Online Student Mentoring System

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Online Student Mentoring System

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
OF THE DEGREE OF

BACHELOR OF ENGINEERING

IN

INFORMATION TECHNOLOGY

BY

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MANISH KUMAVAT

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UNDER THE GUIDANCE OF

PROF. MARTINA D'SOUZA

(Department of Information Technology)

INFORMATION TECHNOLOGY DEPARTMENT

XAVIER INSTITUTE OF ENGINEERING

UNIVERSITY OF MUMBAI

2020 – 2021

XAVIER INSTITUTE OF ENGINEERING

MAHIM CAUSEWAY, MAHIM,MUMBAI - 400016.

CERTIFICATE

This to certify that

SHRINEETH KOTIAN	(28)
MANISH KUMAVAT	(29)
DIXIT PATEL	(40)

Have satisfactorily carried out the MINI-PROJECT work titled "**ONLINE STUDENT MENTORING SYSTEM"** in partial fulfillment of the degree of Bachelor of Engineering as laid down by the University of Mumbai during the academic year 2020-2021.

Prof. Martina D'souza

Internal Examiner **External Examiner**

Date:

Place: MAHIM, MUMBAI

DECLARATION

I declare that this written submission represents my ideas in my own words and where others' Ideas or words have been included, I have adequately cited and referenced the original sources.

I also declare that I have adhered to all the principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission.

I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which thus have not been properly cited or from whom proper permission have not been taken when needed.

Shrineeth Kotian (28) ----------

Manish Kumavat(29) ----------

Dixit Patel (40) ----------

Date:

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Acknowledgement

We would like to thank Fr. Dr. John Rose S.J (Director of XIE) for providing us with such an environment so as to achieve goals of our project and supporting us constantly.

We express our sincere gratitude to our Honorable Principal Mr. Y.D.Venkatesh for encouragement and facilities provided to us.

We would like to place on record our deep sense of gratitude to Prof.ChhayaNarvekar,Head of Dept Of Information Technology, Xavier Institute of Engineering, Mahim, Mumbai, for her generous guidance help and useful suggestions.

With deep sense of gratitude we acknowledge the guidance of our project guide Prof Martina D'souza. The time-to-time assistance and encouragement by her has played an important role in the development of our project.

We would also like to thank our entire Information Technology staff who have willingly cooperated with us in resolving our queries and providing us all the required facilities on time.

Shrineeth Kotian ----------

Manish Kumavat ----------

Dixit Patel ----------

Xavier Institute of Engineering

Department of Information Technology

Course Code	Course Name	Examination Scheme						
		Theory Marks				Term Work	Oral	Total
		Internal Assessment			End Sem Exam			
		Test 1	Test 2	Avg of 2 test				
ITL601	Software Design Lab					25	25	50

Term Work= 25Mks = 15(Case Study) + 5 (Assignment)+ 5(Attendance*)*

Lab Outcomes: Students will be able to:

LO1	Apply a Modeling with UML and design Use case Diagram
LO2	Create Structural Modeling.
LO3	Create Behavioral Modeling
LO4	Create Component Modeling.
LO5	Evaluate estimation about schedule and cost for project development.
LO6	Analyze project development tool.

Ms. Martina D'souza
Lab-Incharge

XAVIER INSTITUTE OF ENGINEERING

Department of Information Technology

Class/ Sem/ A.Y: TE IT/ VI/ 2018-19

Course Name: Software Design Lab

Name of Student/Roll No:

Shrineeth Kotian / XIEIT181925

Manish Kumavat / XIEIT181926

Dixit Patel / XIEIT181936

Group No: 16

LO1: Apply a Modeling with UML and design Use case Diagram

LO2: Create Structural Modeling.

LO3: Create Behavioral Modeling

LO4: Create Component Modeling.

LO5: Evaluate estimation about schedule and cost for project development.

Rubrics For Case Study/ Mini Project

Name of the Student (Roll No)	Problem Statement (03)	Design & Quality of work done (07)	Punctuality and lab ethics (02)	Performance/ Presentation (03)	Total (15)
Shrineeth Kotian					
Manish Kumavat					
Dixit Patel					

Ms. Martina D'souza.

1. Introduction

1.1 Project Fromulation:

There are three modules or users namely admin, mentor and student. The user admin is similar to administrator of the system who manages the mentors as well as students. Admin only has the option to edit login credentials of both the users i.e. the teacher and the student, and monitor over the actions performed by them. The admin can see the responses given in the contact us form which is in the homepage. The whole system is controlled by the admin user. The mentors also play a critical role by giving their right feedback to right students. The mentors are mediators between the admin users and the student user of the system. Mentors also provided with the login credentials by admin to login and check the information of the students and do analysis of each and every student assigned to him for mentoring then give his valuable feedback. The mentor gives attendance to the students according to the lectures and sessions they have attended and provide them marks for the files which have been uploaded by the students. The student can ask doubts if they have any and it is answered by the teacher accordingly. Then lastly the mentor uploads notices which is seen by the students. A Mentor Student user has his login for viewing the feedback given by their mentors. He/ She can view the attendance given by their respected mentors and can view the marks given by them for their submissions.

2. SRS Document

A software requirements specification (SRS) is a description of a software system to be developed. It lays out functional and non-functional requirements, and may include a set of use cases that describe user interactions that the software must provide.

Software Requirement Specification (SRS) document usually contains a software vendor's understanding of a customer's software requirements. This document ensures that the software vendor and the customer are in agreement as to the features required in the software system being built. SRS is created after the initial requirement elicitation phase in which Software vendor interacts with the customer to understand the software needs. Usually SRS documentation is prepared by a business analyst who has some technical background.

An SRS is written in precise, clear and plain language so that it can be reviewed by a business analyst or customer representative with minimal technical expertise. However it also contains analytical models (use case diagrams, entity relationship diagrams, data dictionary etc.) which can be used for the detailed design and the development of the software system. SRS is one of the most critical pieces of software development since it acts as the bridge betweens the software developers and business analysts. An incomplete or incorrect SRS can have disastrous effects on a software project. In this article I explain the major sections of a typical Software Requirement Specification document.

Software Requirements Specification

for

Online Student Mentoring System

Version 1.0 approved

Prepared by SHRINEETH KOTIAN (XIEIT181925)
MANISH KUMAVAT (XIEIT181926)
DIXIT PATEL (XIEIT181936)

Xavier Institute of Engineering, Mahim

01-04-2021

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1. Introduction

1.1 Purpose

There lies a aperture in the conventional education system among the faculty and the students because in most of the students there lies a fear, lack of confidence due to which a student cannot easily talk to their teachers without any hesitation. Also in the present system, for mailing questions and answers it is required that both the mentor and the mentee knows their mail address everytime and it is also time consuming. And for a single mentor or teacher it is difficult to send questions to all students via their mail address everytime. The conventional system requires the mentor and the student to be both physically present at the same place at same time which is always not possible it might happen that the students is late or vice versa so its very difficult to be all there at a common time. The main problem focused here is the process of mentoring between faculty and the student. So now all the data would be kept online in this system and the teacher and student can also easily communicate through there. The teacher can post question and the students could answer them easily thereby improving the overall skills of the students.

1.2 Document Conventions

Entire document should be justified

- Convention for Main title
  - Font Face: Times New Roman
  - Font Style: Bold
  - Font Size: 16
- Convention for Subtitle
  - Font Face: Times New Roman
  - Font Style: Bold
  - Font Size: 14
- Convention for Body
  - Font Face: Times New Roman
  - Font Style: None
  - Font Size: 12

1.3 Intended Audience and Reading Suggestions

This document is intended for people related to education, specifically the staffs of a particular university i.e. an admin and the mentor(teachers) and lastly the students of the university.

1.4 Product Scope

Online Mentoring System is a Client Server model, which acts as an Interface between Teacher and Student. OMS strives to reduce the work load of students in entering their details and at the same time enable the Mentors to assess their students more efficiently. The scope is to improve the performance of students by assisting mentors to understand the problems of students more effectively and easily.

1.5 References

1. https://www.ijeecse.com/V3N5-019.pdf?

2. Thapa-Technical, Code with Harry (youtube.in)
3. https://www.researchgate.net/profile/Satish R U V N/publication/311615267 Implementation of Mentoring System Using J2EE Architecture E-Mentoring/links/5851164c08ae4bc8993b76a6.pdf
4. https://ijettjournal.org/Volume-67/Issue-1/IJETT-V67I1P206.pdf
5. W3Schools
6. Slideshare: https://www.slideshare.net/reshmarrajan/mentoring-system-ppt

2. Overall Description

2.1 Product Perspective

Online Mentoring is fundamentally developed to improve the performance of students by assisting mentors to understand the problems of students more effectively and easily. Mentors can easily evaluate and sort the performance of the students and concentrate on those who need there guidance.

2.2 Product Functions

- Mentor assign the assignment
- Mentor can post notices
- Students can upload their assignments
- Students can ask doubts
- Inbuilt attendance system

2.3 User Classes and Characteristics

There will be 3 user classes that will use this website. The most important user class in this will be the admin who will manage the entire system. The registered teachers can post assignments for each grade and value them. The registered students can post queries online and get their responses from the mentors. The students should post their answers for the assignments given to them within the specified date.

2.4 Operating Environment

This software system could be run on Windows 7 to 10, as well as MacOS. This was designed and developed on Windows OS. We have used the XAMPP server for operating our website database and for the hosting and managing our database we have used phpMyAdmin.

2.5 Design and Implementation Constraints

Mentees and mentors need internet access. Because its an online application so its necessary that both the teacher and student has a working internet connection.
Cost (if new software and hardware have to be purchased) it is possible that for some features we have to pay like if the number of students or teachers start increasing or much data is required so its necessary to purchase a space for same.
Both must have basic information technology skills so it would be easy to use the website properly.
And E-mentoring could be more time consuming than face to face mentoring thoughts not necessary but sometimes clearing all students doubt may take time.

2.6 User Documentation

User may refer to these links to be more familiar to use our website

https://www.youtube.com/watch?v=QlCyL-swz48

https://www.youtube.com/watch?v=YXQkUAU303Q

There will be a Contact Us option in the homepage of our website, using which the user will be able to ask if they have any queries about the site.

2.7 Assumptions and Dependencies

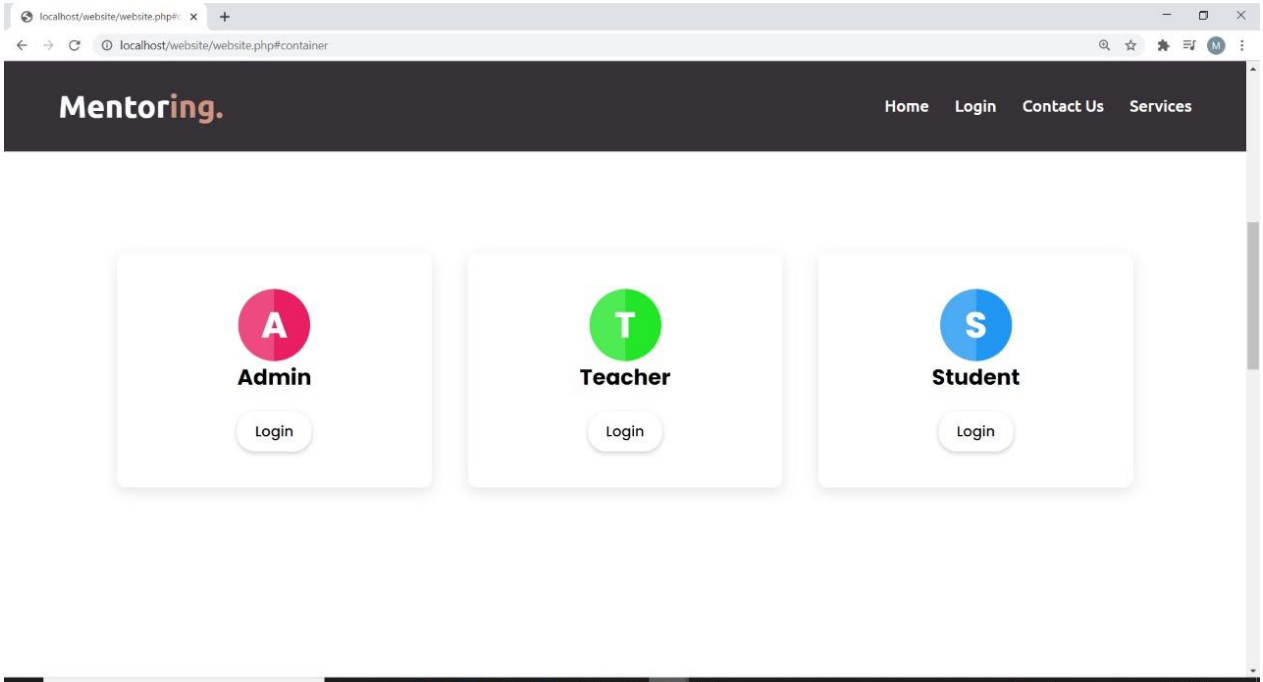
Assumption: In the website, there will be an admin who is already registered into the system. Also we assume the admin user have to know the information about each teacher and student ID.

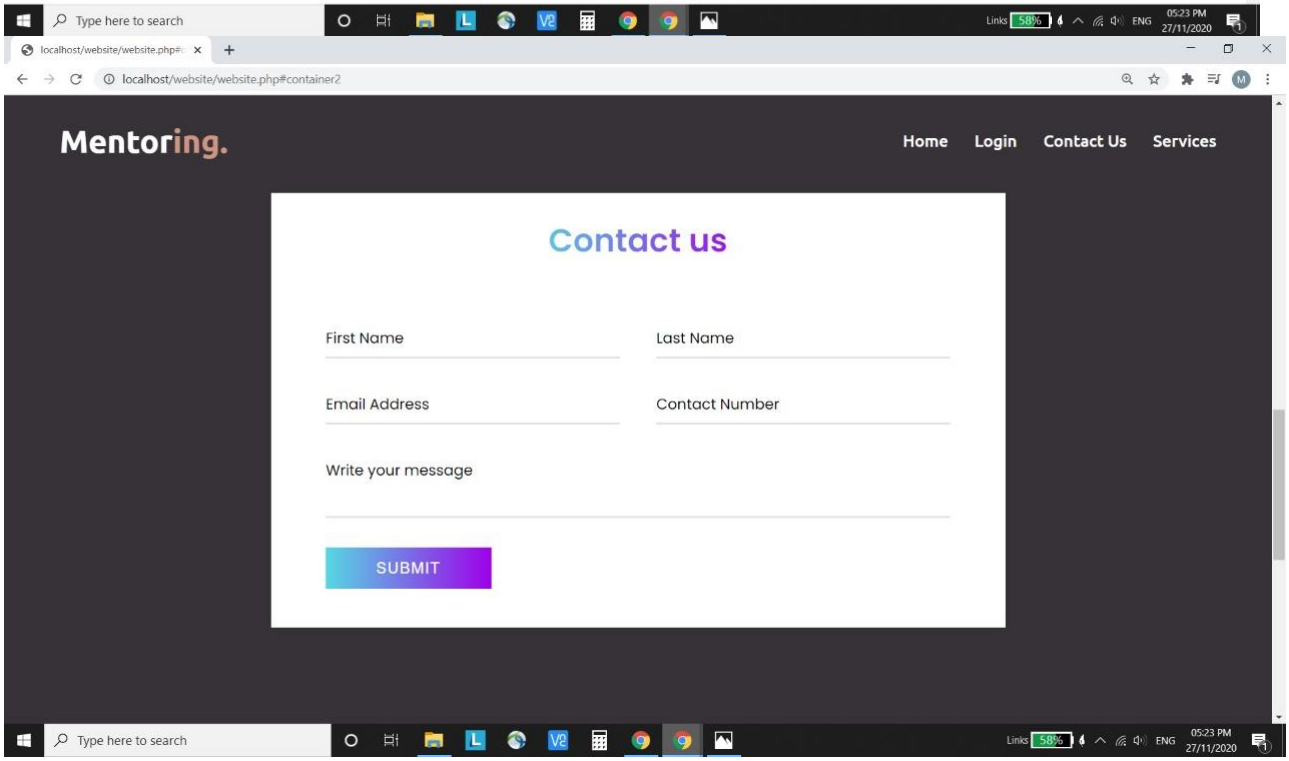
Dependencies: When student makes registration then teacher doesn't need to check the information for the student.

3. External Interface Requirements

3.1 User Interfaces

Our website will have a a login panels in the homepage and when authorized credentials are entered and submitted it will redirect to the particular module.





3.2 Hardware Interfaces

Hardware:
Device Name: Lenovo IdeaPad S145-14API
Processor: AMD Ryzen 5 3500U with Radeon Vega Mobile Gfx 2.10Ghz
RAM:8.00 GB

3.3 Software Interfaces

Software:
Operating System: Windows 10
Web Technologies/Programming Languages used:
1. HTML5,
2. CSS,
3. Javascript,
4. Php,
5. AJAX

Database: Xampp Server (Mysql)
Text Editor: Atom/ Sublime Text 3 or any.

3.4 Communications Interfaces

This project supports all types of web browsers and they are used to view the website. We use TCP/IP protocol.

4. System Features:

In this proposed system teacher has to upload the lab assignments and students will have to prepare for that particular lab assignment and upload it in the upload section of the website.

1. Performance: The performance of the system will depend upon the correct answers given by students on time. Also the plagiarism is used to check whether the code is copied or not. This also enhances the performance of system.

2. Capacity: Capacity of the number of students is limited as it will has certain limit.

3. Availability: Student has allowed to interact with mentor after the registration process . After this only student can be able to see the assignments and submit the codes.

4. Reliability System is reliable to type the code and submit it to teachers section properly.

5. Security: The system is secure because no student can directly interact with teacher without registration. As during registration, college ID is compulsory so no other students from different colleges can register.

6. Validation: It basically helps for the yearwise distribution of students. Means the second year student after getting in third year will be automatically get removed from that group.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The performance of the system will depend upon the correct answers given by students on time. Also the plagiarism is used to check whether the code is copied or not. This also enhances the performance of system.

5.2 Safety Requirements

Any website can be vulnerable sometimes. A hacker can enter into a website without any valid credentials for the website. To prevent this and similar attacks such as SQL injection we have used prepared statements and mysqli_real_escape_string() function in our code which helps escape any form texts that the user passes on from the website, in case they try to inject code into our database .

5.3 Security Requirements

The system is secure because no student can directly interact with teacher without registration. As during registration, college ID is compulsory so no other students from different colleges can register.

Facilitating other Documentation : The SRS forms the basis for checking for the plagiarism.

5.4 Software Quality Attributes

1. Accuracy: This is the first and foremost requirement. The development team will get nowhere if SRS which will be the basis of the process of software development, is not accurate.

2. Completeness The software requirement specification should not be missing any of the requirements stated in the business requirements documentation that the user specified.

3. Prioritization of Requirements: Software Requirement Specification should not simply be a wish list. The requirements should follow the order of priority and preference.

5.5 Business Rules

Any staff of the university and a student of any qualifications are best to run the model because they would be understanding the importance of the features of the website. The registrations of admins and mentors are blocked.

6. Other Requirements

Any user willing to enter the website be the user be a student or an admin or a mentor, they will need a particular email id and password for it. And for accessing the website they should have a device with proper internet connection with them.

Appendix A: Glossary

Admin- A person who has the right to add, delete or modify user entries.

Mentor- A person who guides and gives feedback and advices to a mentee.

Mentee- A person who is advised, trained, or counselled by a mentor.

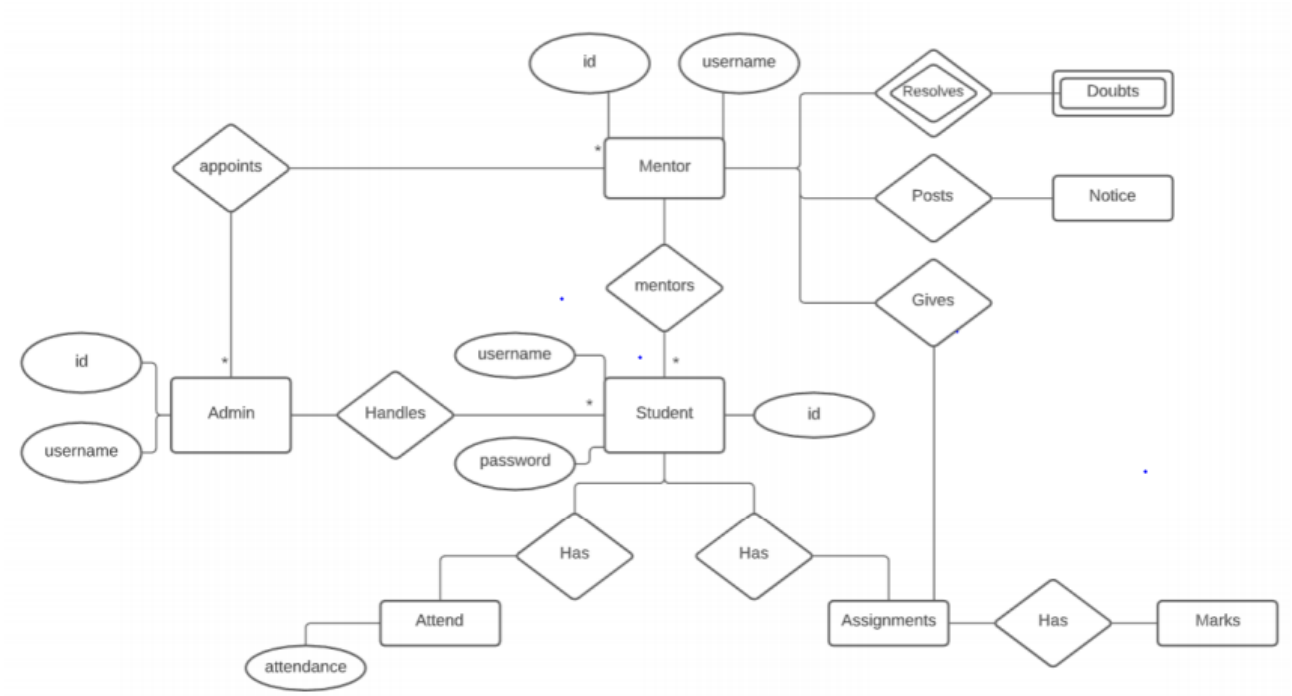
Assignment-It is a academic file or document or a piece of work given to someone.

Features- Attributes of the data set which would affect the output

Validation- Checking the results of training and testing data, and comparing their output in terms of accuracy

Appendix B: Analysis Models

This depicts an ER Diagram of our website



Appendix C: To Be Determined List

Our system may consist of more users other than the three main modules that are already present now for example librarians for providing e-books and materials,etc.

3. Analysis And Design Engineering

3.1 Use Case Diagram:

Use case diagrams are considered for high level requirement analysis of a system. When the requirements of a system are analyzed, the functionalities are captured in use cases.The purpose of use case diagram is to capture the dynamic aspect of a system.

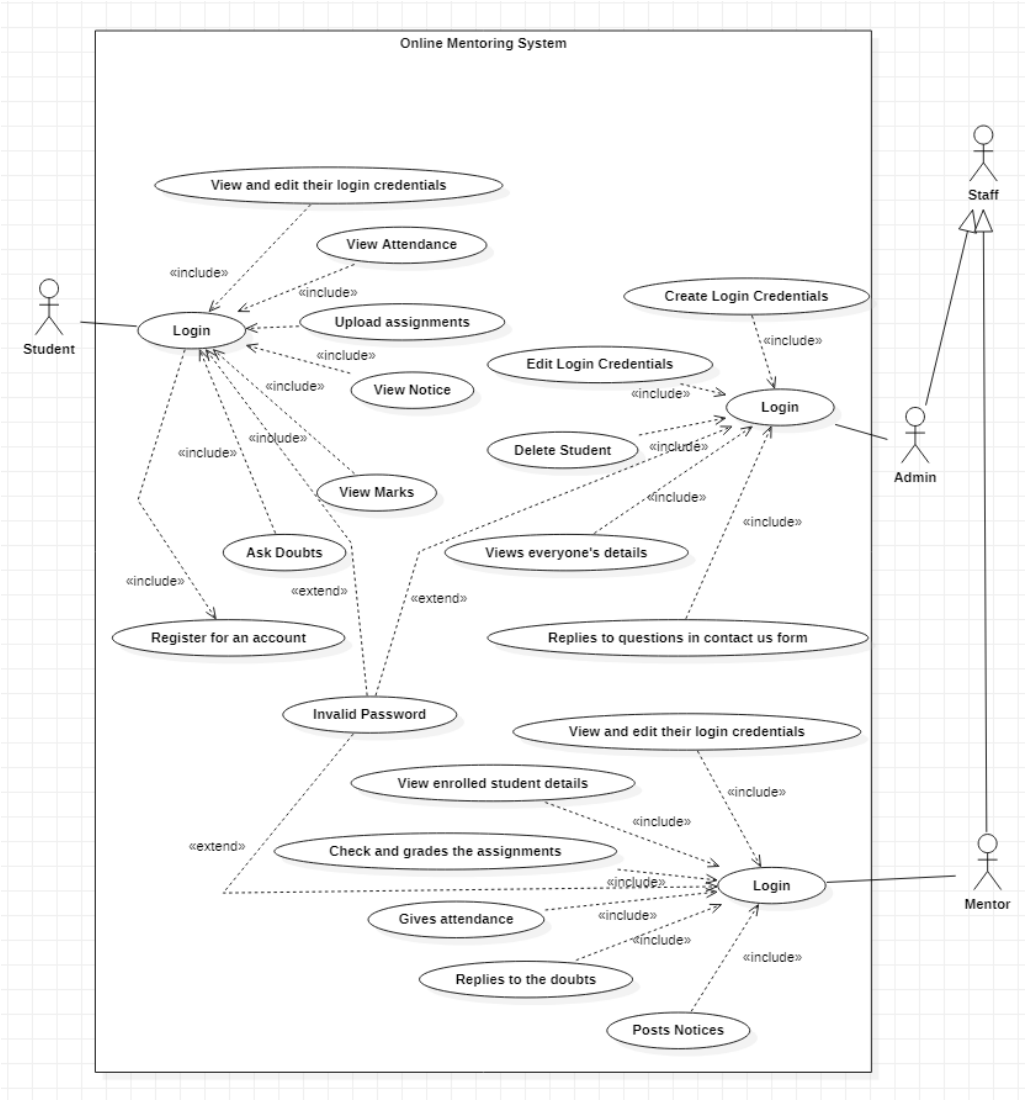


Figure 3.1: Use Case Diagram

3.2 Class Diagram:

Class Diagram defines the types of objects in the system and the different types of relationships that exist among them. It gives a high-level view of an application. This modeling method can run with almost all Object-Oriented Methods. A class can refer to another class. A class can have its objects or may inherit from other classes.

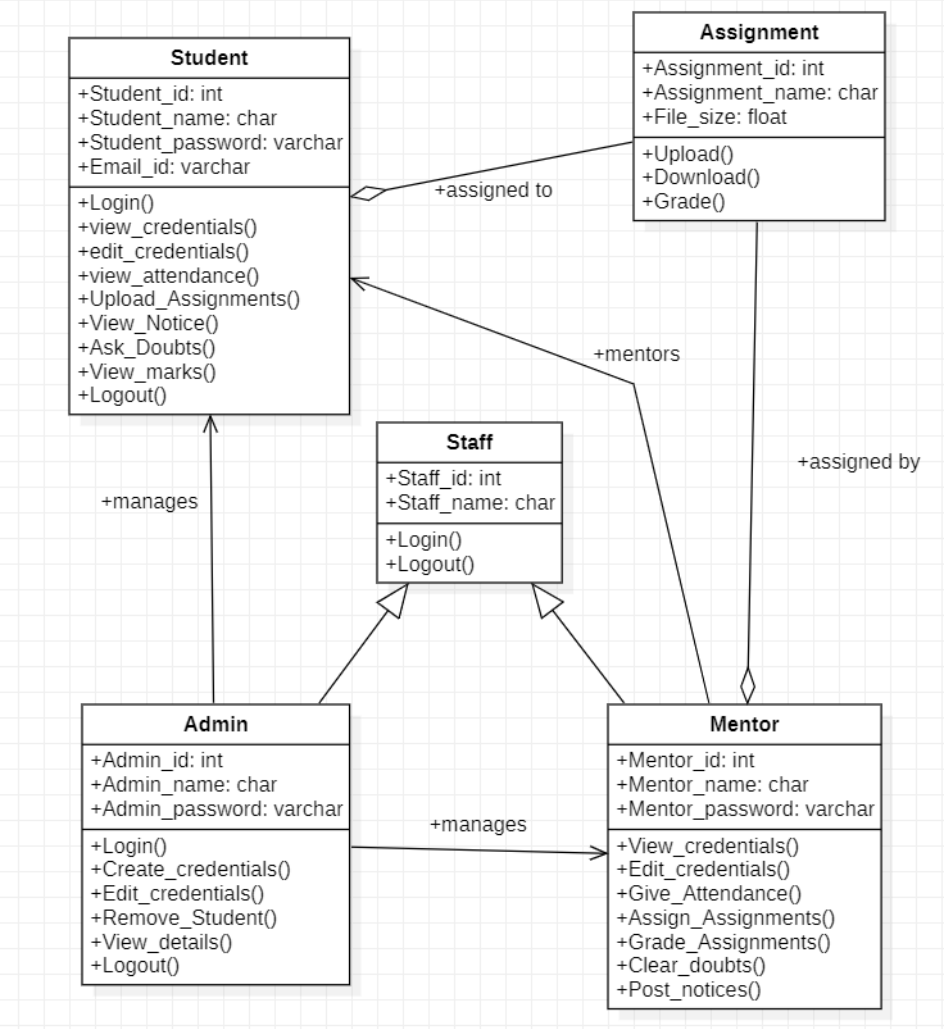


Figure 3.2: Class Diagram

3.3 Object Diagram:

Object diagrams are derived from class diagrams so object diagrams are dependent upon class diagrams.

Object diagrams represent an instance of a class diagram. The basic concepts are similar for class diagrams and object diagrams. Object diagrams also represent the static view of a system but this static view is a snapshot of the system at a particular moment.

Object diagrams are used to render a set of objects and their relationships as an instance.

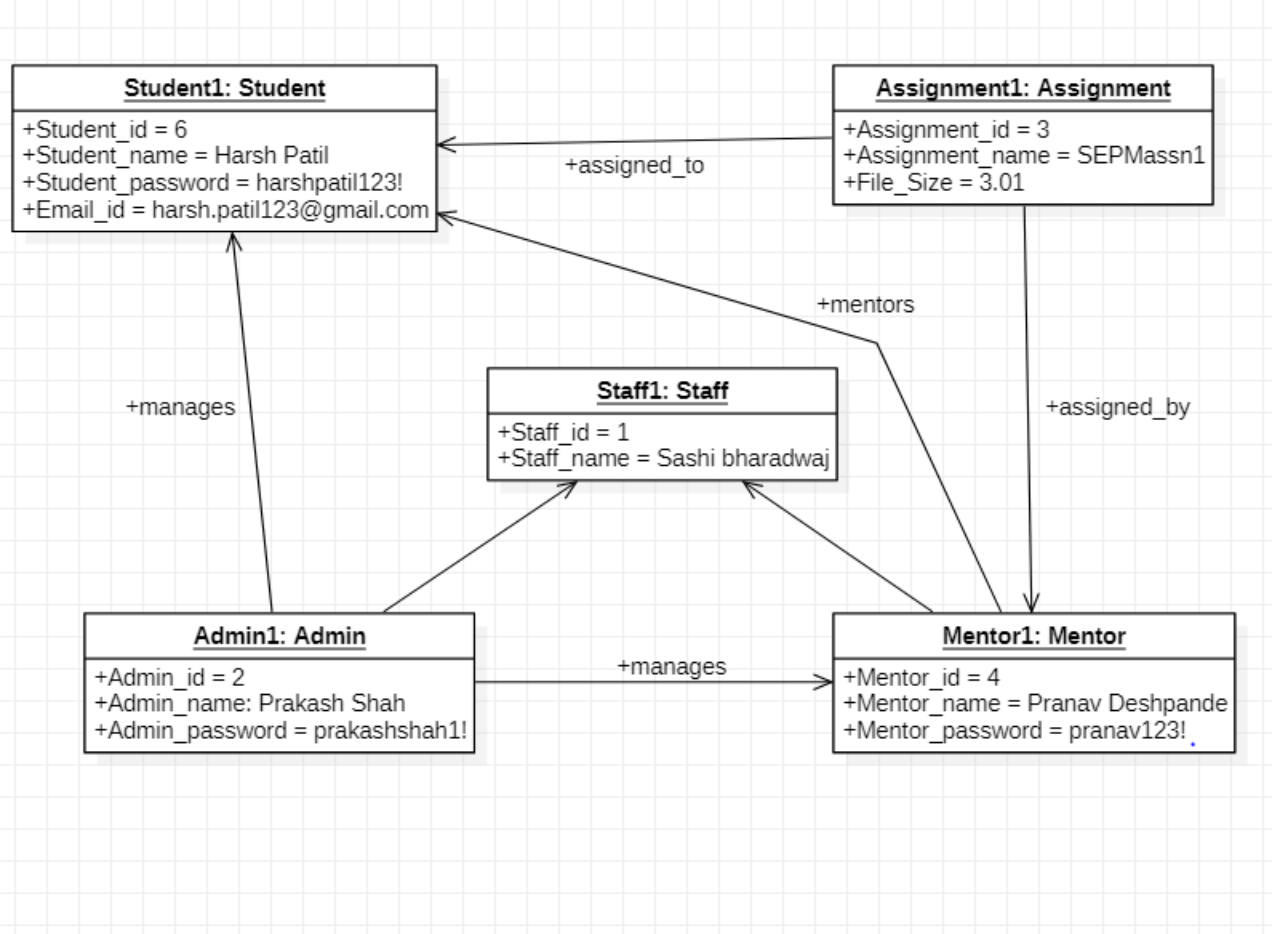


Figure 3.3: Object Diagram

3.4 Sequence Diagram:

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a new system or to document an existing process.

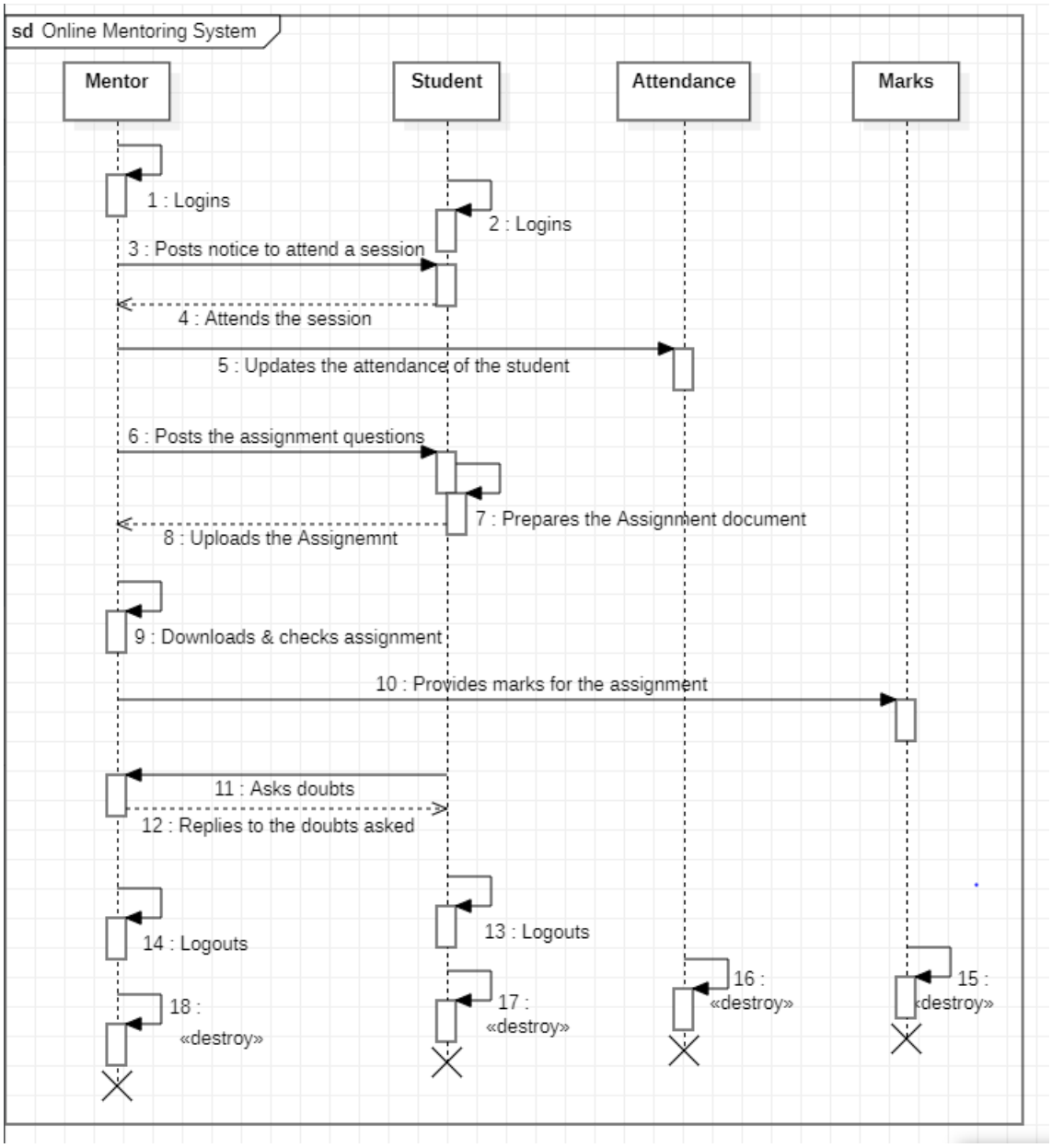


Figure 3.4: Sequence Diagram

3.5 Communication Diagram:

Collaboration diagrams (known as Communication Diagram in UML 2.x) are used to show how objects interact to perform the behavior of a particular use case, or a part of a use case. Along with sequence diagrams, collaboration are used by designers to define and clarify the roles of the objects that perform a particular flow of events of a use case. They are the primary source of information used to determining class responsibilities and interfaces.

The collaboration diagram is used to show the relationship between the objects in a system. Both the sequence and the collaboration diagrams represent the same information but differently. Instead of showing the flow of messages, it depicts the architecture of the object residing in the system as it is based on object-oriented programming.

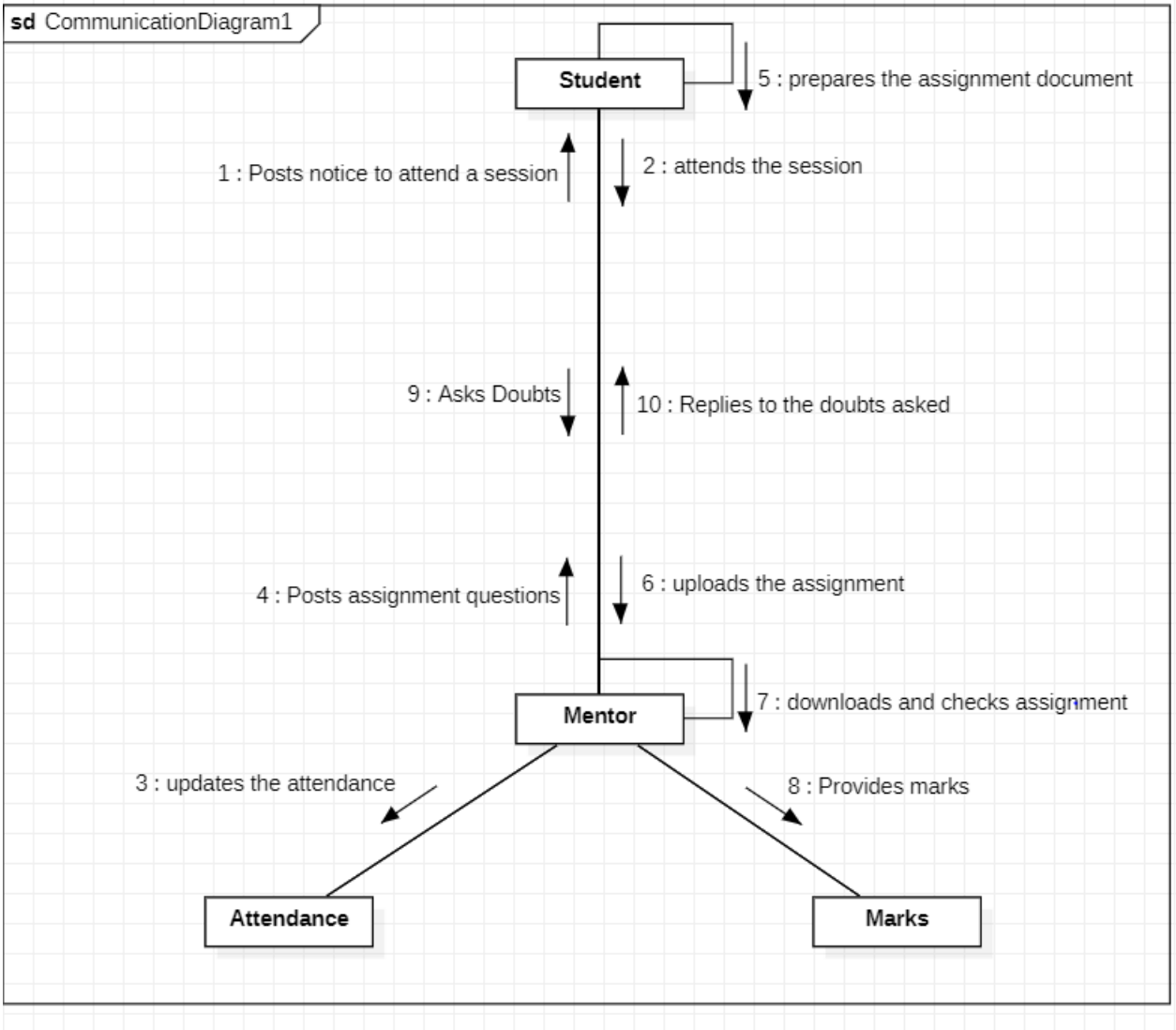


Figure 3.5: Communication Diagram

3.6 Activity Diagram:

An activity diagram visually presents a series of actions or flow of control in a system similar to a flowchart or a data flow diagram. Activity diagrams are often used in business process modeling. They can also describe the steps in a use case diagram.

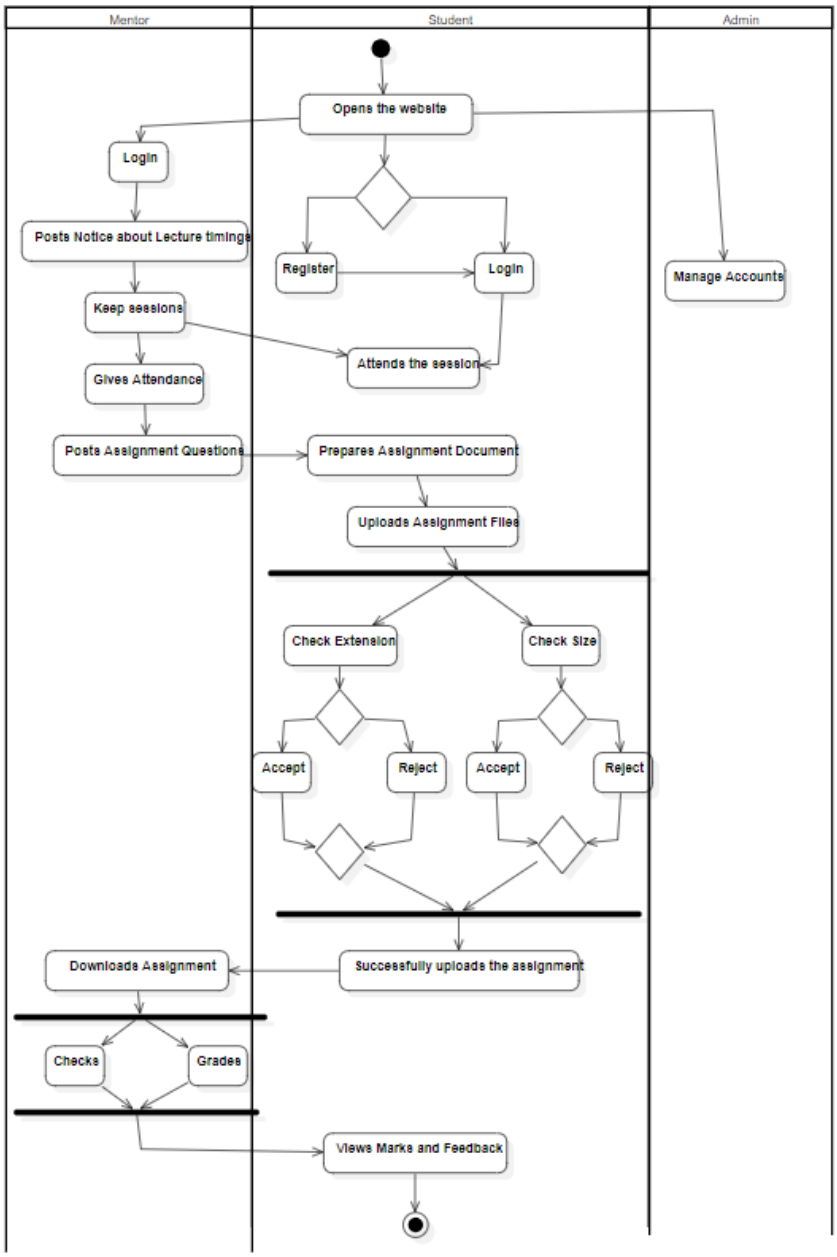


Figure 3.6: Activity Diagram

3.7 State-Chart Diagram:

A state diagram is used to represent the condition of the system or part of the system at finite instances of time. It's a behavioral diagram and it represents the behavior using finite state transitions.

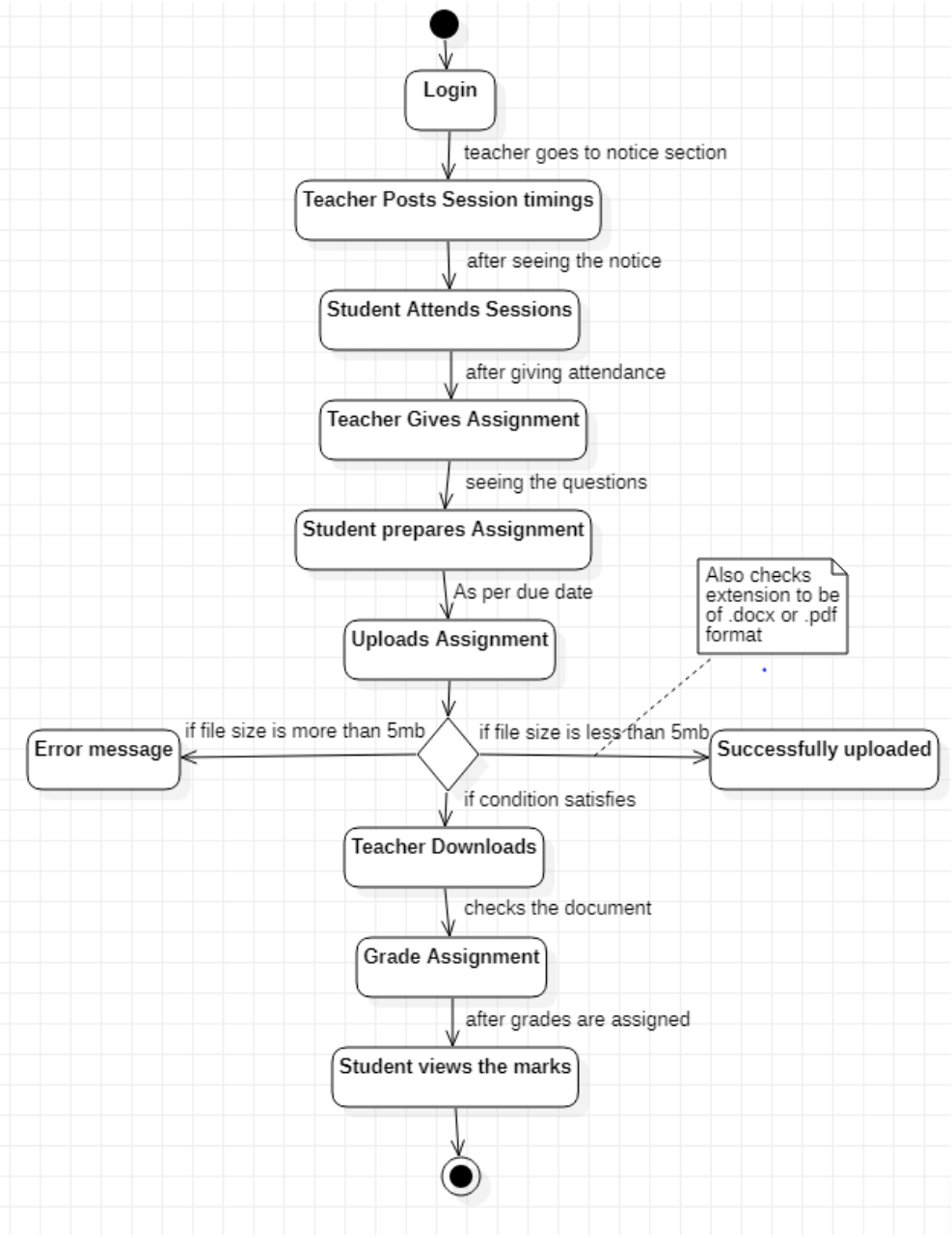


Figure 3.7: State-Chart Diagram

3.8 Component Diagram:

A component diagram is used to break down a large object-oriented system into the smaller components, so as to make them more manageable. It models the physical view of a system such as executables, files, libraries, etc. that resides within the node.

It visualizes the relationships as well as the organization between the components present in the system. It helps in forming an executable system. A component is a single unit of the system, which is replaceable and executable. The implementation details of a component are hidden, and it necessitates an interface to execute a function. It is like a black box whose behavior is explained by the provided and required interfaces.

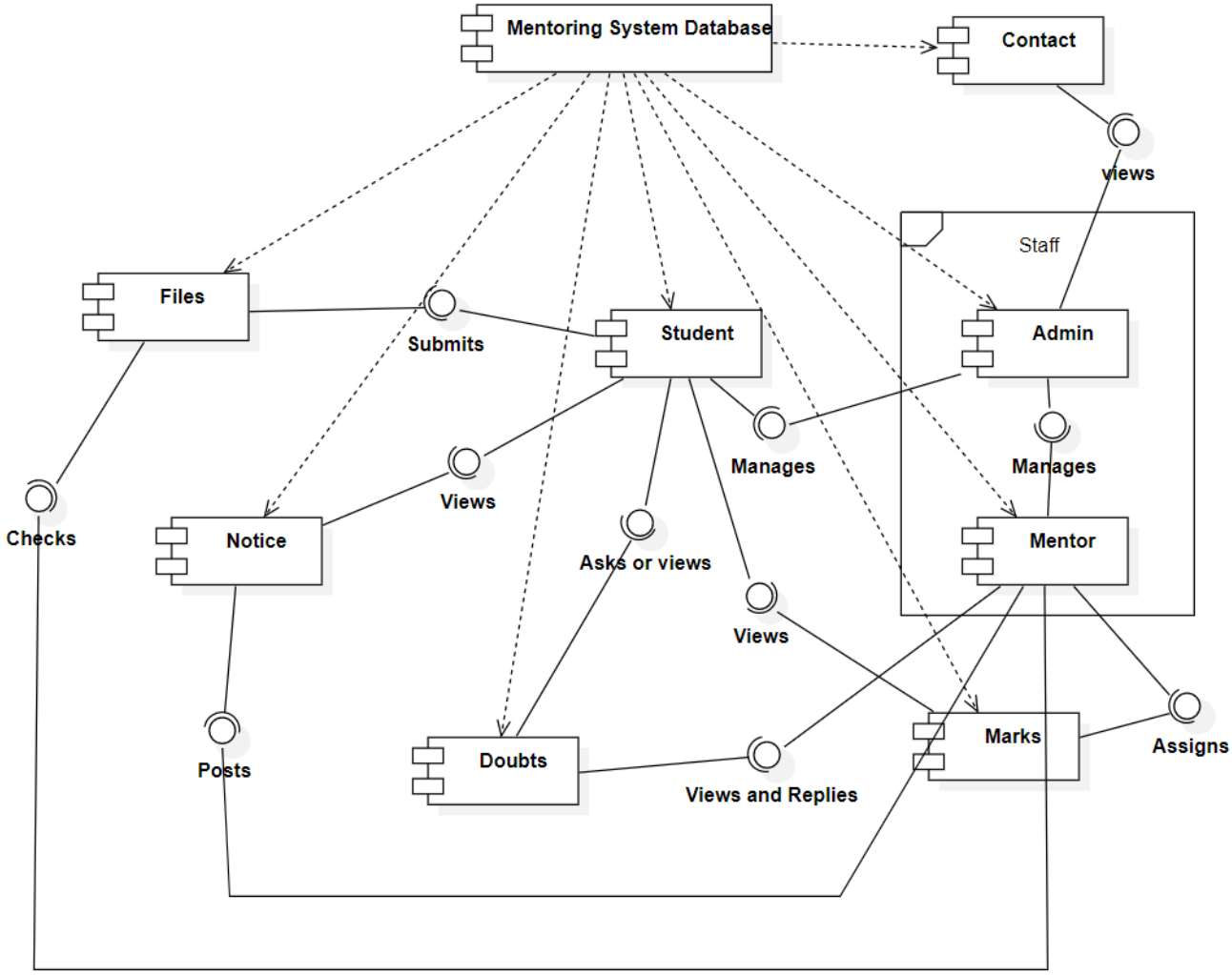


Figure 3.8: Component Diagram

3.9 Deployment Diagram:

A deployment diagram is a UML diagram type that shows the execution architecture of a system, including nodes such as hardware or software execution environments, and the middleware connecting them.

Deployment diagrams are typically used to visualize the physical hardware and software of a system. Using it you can understand how the system will be physically deployed on the hardware.

Deployment diagrams help model the hardware topology of a system compared to other UML diagram types which mostly outline the logical components of a system.

Deployment diagrams are used to visualize the topology of the physical components of a system, where the software components are deployed.

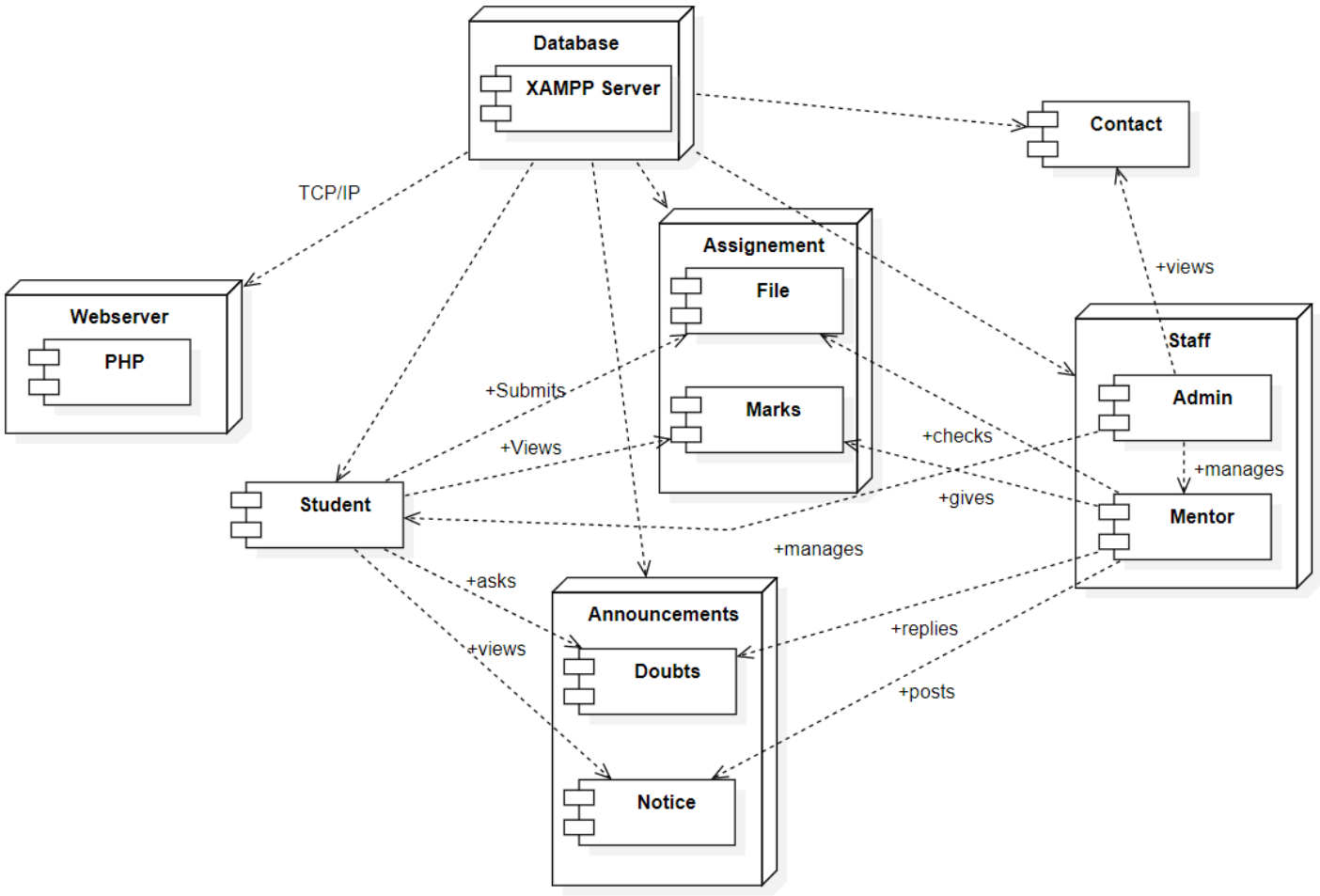


Figure 3.9: Deployment Diagram

3.10 Data-Flow Diagram:

A data-flow diagram is a way of representing a flow of data through a process or a system (usually an information system). The DFD also provides information about the outputs and inputs of each entity and the process itself. A data-flow diagram has no control flow, there are no decision rules and no loops.

LEVEL-0

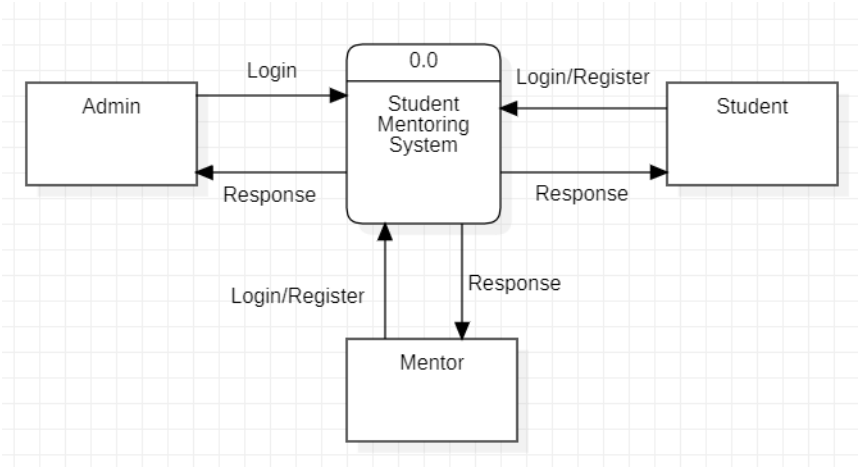


Figure 3.10: Data-Flow Diagram(Level 0)

LEVEL-1 Mentor Module

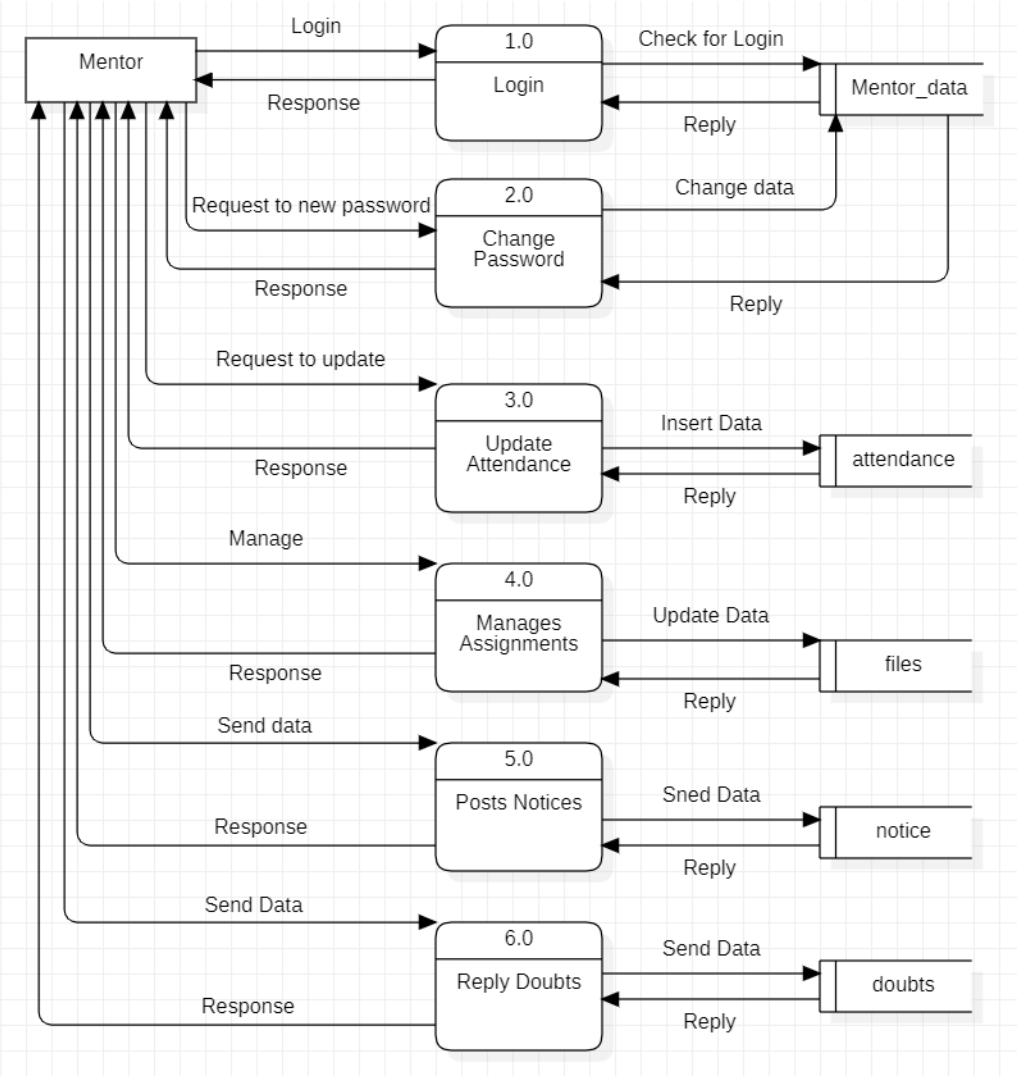


Figure 3.11: Data-Flow Diagram(Level 1-Mentor)

LEVEL-1 Student Module

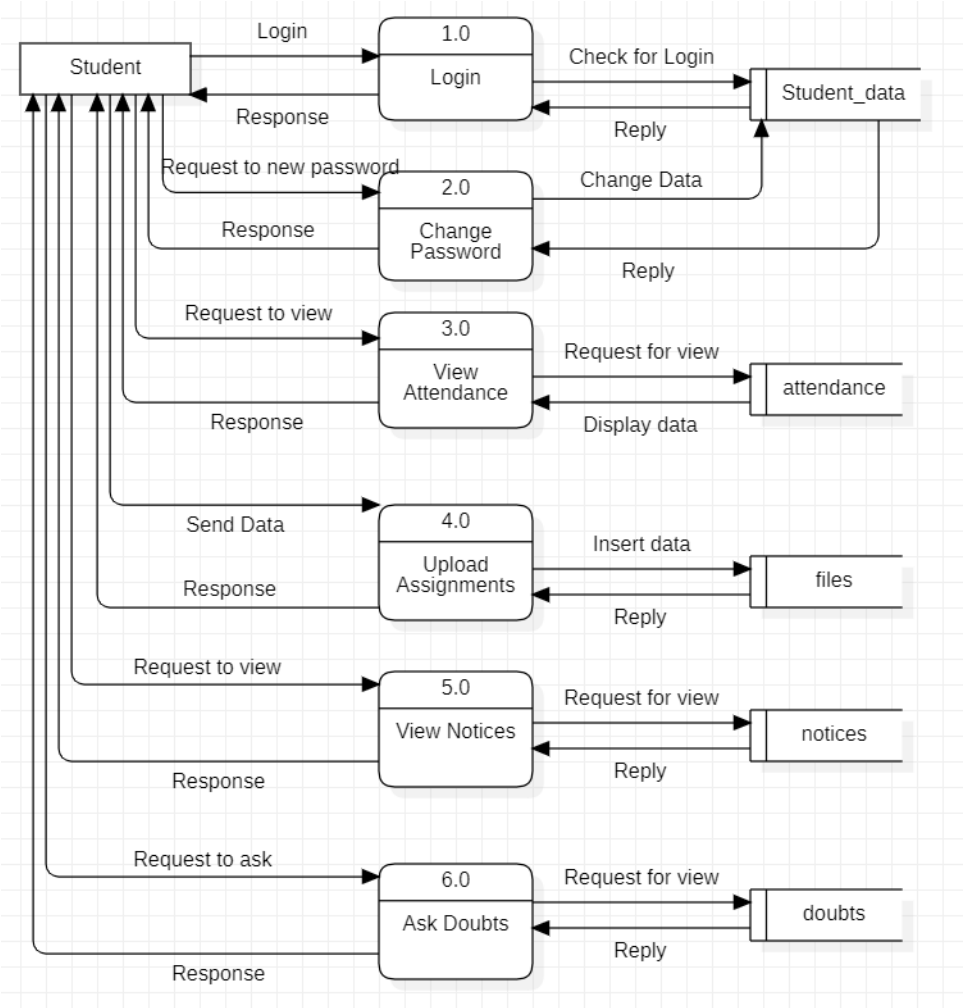


Figure 3.12: Data-Flow Diagram(Level 1-Student)

LEVEL-2 Student Module

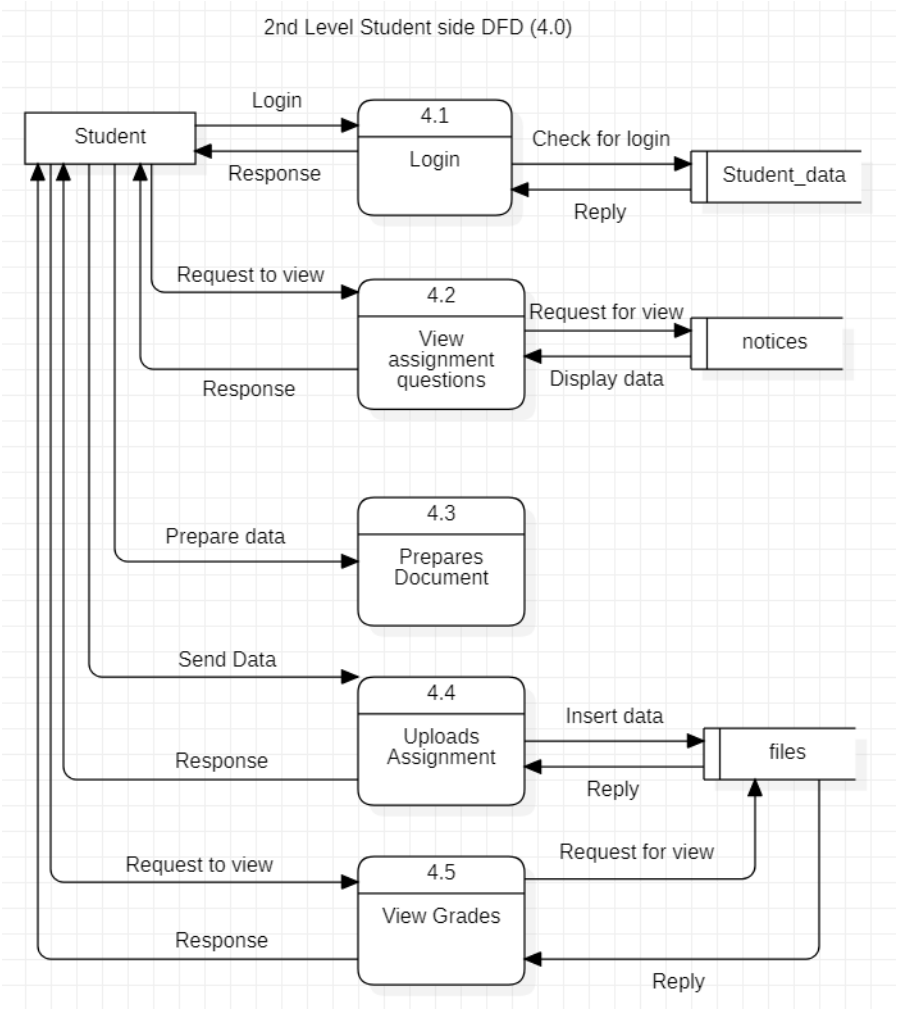


Figure 3.13: Data-Flow Diagram(Level 2-Student)

3.11 ER Diagram:

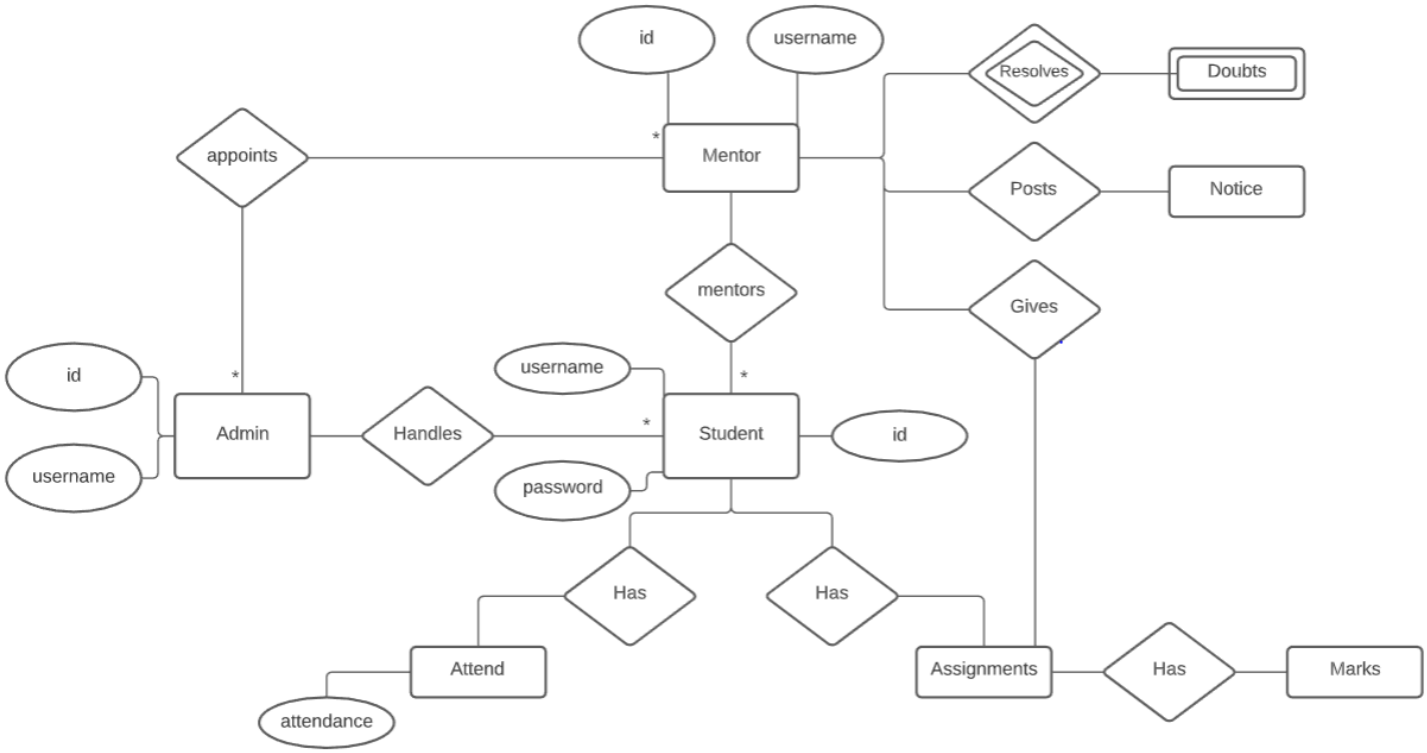


Figure 3.14: ER Diagram

4. Schedule and Cost Estimation

4.1 Work Breakdown Structure

A work breakdown structure (WBS) is a visual, hierarchical and deliverable-oriented deconstruction of a project. It is a helpful diagram for project managers because it allows them to work backwards from the final deliverable of a project and identify all the activities needed to achieve a successful project.

Work breakdown structure (WBS) in project management is a method for completing a complex, multi-step project. It's a way to divide and conquer large projects to get things done faster and more efficiently.

The goal of a WBS is to make a large project more manageable. Breaking it down into smaller chunks means work can be done simultaneously by different team members, leading to better team productivity and easier project management.

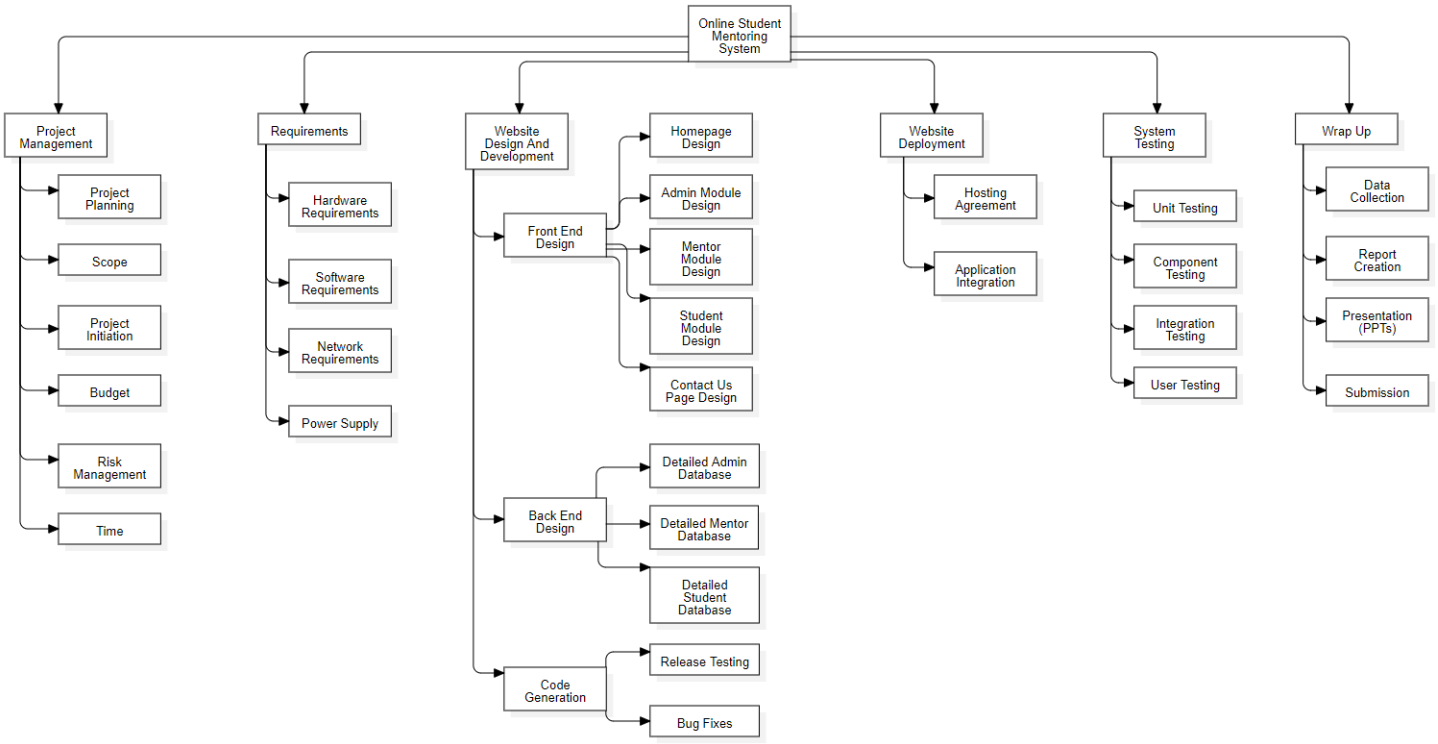


Figure 4.1: Work Breakdown Structure

4.2 Gantt Chart

A gantt chart is a horizontal bar chart used in project management to visually represent a project plan over time. Modern gantt charts typically show you the timeline and status—as well as who's responsible—for each task in the project.

A Gantt chart is a project management tool assisting in the planning and scheduling of projects of all sizes, although they are particularly useful for simplifying complex projects. Project management timelines and tasks are converted into a horizontal bar chart, showing start and end dates, as well as dependencies, scheduling and deadlines, including how much of the task is completed per stage and who is the task owner. This is useful to keep tasks on track when there is a large team and multiple stakeholders when the scope changes.

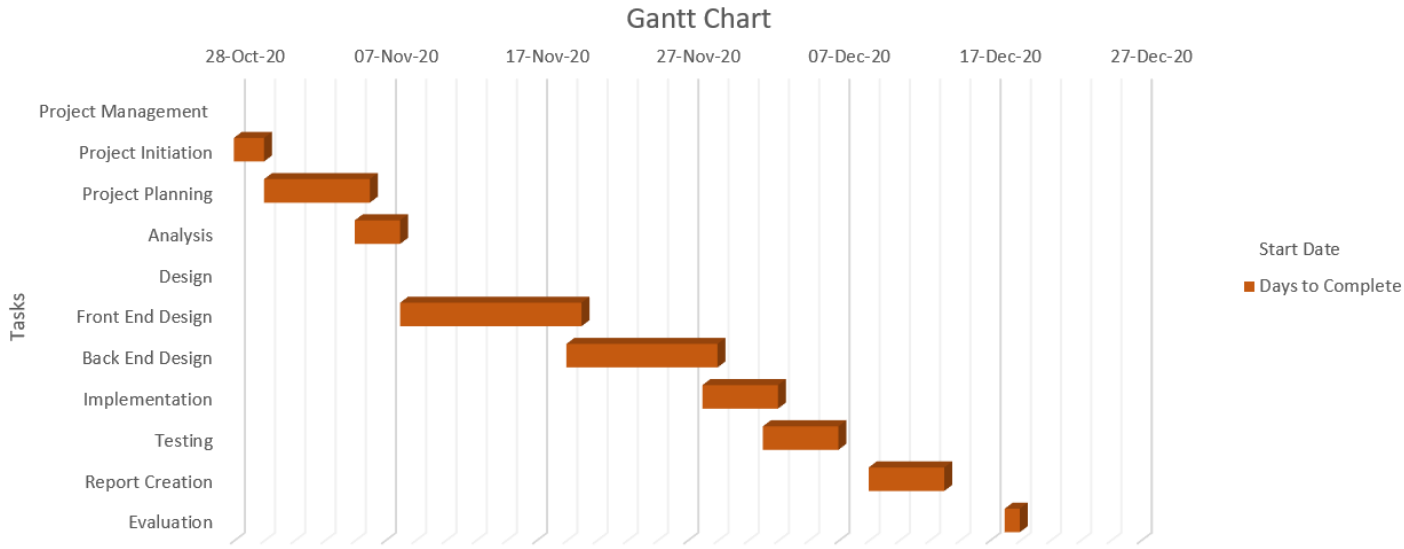


Figure 4.2: Gantt Chart

4.3 Network Diagram

A network diagram is a graphical representation of the project and is composed of a series of connected arrows and boxes to describe the inter-relationship between the activities involved in the project. Boxes or nodes represent the description of activities and arrows show the relationship among the activities. There must be a start and finish the activity, and all the other activities fall within these two. There are so many ways for drawing the network diagram, such as precedence diagramming method (PDM), arrow diagramming method, and GERT (Graphical Evaluation and Review Technique).

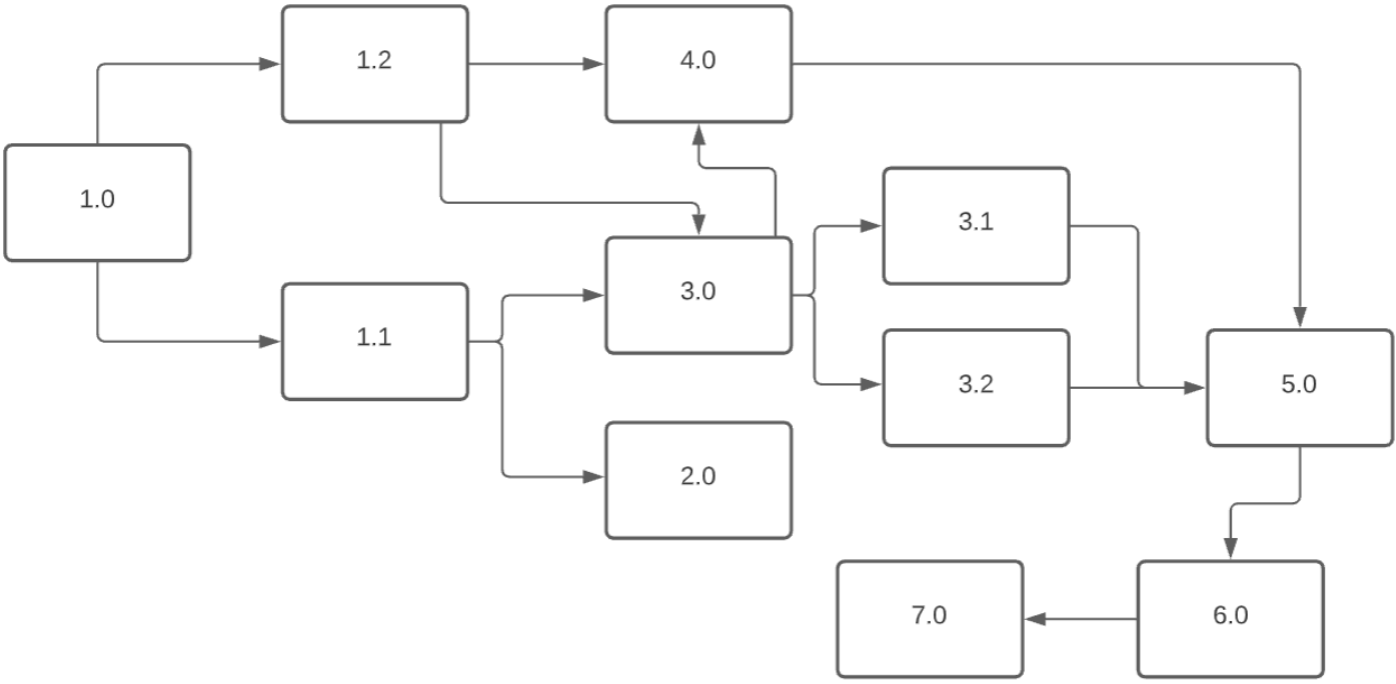


Figure 4.3: Network Diagram

4.4 Cost Estimation:

Assume all the User Interfaces like the Admin, Mentor and Student Module pages designing takes 1000, 1500 and 1700 lines of code respectively, the Login and Validation part takes 1500 lines of code, and the Database connections and maintaining the users registered in the system takes 1500 lines of code.

Assume Productivity = 500 loc/pm
Cost per LOC = $25

Therefore,
Total LOC = 1000 + 1500 + 1700 + 1500 +1500
=7200

Total Cost = LOC x Cost per LOC
= 7200 x 25
= $180000

Estimated Effort = LOC/pm
500 = 7200/pm
pm = 7200 / 500
pm = 14.4
pm = 14