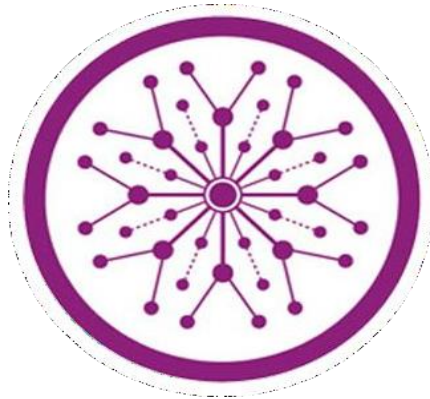


SMART LEARNER
Final Year Project Session
2019-2022

A project submitted in partial fulfillment of
the degree of BS in Software Engineering



Department of Software Engineering
Faculty of Computer Science & Information Technology
Superior University, Lahore

Type (Nature of project)	Development[] [] Research [] R&D
Area of specialization	
FYP ID	

Project Group Members				
Sr.#	Reg. #	Student Name	Email ID	*Signature
(i)	Bsem-S19- 016	Waqar Ahmed	Bsem-s19-016@superior.edu.pk	
(ii)	Bsem-f18- 011	Nayab Bashir	Bsem-F18-011@superior.edu.pk	
(iii)	Bsem-f18- 245	Sana Hameed	Bsem-F18-245@superior.edu.pk	

Dedication

“This report is dedicated to our respected to our beloved parents whose sacrifice has no match; it’s because of them that we’re here pursuing our degree of software engineering; without their financial and emotional support we couldn’t have done it any better.”

Acknowledgments

“We are thankful to ALLAH ALMIGHTY after that We express our sincere respect to and gratitude to our supervisor Sir Muhammad Ahmed (Senior Lecturer) Who has given us valuable support cooperation and Suggestions from time to time in successfully completing this report and we are also thankful to our family and friends for their support.”

Executive Summary

It is a web application for dream People. In which we provide different courses e.g. Student will login our application then he/she select the category and the drop down list of courses will appear in front of the screen and then he/she can select the course whatever they want to learn and then they pay the fee and access the course material. This project will use Artificial intelligence for scanning credit card and for the Face login using Artificial intelligence.

Contents

Introduction.....	8
Motivations and Challenges.....	8
Background.....	6
Goals and objectives	9
Literature Review / Existing solution	9
Gap Analysis/Problem Statement	9
Proposed solution.....	10
Project plan	10
Work breakdown Structure (WBS).....	10
Roles & Responsibility Matrix.....	11
Grant Chat	13
Report Outline.....	13
Introduction.....	Error! Bookmark not defined.
Purpose.....	15
Document Conventions.....	15
Intended Audience and Reading Suggestions	15
Product Scope	16
References.....	16
Overall description.....	16
Product perspective.....	16
Product Functions	17
Admin:	17
Student	17
Teacher.....	18
User Classes and Characteristics.....	18
Admin	18
Students.....	19
Teachers	19
Operating Environment.....	20
Design and Implementation Constraints	20
Design:	20
Tools	21

Constraints	21
User Documentation	21
Assumptions and Dependencies.....	22
Customer	22
Provider.....	22
Assumptions.....	22
External Interface Requirements.....	23
User Interfaces:	23
Hardware interface	23
Software Interfaces	23
Operating system.....	23
Database.....	24
Node js and Mangodb:	24
Communications Interfaces.....	24
System Features:	24
Login/Logout	25
• Description and Priority	25
• Functional Requirements	25
Other Nonfunctional Requirements	26
• Performance Requirements.....	26
• Availability	26
• Efficiency.....	26
• Security	26
• Scalability	26
• Reliability.....	27
• Usability	27
• Maintainability	27
• Software Quality Attributes	27
Integrity.....	27
Reliability.....	27
Availability	27
Throughput.....	27
Accessibility/ Usage:	28

• Business Rules	28
System Analysis	29
Use Case Model For User	30
Use Case Model For Student	31
Use Case Model For Teacher	32
Use Case Model For Admin.....	33
Use Case Model For Register	33
System Design	35
Architecture Diagram.....	35
Domain Model	35
Entity Relationship Diagram with data Dictionary	35
Use case diagrams.....	38
Use case diagram For Admin.....	39
Use case diagram For Teacher	40
Use case diagram For Student.....	41
Use case diagram For Non-Register User	42
Use case diagram For Whole System.....	43
Class Diagram	44
Sequence Diagram	45
Activity Diagram.....	46
Implementation	47
Deployment Environment.....	47
Tools and Techniques	48
Best Practices / Coding Standards.....	48
Version Control.....	48

Chapter No 1

Introduction

In Pakistan the number of properly trained speech therapists is far less than what is needed. As a result a large number of children are unable to receive the professional training that they need to be able to listen properly. We are developing an Web application in which deaf and dumb people disability is concerned. Deaf people need specialized training to learn new technologies. AI Based deaf and Dumb learning system is a whole solution for such Children.

Background

In Pakistan large number of children are unable to receive the professional training due to deaf. Deaf and Dumb is the solution for deaf children's disabilities . Deaf and dumb learning system is a whole solution for such Children. We provide teacher management, system user management, login management, Assignment management, student management, subject management System in one platform.

Motivations and Challenges

A large number of children are unable to receive the professional training due to deaf. Deaf and Dumb is the solution for deaf children's disabilities . Deaf and dumb learning system is a whole solution for such Children. We provide teacher management, system user management, login management, Assignment management, student management, subject management System in one platform.

Goals and objectives

We realize that the population of Deaf children in Pakistan is increasing. Due to this, these children can not get success in their lives. Deaf and dumb learning system is a whole solution for such Children. In Deaf and dumb learning system we chose top universities graduate students for evolution and provide complete teacher management, user management, student management System.

Literature Review / Existing solution

There is not any proper system which focuses on deaf children. In Pakistan there are many systems that provide education for deaf children they provide the necessary language tools so that Deaf children can effectively communicate with their parents and teachers. But these institutes provide physical training. The children which belong to village are very difficult to get training. That is why we are first institute in Pakistan which provide online training for deaf children. We are new in market we have no competitor.

Gap Analysis/Problem Statement

The current system Deaf Reach, they only provide tools for learning language and they provide physical training. For village students this is very difficult to get training from there. This system is manual not technology is used in this system.

Proposed Solution

The deaf children which belongs to village or too far from cities they not get any training to learn new technologies. For this problem we are developing a web application where any teacher which has skill to teach deaf students can enroll in this platform and provide there services to deaf children. On this platform deaf children from any where of the pakistan can get enroll and get the course and get trainging according to there interest.

Project plan

Here is the project plane that how can we manage our project. It's basically consisted of two things i.e. Work breakdown structure (WBS) and Gantt Chart consisting of Timeline with milestone.

Work breakdown Structure (WBS)

- Project Management
- Work Breakdown Structure (WBS)
- Roles & Responsibility Matrix
- Change Control System
- Analysis
- Requirement gathering
- Feasibility Report
- Planning

- Project Scope
- Time Management
- Cost
- Design
- Use case diagram
- Sequence Diagram
- Class Diagram
- Activity Diagram
- ERD
- Project
- Implementation/ Development Environment
- VS Code
- Git/GitHub
- Node JS Server
- Mongo DB Database
- Testing
- Functional Testing
- System Testing
- Non-Functional Testing
- Performance Testing
- Security Testing

Roles & Responsibility Matrix

The purpose of roles & responsibility matrix is to identify who will do what.

WBS	WBS Deliverable	Activity	Activity to Complete Deliverable
1	Analysis	1.1	1-Mar-22
2	Planning	2.0	15-Mar-22
3	Design	3.0	2-Apr-22
	Use case Diagram	3.1	7-Apr-22
	Sequence Diagram	3.2	
	Class Diagram	3.3	
	Activity Diagram	3.4	
4	Project	4.0	17-Apr-22
	Implementation	4.1	2-May-22
	Review & Analysis	4.2	
5	Testing	5.0	27-May-22

Grant Chat

	Make Websit e	Web Testin g	back end	Start wokrin g on websit e	User interfa ce	Diagra m	Basic design elemen t	Requir em ent getheri n g	Projec t planni ng	Team meetin g
Start Date	20-Feb-22	24-Feb-22	1-Mar-22	15-Mar-22	2-Apr-22	7-Apr-22	17-Apr-22	2-May-22	27-May-22	3-Jun-22
Duration	4	5	14	18	5	10	15	25	5	2

Report Outline

- Introduction
- Existing System / Competitive Analysis
- Problem Statement
- Proposed Solution
- Scope of the Project:
- System Architectural Design
- Implementation Tools and Techniques
- Project Plan
- Work Breakdown Structure
- Project Management
- System Design
- Implementation
- Testing & Performance Evaluation

- Development Environment
- Presentation Layer
- Roles & Responsibility Matrix
- Gantt Chart

Chapter No: 2

Software Requirement Specifications

Purpose

Before this application we do not easily found any online platform in Pakistan for deaf childrens. Now anyone from anywhere in the Pakistan open the application and register there children's with live teachers support.

- No need to go out and find institutes
- Technology is used
- To save your travelling expenses

Document Conventions

Stander rule of documentation has been followed in the order of standardized the work.

Intended Audience and Reading Suggestions

The document is intended for, developers, project managers, marketing staff, users, testers, and End users of this application who wish to read about what this project can do.

Product Scope

The scope of development Deaf and Dum learning system is focused on several aspects which are web application and Students and teacher. it not only use for small scale also use for large scale and we expand it on national level. Deaf and Dum learning system will save time, cost ,admin will be notified.

References

IEEE 830-1998 standard for writing SRS document.

Overall description

Product perspective

This is a web based application project in which we will provide services for deaf children's so they can learn new skills and languages. This application will contain some feature like:

- Services for Counseling
- Communication Research and Services
- Tutoring Services
- Online platform

On the other hand, this will perform functionality like:

- Account system
- Login system
- Profile edits
- Registration
- History
- Payment system
- Payment details

Product Functions

Admin:

- Approve course
- Manage Subscriber
- Profile edits
- Add Students
- Add Roles
- Manage User
- Admin login
- Manage User
- Payment details

Student:

- View Course

- View Course teacher
- Add to Cart
- View Cart
- Register
- Profile edits
- Payment details
- History

Teacher:

- View Categories
- Login
- Add course
- Add Course Price
- Profile edits
- View Student Progress
- View Enroll Students

User Classes and Characteristics

This system comprises of a type of users with different features:

Admin

- Admin can approve many requests like adding new Teacher , students or register
- He would be able to control and see the records of the industry and only he'd have authority to access his account.
- He would be able to check on every record, and clients Payment details.
- Access to database and access to the admin menus.
- Admin Can help members by informing them with new features via mail, manage members, generate invoices, cash flow and much more.

Students

- Students would be able to login the system only, and cannot make any substantial
- A Student can check his dashboard details: his Classes, teacher, assessments
- He can contact the admin, and can give feedback that what needs to be changed.

More details:

- View Course
- View Course teacher
- Add to Cart
- View Cart
- Register
- Profile edits
- Payment details
- History

Teachers

- Teachers would be able to login the system only, and can see their students and their progress

- A Teacher can check his dashboard details: his Classess, Studnets, assesments
- He can contact the admin, and can give feedback that what needs to be changed

More details:

- View Categories
- Login
- Add course
- Add Course Price
- Profile edits
- View Student Progress
- View Enroll Students

Operating Environment

- Operating system: Web Application
- Database: mango db
- Platform: Visual Studio/React.js
- Client/Server system

Design and Implementation Constraints

Design:

- The Deaf and Dum learning system is being developed by using react.js .
- Data is managed with the help of Mango DB.

- The purpose behind using Node js and mangodb for the development of Deaf and Dum learning system is the ease and usability factor.
- This platform provides us with Development of responsive web application.
- This software will be operable on windows (complete) and on visual studio.

Tools:

- Visual Studio
- Node js and mongodb
- React js

Constraints:

- Security is the more important factor for the system. Each record must be secure and manage. There is no loss of data.
- The system must be available at 24/7 so everyone accesses the system.
- The system should be scalable enough, if more than the 10000 user access the system at a time the system must be up to date.
- The customer first has to register himself. If he is not registered the error message is generated.
- Only authorize user use the system.
- The system must recover from the error condition in an efficient way.

User Documentation

- User documentation will be available in software which user can access anytime and get help.
- if the user wants to add more features or queries there is also the contact page, through which he can contact for the addition of more queries.

Assumptions and Dependencies

Customer:

We have assumed that all of the Students and teachers have internet connection and web application, proper working condition and that the user (including admin) are capable of operating these system's basic functions including but not limited to being able to power on the system, login and open the Web Application.

Provider:

We have assumed that the Deaf and dum learning system will be running on a properly working Web application and database system with an Internet connection that allows this system to perform all communications with customers.

Assumptions:

Multiple Students can register and at on time and get information

The admin user name and password maybe hard coded.

The admin can be a student.

Students can edit their information

External Interface Requirements

User Interfaces:

Front End: software: Visual Studio React js

Backend: Node js and Mongodb

Hardware interface:

Processor: core i5 64-bit OS

RAM: 1GB

Software Interfaces:

- Html , CSS,Node js, Mongodb
- All browsers

Operating system:

We have chosen windows Operating system and MAC book to develop our Web Application.

Database:

We have chosen fire-base database to store data.

Node js and Mangodb:

We have chosen Node js and Mangodb language to implement project.

Communications Interfaces

Communication will be maintained through internet and web servers.

System Features:

- Account system
- Login system
- Profile edits
- Registration
- GPS system
- Location system
- History
- Payment system

- Payment details
- User verification

Login/Logout

- Description and Priority

Each user of system (including admin, Students and teacher) would have interaction with this feature to use the system. This feature has high priority.

- Stimulus/Response Sequences
- A page for login/logout will be created
- Page contains two task fields “Username”, “Password”
- After enter the two task fields then it will go to the login function.
- From there both the fields directed toward the database for Authentication.
- After authentication from db.
- Successful login message showed

- Functional Requirements

- Feature Name: Get admission
- Description: This feature shall allow the user to get admission . REQ-SF2-2:
- Feature Name: Cancel the Registration.
- Description: This feature shall allow the students to cancel the registration. REQ-SF3-3:
- Feature Name: Updating the data.
- Description: The application shall allow the user to request for updating the records.

Other Nonfunctional Requirements

- Performance Requirements

Since this application is handling complex tasks of a business, it does require a powerful web server hosting with high band internet access. Another performance requirement is a storage space. Software should be developed as lightweight application so that it can work on almost at any platform even with slower machine or internet connection.

These are some of the most imperative quality factors that can affect the whole project:

- Availability:

Application should be available at 24/7 hours and provides services to clients.

- Efficiency:

Application should have efficiency in its performance/response time. It can work properly without any failure.

- Security:

Application should be secure enough that no one can access personal data.
Security of the system is improved by installing firewalls and authorization processes.

- Scalability:

Application should be scalable enough that it can adapt to increase in user request.

- Reliability:

Application should be reliable enough that it can maintain its performance over time.

It can adapt changes and maintain itself in near future.

- Usability:

Application should be user-friendly and easy to understand.

Clients should be fully satisfied with its performance and its functionality.

- Maintainability:

Application should be self-maintained and efficient. It can maintain the new changes.

It can maintain all the records.

- Software Quality Attributes

Integrity:

- The authorized user shall be 100% allowed to access the app.
- It provides the user specific interface.

Reliability:

- Application is 100% reliable

Availability:

- 100% availability 24/7

Throughput:

- Application can tackle with 1lac transactions load at a time.

Accessibility/ Usage:

- Application provides attractive Graphical User Interface.

● Business Rules

There are mostly three kinds of clients utilizing the framework for example

- Administrator
- Students
- Teachers

Chapter 3

Use Case Analysis

System Analysis

Systems analysis is the process of observing systems for troubleshooting or development purposes. It is applied to information technology, where computer-based systems require defined analysis according to their makeup and design, include looking at end-user implementation of a software package or product; looking in-depth at source code to define the methodologies used in building software; or taking feasibility studies and other types of research to support the use and production of a software product, among other things.

Use Case Model



Use Case Model For User

Use Case ID	ID-101
Use Case Name	LOGIN
Priority	10
Primary Actor	USER
Secondary Actor	None
Description	This Use Case allows the Users to login in into the System, After Successful login they will be directed towards their respective Pages
Pre-Condition	User has a valid User Name and Password Checking Credential
Post-Condition	The System display the relevant home page

Use Case Model For Student

Use Case ID	ID-102
Use Case Name	Student Login
Priority	10
Primary Actor	Student
Secondary Actor	None
Description	This Use Case allows the Students to login in

	into the System, After Successful login they will be directed towards their Dashboard
Pre-Condition	Student has a valid User Name and Password Checking Credential
Post-Condition	The System display the relevant Dashboard

Use Case Model For Teacher

Use Case ID	ID-103
Use Case Name	Teacher Login
Priority	10
Primary Actor	Teacher
Secondary Actor	None
Description	This Use Case allows the Teacher to login in into the System, After Successful login they will be directed towards their Dashboard
Pre-Condition	Teacher has a valid User Name and Password Checking Credential
Post-Condition	The System display the relevant Dashboard

Use Case Model For Admin

Use Case ID	ID-104
Use Case Name	Admin Login
Priority	10
Primary Actor	Admin
Secondary Actor	None
Description	This Use Case allows the admin to login in into the System, After Successful login they will be directed towards their respective Dashboard
Pre-Condition	Admin has a valid User Name and Password

Use Case Model For Register

Use Case ID	ID-105
Use Case Name	Register
Priority	10
Primary Actor	USER
Secondary Actor	None

Description	<p>This Use Case allows both User to Sign up and Register into the System,</p> <p>After Successful Registration, they will be granted their User Name and Password to login into the System</p>
Pre-Condition	<ul style="list-style-type: none"> • Valid User Name • Valid Password • Valid Email
Post-Condition	Verify Email Via Email Verification

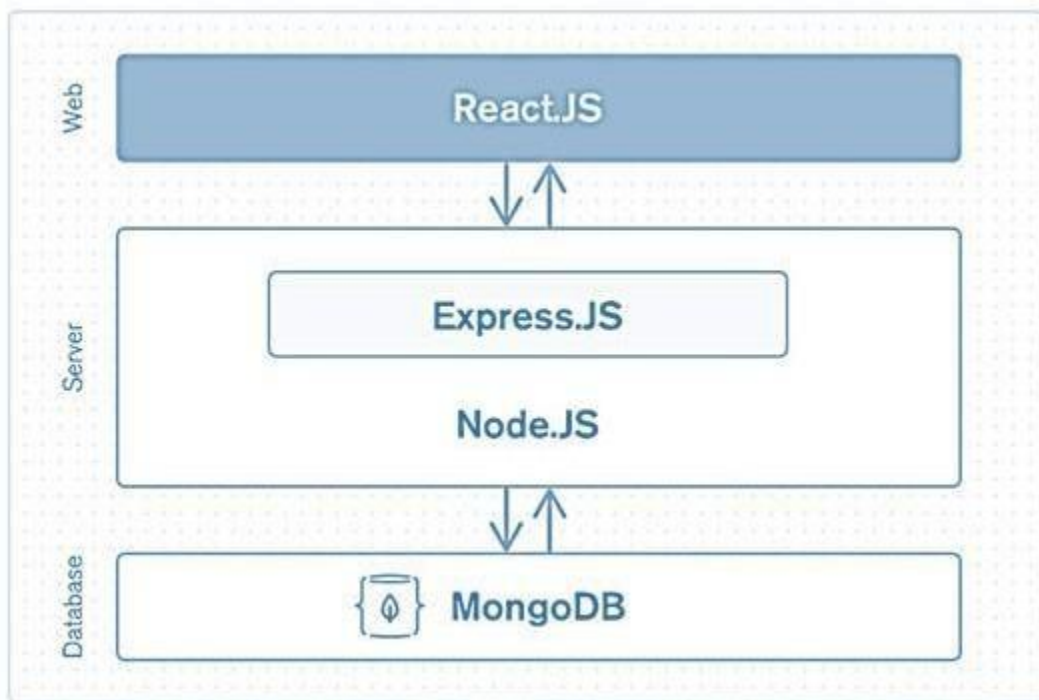
Chapter 4

System Design

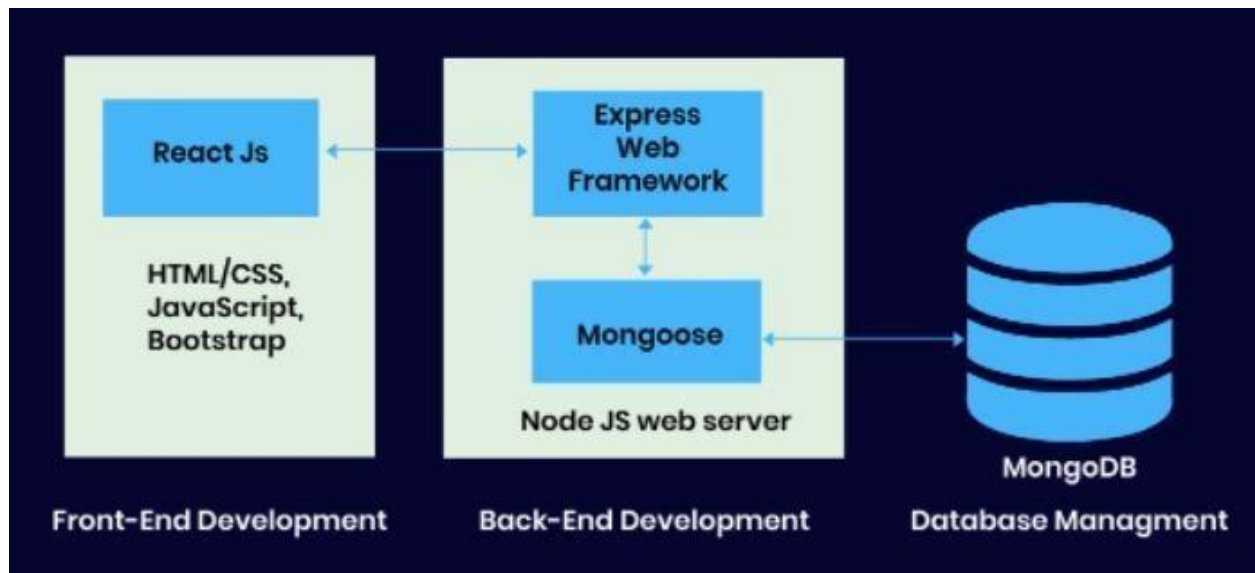
System Design

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development.

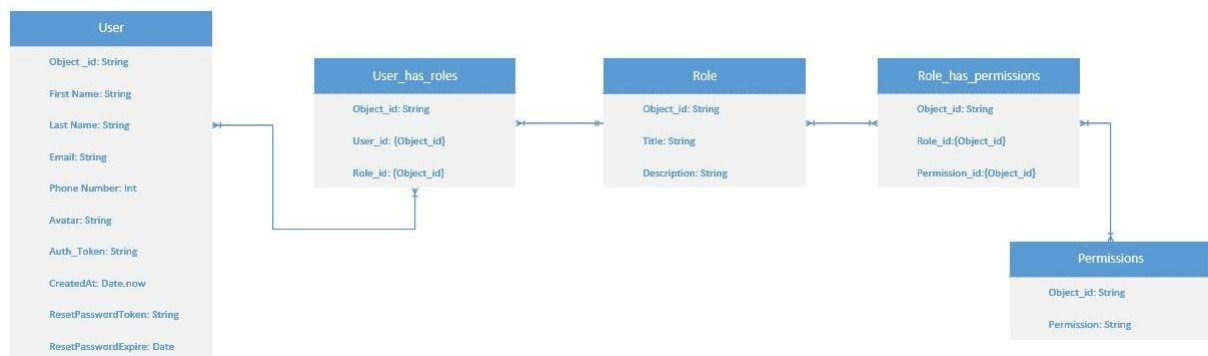
Architecture Diagram

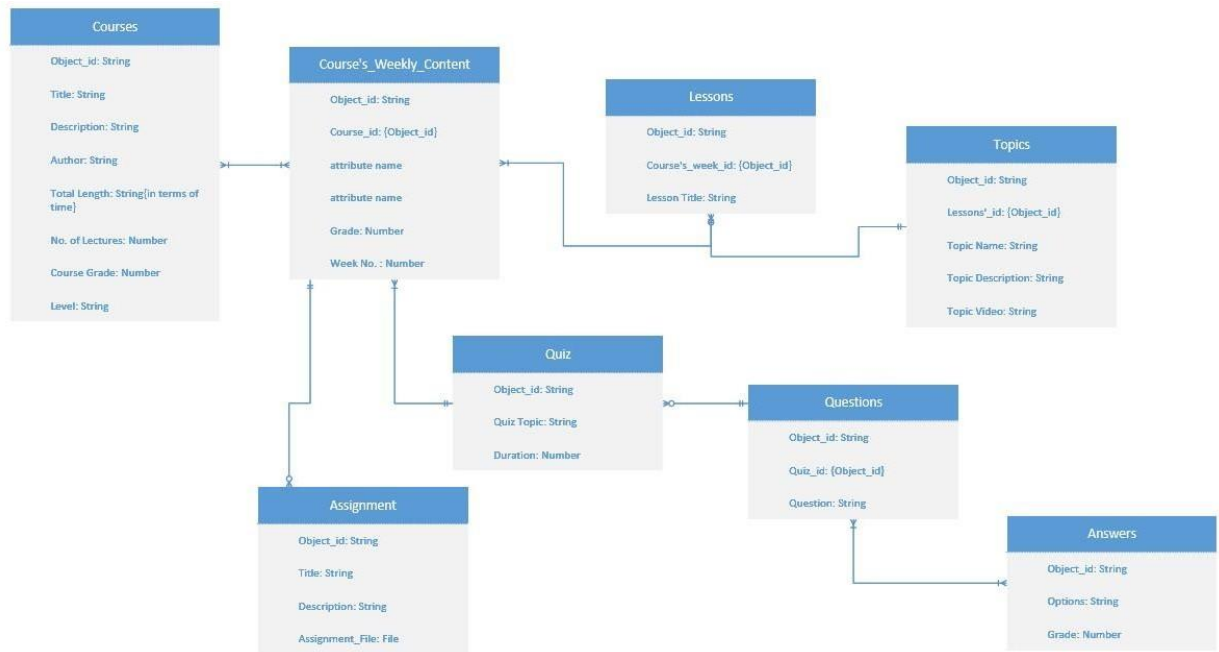


Domain Model



Entity Relationship Diagram With data Dictionary

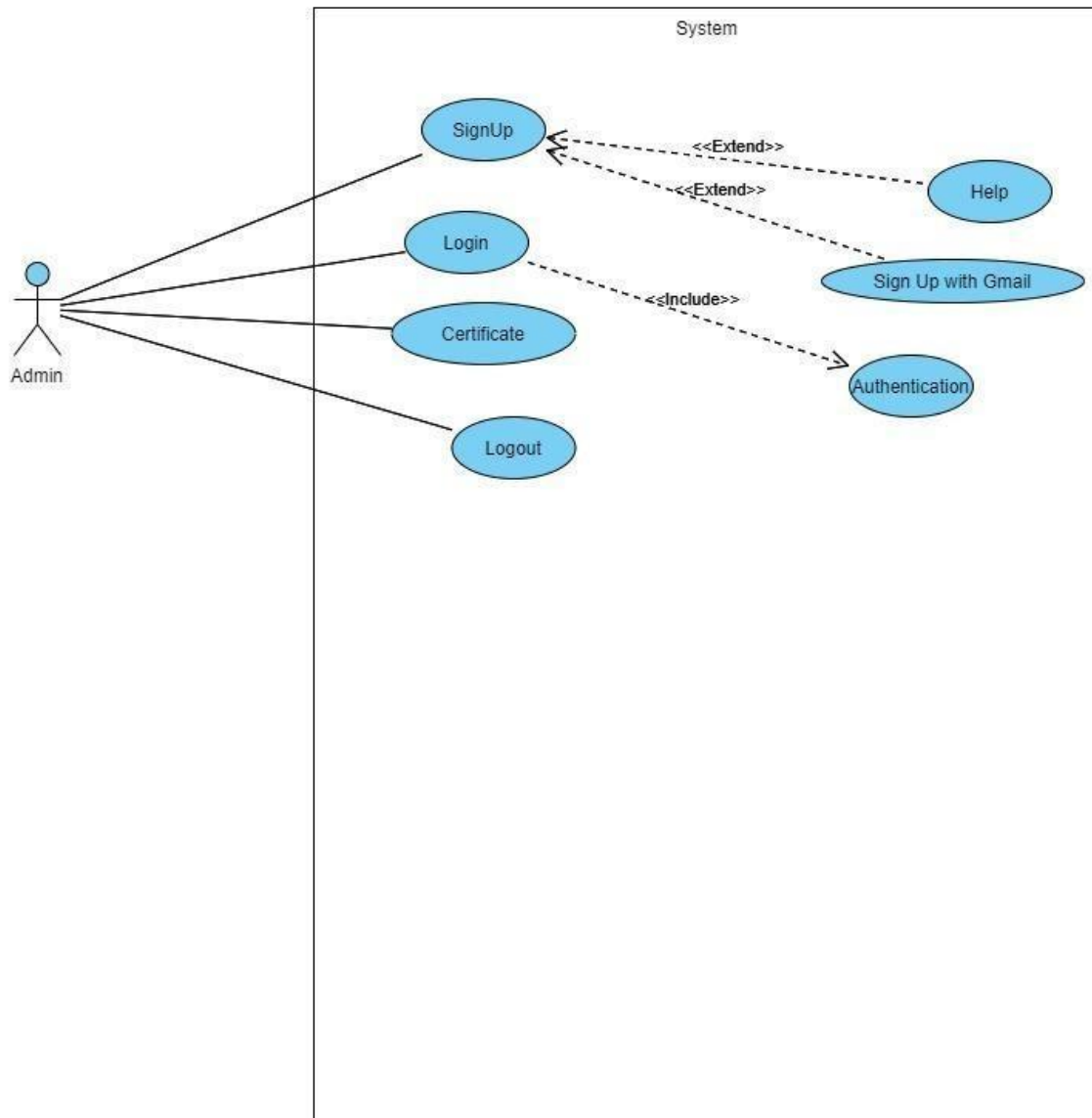




Use case diagrams

Use case diagram For Admin

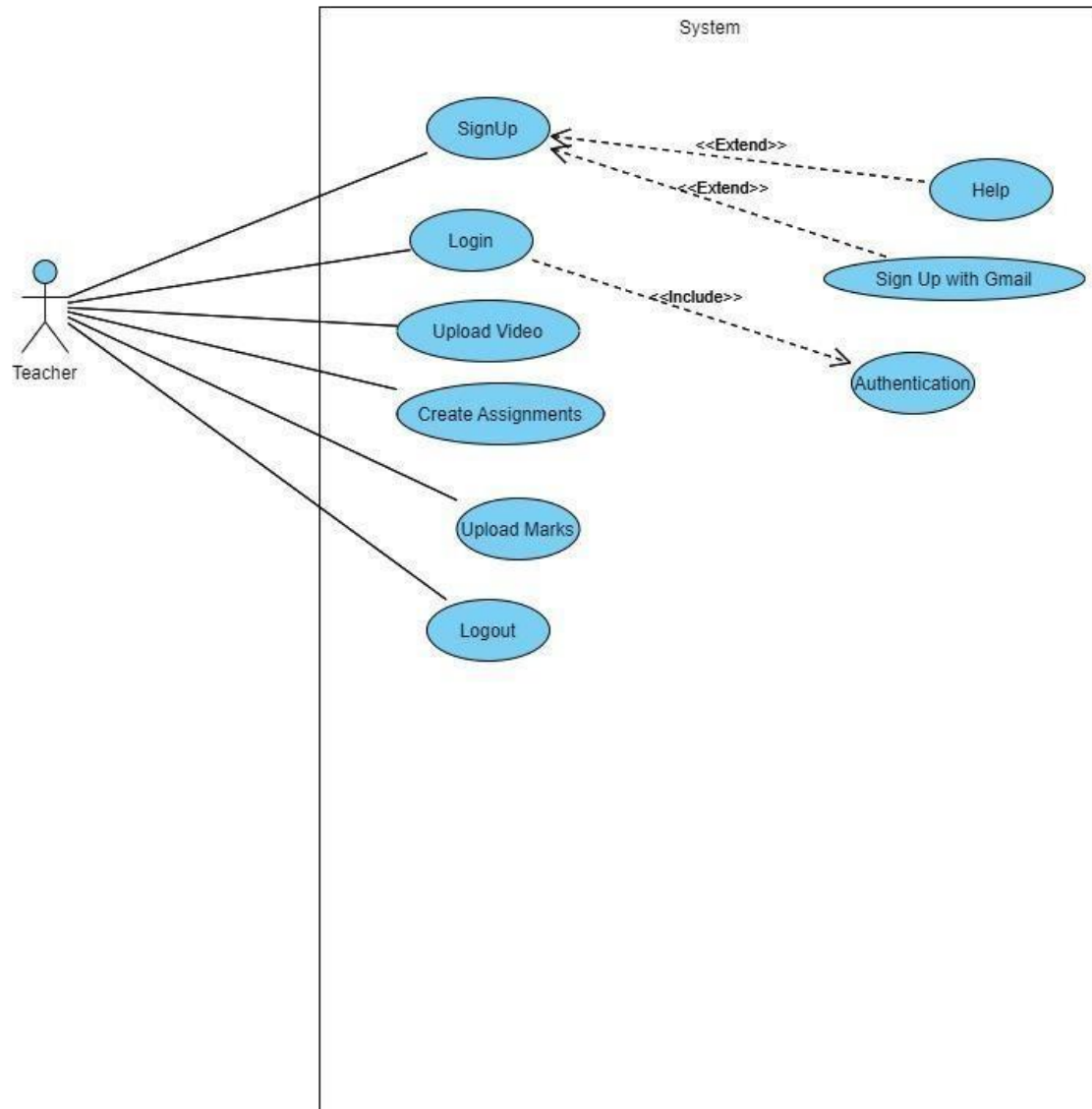
Visual Paradigm Online Free Edition



Visual Paradigm Online Free Edition

Use case diagram For Teacher

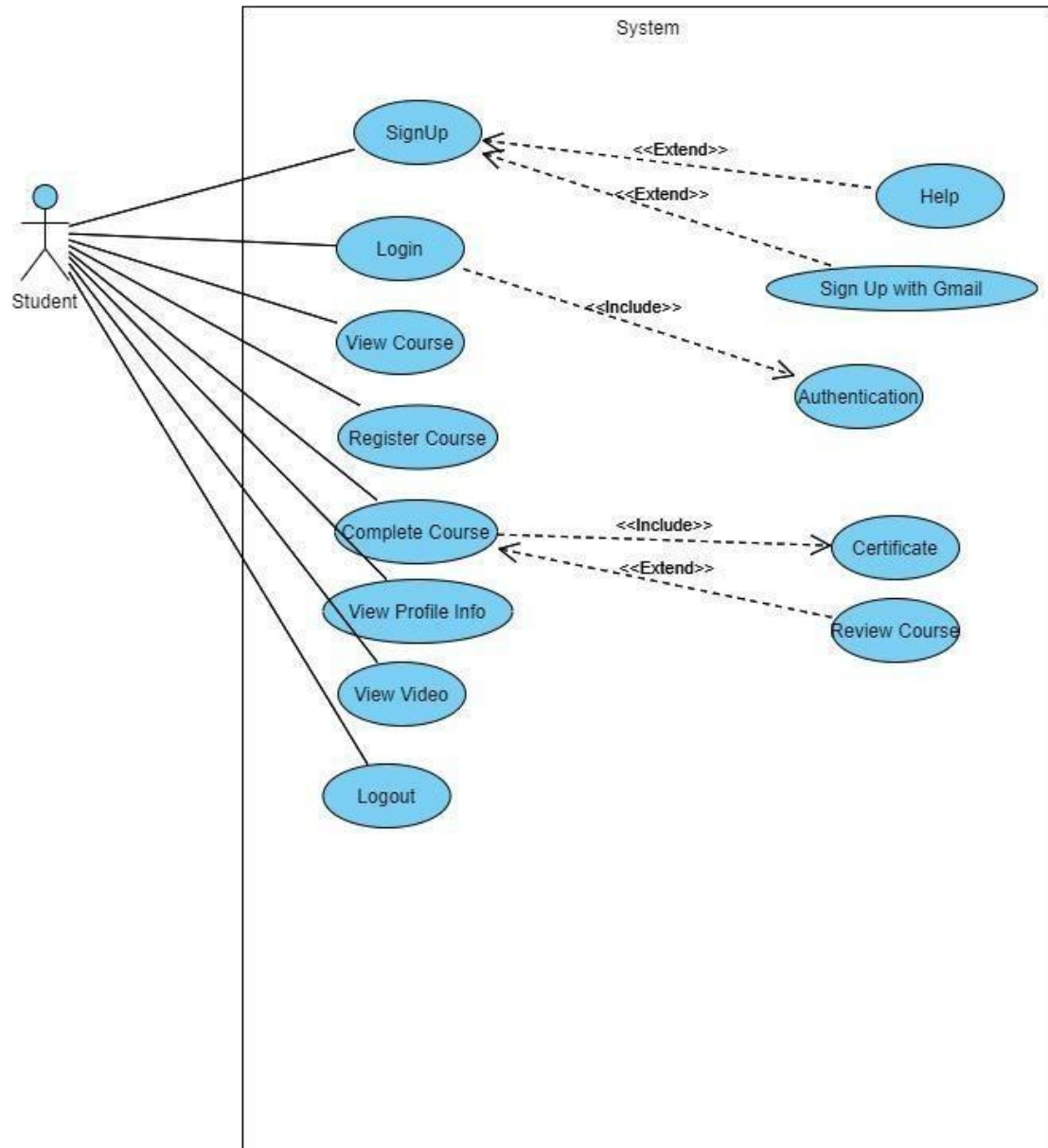
Visual Paradigm Online Free Edition



Visual Paradigm Online Free Edition

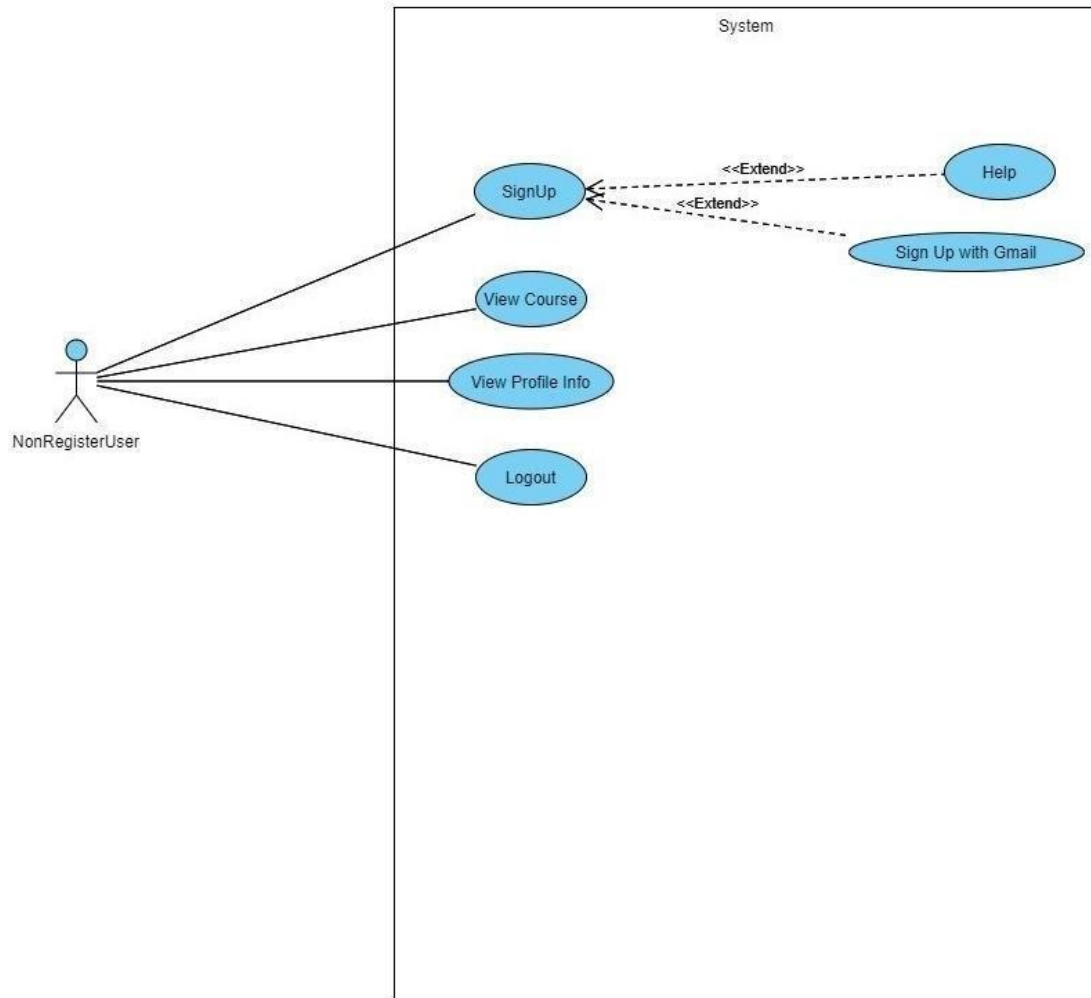
Use case diagram For Student

Visual Paradigm Online Free Edition

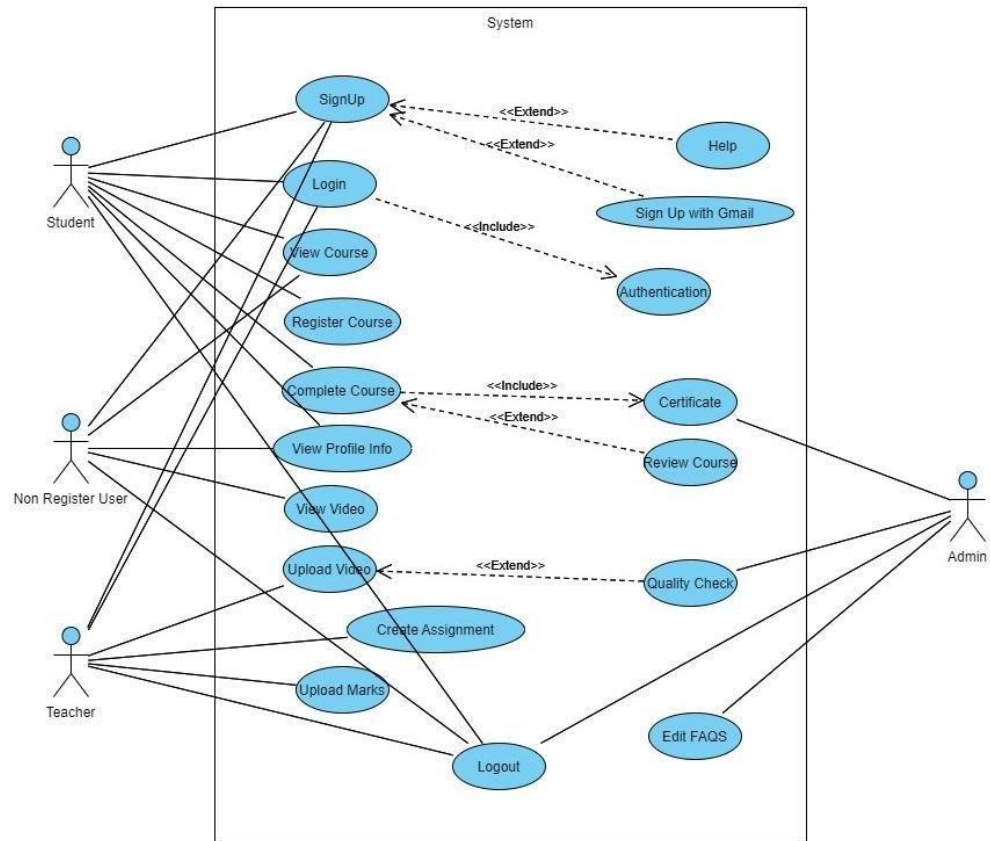


Visual Paradigm Online Free Edition

Use case diagram For Non-Register User

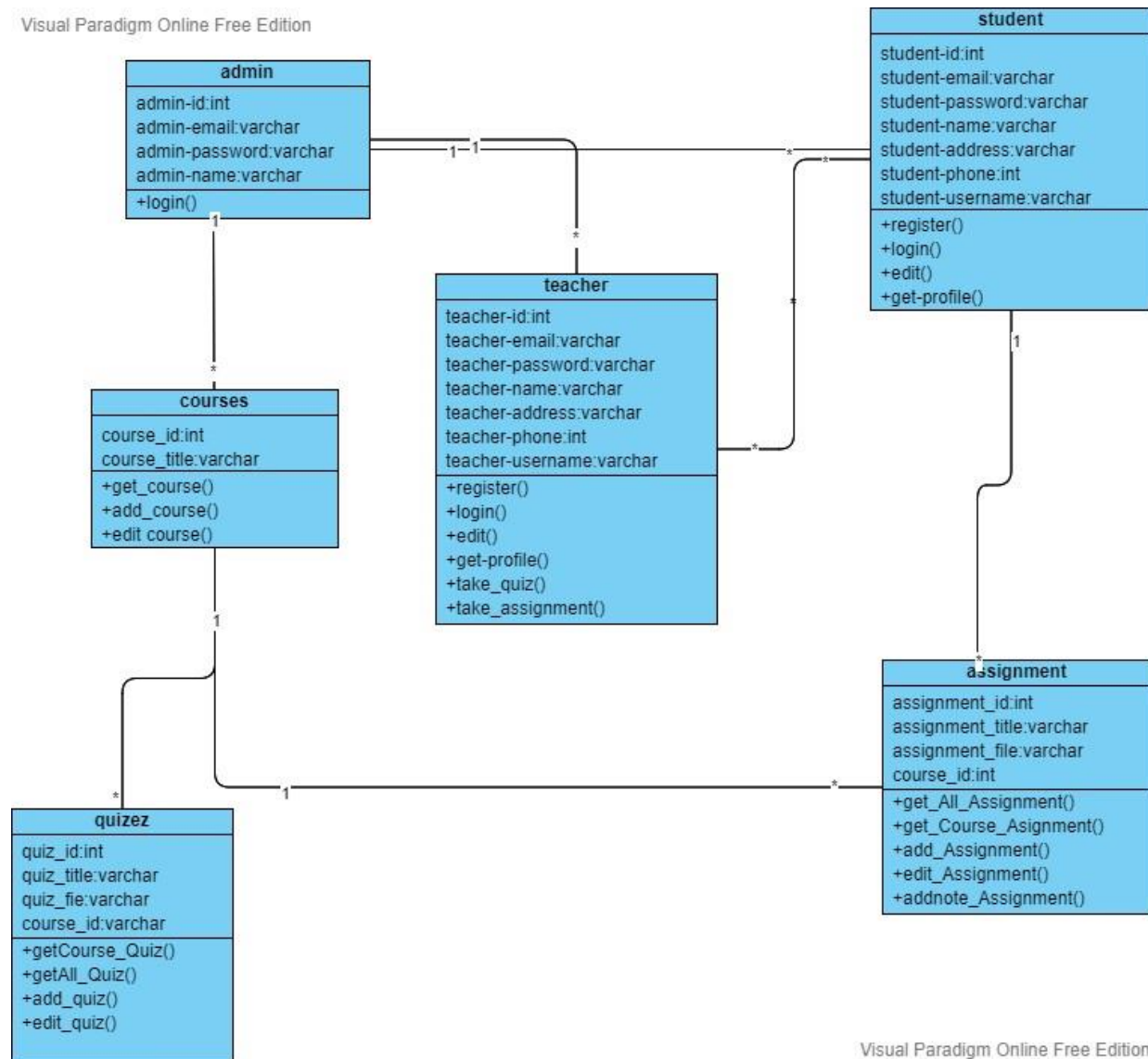


Use case diagram For Whole System



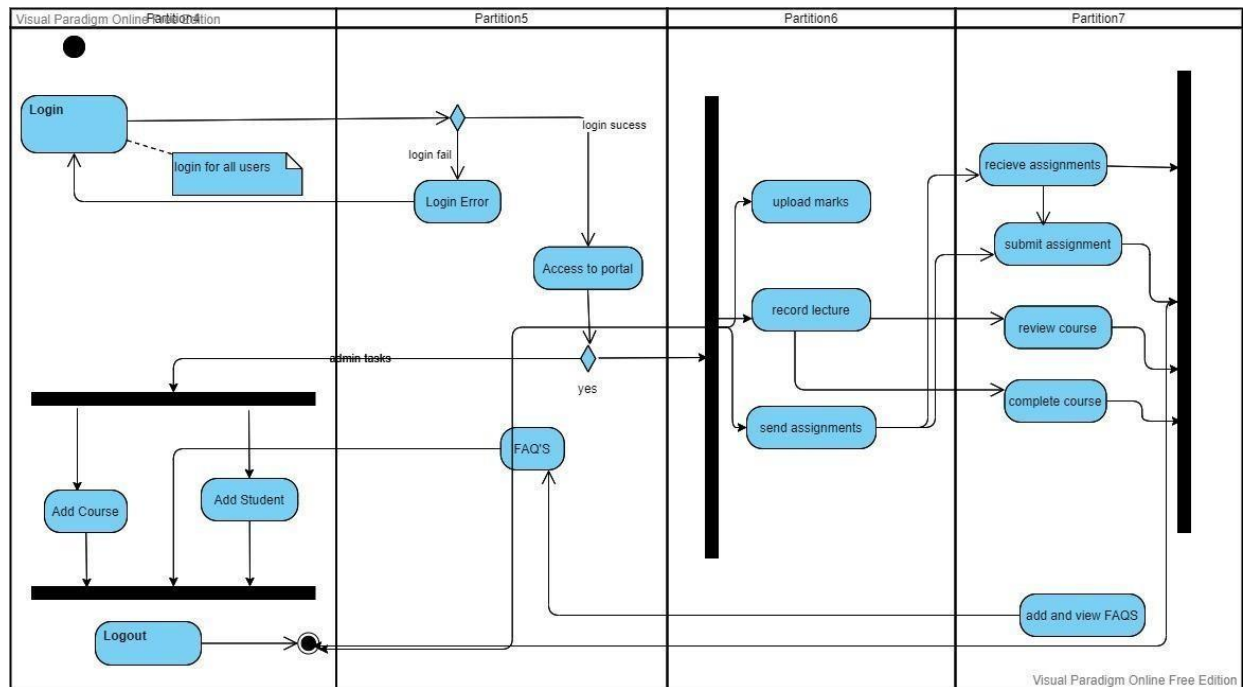
Class Diagram

Visual Paradigm Online Free Edition

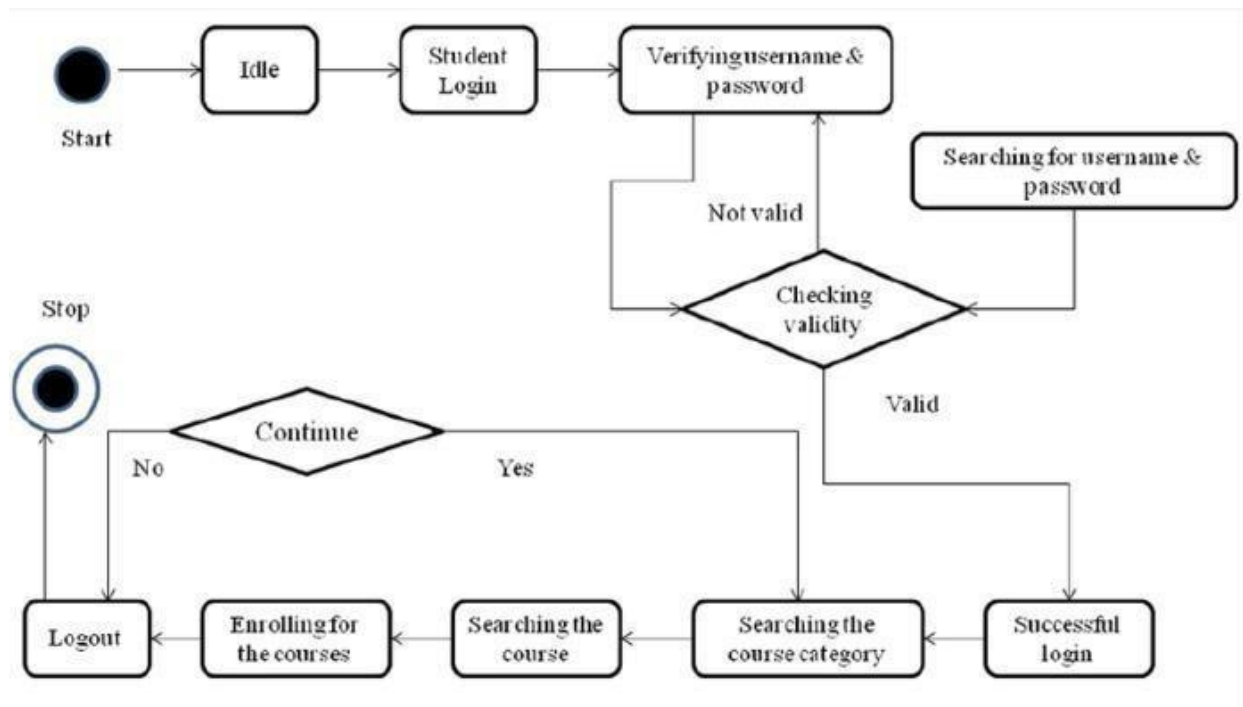


Visual Paradigm Online Free Edition

Sequence Diagram



Activity Diagram



Chapter 5

Implementation

Implementation

We have used Node js and Mangodb in this Web application development.

For the front end designing we have used Node js along with (HTML + CSS). For the login purpose, we have used Mangodb real time databases. For the Backend Development, we will be using Mangodb. All the student and teacher Information will be stored in database and for the user registration purpose, we will be using firebase authentication. For communication point of view, we will be using different APIs.

Components, Libraries, Web Services and stubs

- Visual Studio
- Node js
- Mangodb
- React js

Deployment Environment

We will be deploying our Website with our professional practice.

Tools and Techniques

The Tools We are using in our project is list below:

- Visual studio Code
- Google
- Mongodb
- Google Chrome web browser
- Photoshop

Here comes the Techniques:

- Node js used for structuring and designing.
- Photoshop for designing.

Best Practices / Coding Standards

Camel Casing for Class Interfaces. Pascal Casing for the methods and functions.

Version Control

We are using GITHUB for Version Controlling.

