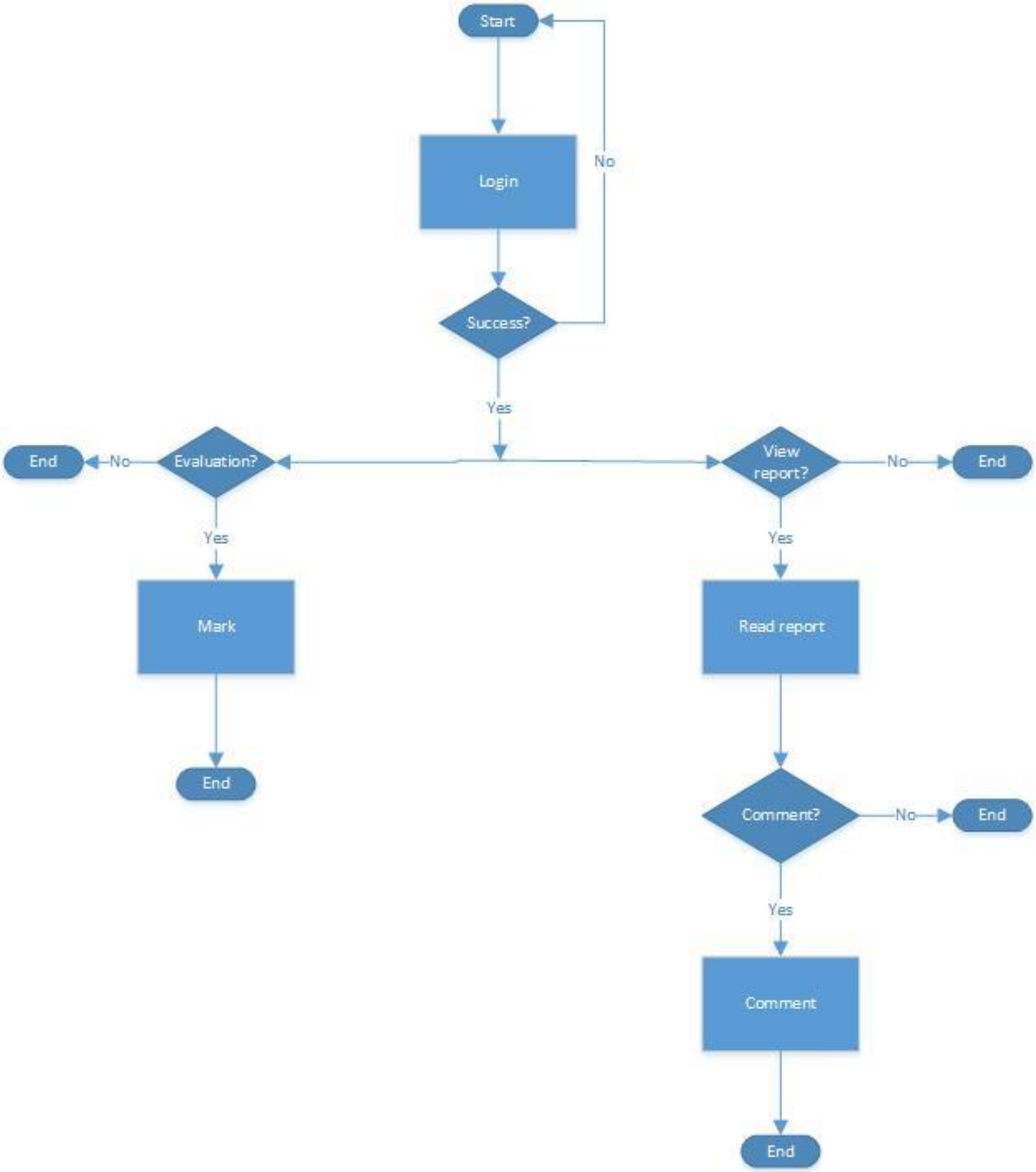
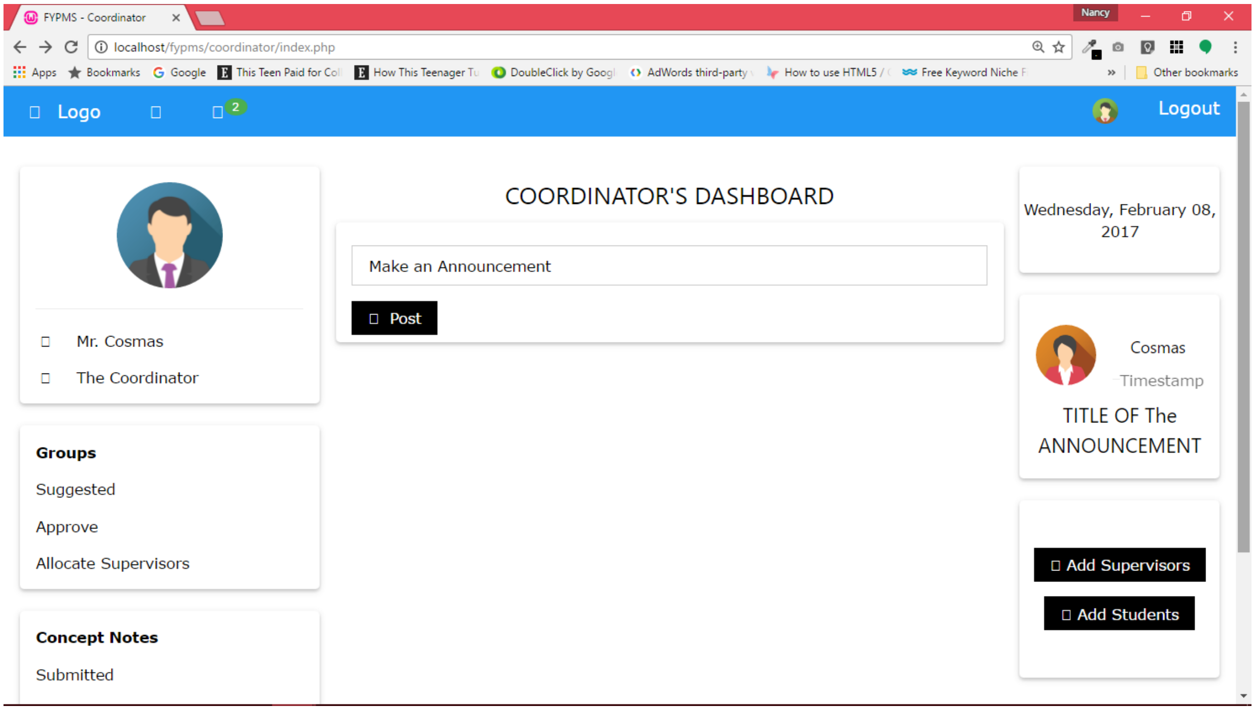


Figure 4: The Suoervsorr's Data Flow Diagram

USER INTERFACE

Coordinator's dashboard:



COORDINATOR'S DASHBOARD

Make an Announcement

Mr. Cosmas

The Coordinator

Groups

Suggested

Approve

Allocate Supervisors

Concept Notes

Submitted

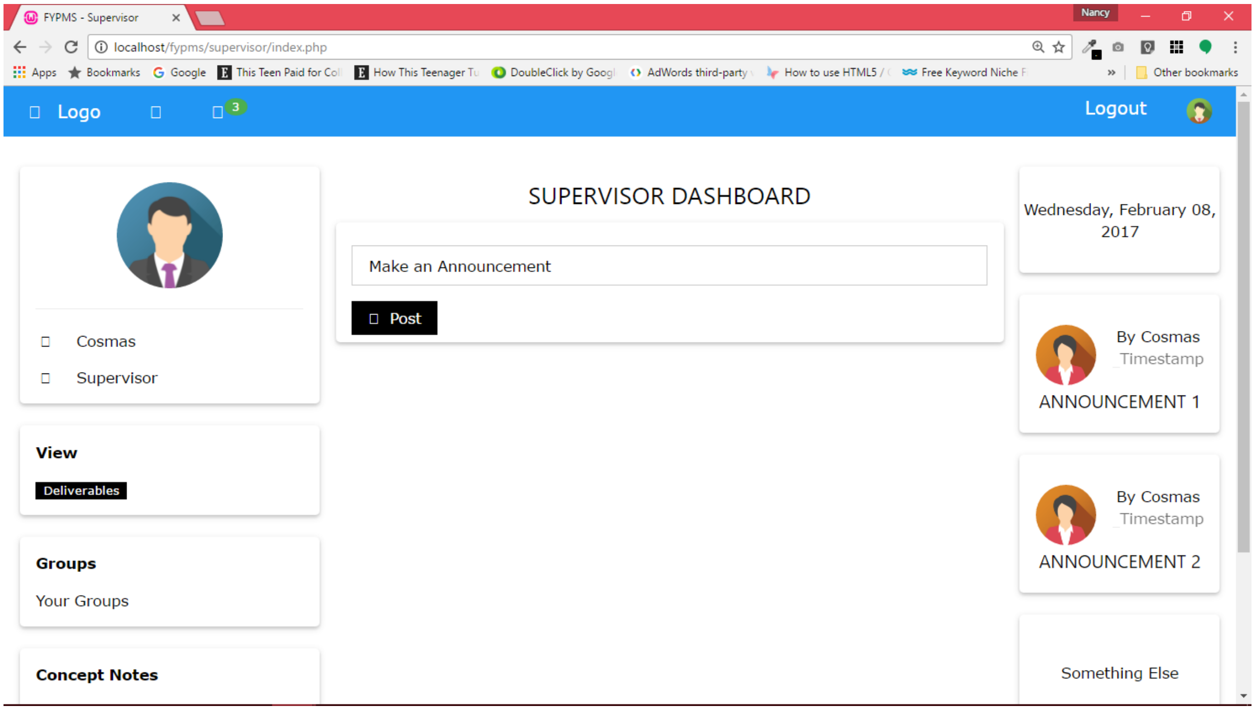
Wednesday, February 08, 2017

Cosmas

Timestamp

TITLE OF The ANNOUNCEMENT

Supervisor’s Dashboard:



SUPERVISOR DASHBOARD

Make an Announcement

Cosmas

Supervisor

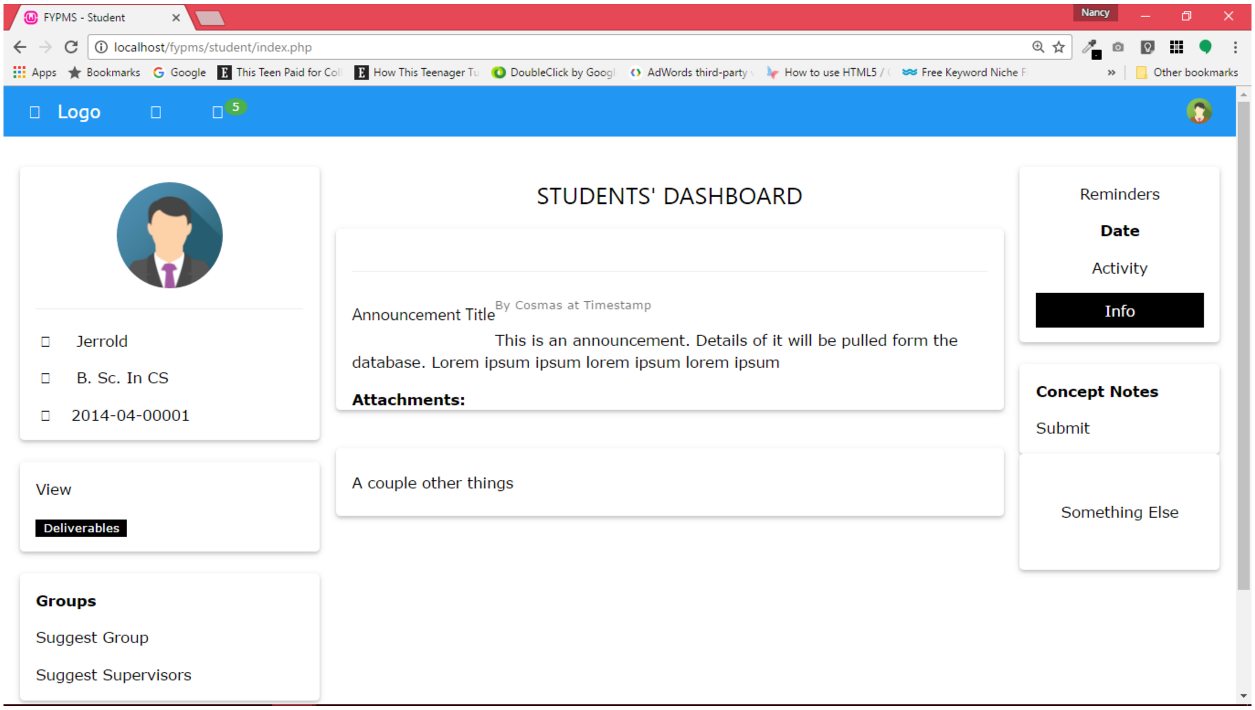
Wednesday, February 08, 2017

By Cosmas
Timestamp
ANNOUNCEMENT 1

By Cosmas
Timestamp
ANNOUNCEMENT 2

Something Else

Student’s Dashboard:



STUDENTS' DASHBOARD

Announcement Title By Cosmas at Timestamp

This is an announcement. Details of it will be pulled form the database. Lorem ipsum ipsum lorem ipsum lorem ipsum

Attachments:

A couple other things

Jerrold

B. Sc. In CS

2014-04-00001

View

Deliverables

Groups

Suggest Group

Suggest Supervisors

Reminders

Date

Activity

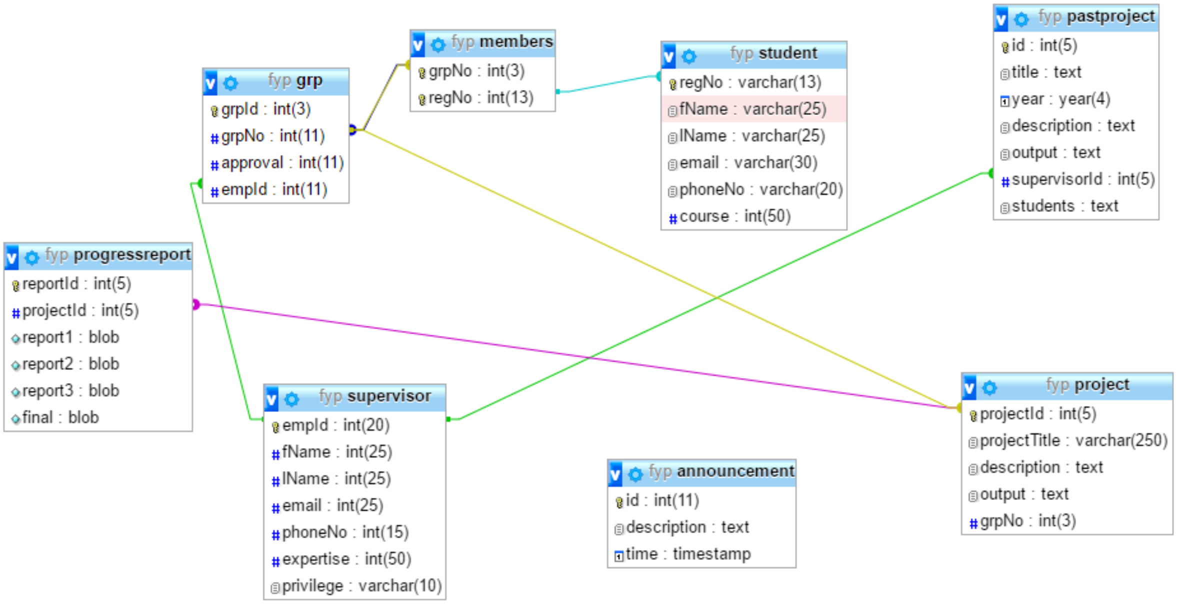
Info

Concept Notes

Submit

Something Else

Database of the system



fyp members
- grpNo : int(3)
- regNo : int(13)

fyp student
- regNo : varchar(13)
- fName : varchar(25)
- lName : varchar(25)
- email : varchar(30)
- phoneNo : varchar(20)
- course : int(50)

fyp pastproject
- id : int(5)
- title : text
- year : year(4)
- description : text
- output : text
- supervisorId : int(5)
- students : text

fyp grp
- grpId : int(3)
- grpNo : int(11)
- approval : int(11)
- empId : int(11)

fyp progressreport
- reportId : int(5)
- projectId : int(5)
- report1 : blob
- report2 : blob
- report3 : blob
- final : blob

fyp supervisor
- empId : int(20)
- fName : int(25)
- lName : int(25)
- email : int(25)
- phoneNo : int(15)
- expertise : int(50)
- privilege : varchar(10)

fyp announcement
- id : int(11)
- description : text
- time : timestamp

fyp project
- projectId : int(5)
- projectTitle : varchar(250)
- description : text
- output : text
- grpNo : int(3)

References

Online Resource: *myCourse Quick Reference Guide*

M. A. Bakar et al, (2011), *Final Year Supervision Management System as a Tool for Monitoring Computer Science Projects*, Elsevier Publishers.

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