



Course Code: CSE 401 - 01

Course Title: System Analysis and Design

Project Title

সরল বর্গ

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Table of Contents

Page

Introduction.....	3
Abstract.....	3
Objective.....	3
Motivation.....	3
Complex Engineering project	3
Complex engineering problems	4
Complex engineering activity	4
Methodology.....	4
Feature of the project	4
Teacher Interface	4
Student Interface	4
Requirement of the project.....	5
Functional Requirement.....	5
Non-Functional Requirement.....	5
Software Requirement	5
Feasibility Analyses	5
Technical Feasibility Analyses	5
Economic Feasibility Analyses.....	5
Operational Feasibility Analyses	6
Scheduling Feasibility Analyses	6
System Design	7
Context Level DFD.....	7
Level 1 DFD	8
UML Use Case Diagram.....	8
UML Activity Diagram.....	9
UML Class Diagram	10
ER Diagram	10
Social Impact	11
Conclusion	11

Introduction

Abstract

Education is the backbone for a nation. But children of Bangladesh are deprived of it because of centralization. Qualified teachers or bright students are heading to the city as a result in the rural areas quality education is not ensured. However, because of lack of resources potential students lag far behind in the education system. Also because of financial problems they cannot afford the tuition for qualified teacher and sometimes they have to go to the nearby city for tuition which is time consuming. To mitigate these problems, in this paper I'll be designing an education-based website as well as an app of it, which will be entitled as “সরল বর্ণ”.

Through this application students will be able to get connected with the teachers and seniors or classmates of all over the country. Thus, the users are teachers and students only. The main activities are the enrolled teachers of class 6-12 will upload the videos of the subjects they are experts in. These are accessible by all the students for free who will enrol the application, which is quite similar to the “10 Minutes School”. But in this, the problem is students can't properly define their problems through text or can't get the answer of their questions on time. So, using my application, they can have a live session where there will be a Q&A session and also if needed, they can have an extra session. In that case they have to pay. Two more golden opportunity are, students themselves can choose to which teacher they actually want a session in the teacher's convenient time and another is they can solve any assigned like H.W or Demo question by posting in the site and anyone can reply that.

Objective

This project's main purpose is to develop an online based education system called “সরল বর্ণ” to decentralized the education system.

To do that, I will utilize the internet and online resources completely where the students can gain and share knowledge, save time.

Motivation

There are several reasons behind taking up this project:

1. The students of rural areas don't have the access to have better education. So, by paying less they can have gain knowledge.
2. Seniors can earn through this project which will motivate them to be a part of the application.
3. Some students may feel uncomfortable about having one-on-one sessions. However, the session will be recorded as soon as the class begins to ensure a good environment that will encourage the kids as well as the parents to allow their children to sign up for the app.

Complex Engineering project

This project is a complex engineering project because it meets some of the criteria for the following sections.

Complex engineering problems

1. To complete this I will be hiring professional analysts, application tester, designers to solve the problems (WP1)
2. Depth analysis is required for this project (WP3)
3. This area will be covered by the backend and frontend developer later (WP5).

Complex engineering activity

1. This project is innovative (EA3) because I am going to use various features in this application which were not applied before.
2. Resource persons are going to handle the project with information and technologies (EA1)
3. This will help to decentralize the education system. Also, students of rural area can get the opportunity to learn efficiently (EA4)

Methodology

In this whole process First of all I initialized in which point improvement is important in our country. I found in the education system some changes should be made. Hence to accomplish that I generated the whole idea and found how this could be a complex engineering project. Then I did a mapping that what could be the feature. According to that all the functional, non-functional requirements along with software requirement were initialised. To successfully complete a project a feasibility analyses is more important. Because, with the help of it we can understand whether we can accomplish it or not. So, this part also was completed carefully. In this phase Technical Feasibility, Economic Feasibility, Operational and scheduling feasibility were done. After that the main part of the project was to design the interface and diagram. In this project five diagram were made. These are Data Flow Diagram (Context Level DFD and Level 1 DFD), UML Use Case Diagram, UML Activity Diagram, UML Class Diagram, ER diagram. All these were completed by EdrawMax software. Finally, The interface were done by the Figma software.

Feature of the project

In this app or website, there will be two interfaces in the home page. One for teacher and another for students.

Teacher Interface

- When the user will push teacher interface, there will show a login form where the teacher will have to login using unique ID and password.
- Then teacher can make an appointment using session starting time, ending time and will share the Google Meet link.

Student Interface

- When the user will push student interface, there will show a sign up and a login button.
- If signed up then they can login using their using unique ID and password.
- After that their will show available 2 options, “Subjects” and “Book Appointment”.
- If they click Book Appointment option there will show Subjects and Available teacher.
- After selecting the subjects and available teacher there will show another option Need Extra Time. If they don’t need extra session, then they will fix time and send link with confirmation and exit the application.

- Otherwise, if the time is more than 20 minutes, they have to send a confirmation mail with class link and have to pay money. If the time is 15 or less than 15 minutes then they don't need to pay.

Requirement of the project

Functional Requirement

1. Registration
2. Sign Up
3. Sign Out
4. Create Profile
5. Watch Class Videos
6. Upload videos
7. View Courses
8. View Teachers
9. Attend One-on-One session
10. Make payment
11. View Payment history
12. Evaluate Teacher and student

Non-Functional Requirement

1. Data Integrity
2. Security of the project
3. Flexibility
4. Maintainability
5. Useability

Software Requirement

1. EdrawMax
2. Figma
3. Visual Studio

Feasibility Analyses

Technical Feasibility Analyses

The technologies that are required for the proposed project are given below:

1. **“Flow Chart Maker and Online Diagram Software”** an online software will be used to make the flowchart of the project idea.
2. **“Figma”** is going to be used to make the interface of the application
3. **“MySQL”** will be used for designing the database to store and retrieve data

Economic Feasibility Analyses

The total cost and benefit of the project can be defined from this portion. The budget planning or the cost information is given here.

SL	Requirement	Quantity	Working Hour	Per Hour Cost	Total Cost
Project Development Cost					
1	Designer	1	720	1400	1,008,000
2	System Analyst	1	720	1400	1,008,000

3	Database Administrator	2	180	1000	180,000
4	Application Tester	1	380	1200	456,000
5					
Grand Total: 2,652,000					

Figure: Cost of the Project

Here, from Gantt chart we can estimate that around twenty-six lakhs fifty-two thousand BDT will be invested for this project which is affordable and for this initial stage we can see intangible benefits here which will maintain a good business and enhance the accuracy of the project.

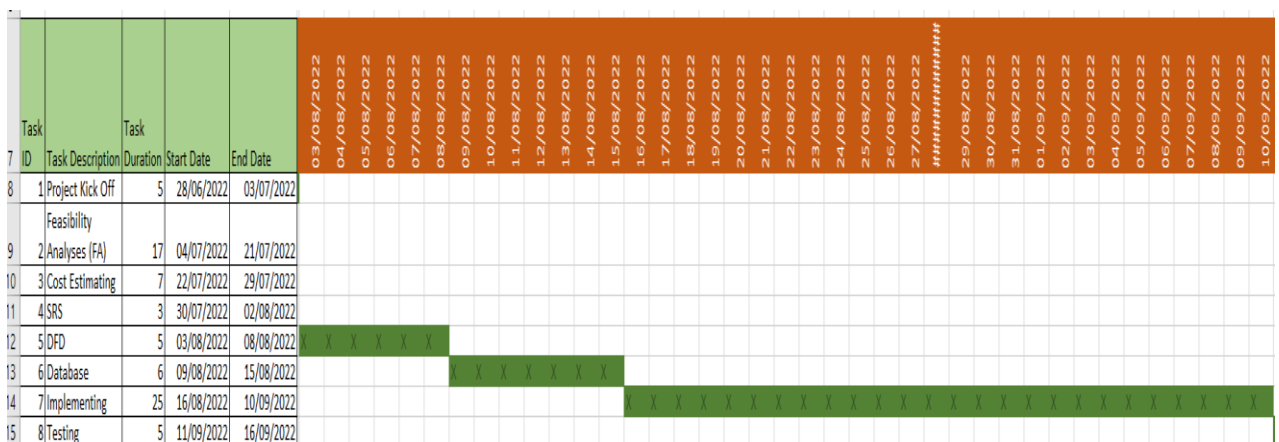
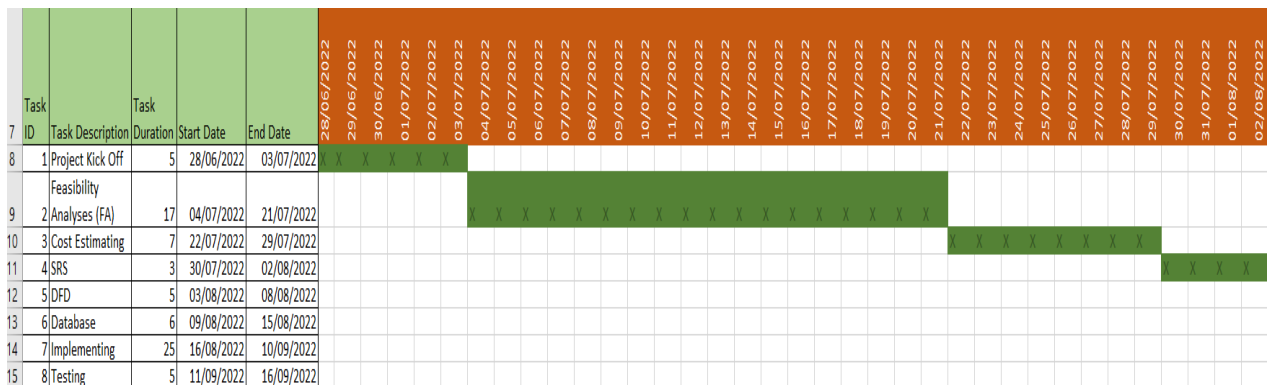
Operational Feasibility Analyses

A project can be operationally feasible if it can satisfy the requirement of the project that was identified in the requirement analyses phase.

In my project I have all the software resources as well as human resources and most importantly this interface is user friendly. So, it is also operationally feasible.

Scheduling Feasibility Analyses

This project's design will be completed in the duration of almost 4 months. This has been visualized through the Gantt Chart below here.



	Task ID	Task Description	Task Duration	Start Date	End Date	11/09/2022	12/09/2022	13/09/2022	14/09/2022	15/09/2022	16/09/2022
7	1	Project Kick Off	5	28/06/2022	03/07/2022						
8		Feasibility									
9	2	Analyses (FA)	17	04/07/2022	21/07/2022						
10	3	Cost Estimating	7	22/07/2022	29/07/2022						
11	4	SRS	3	30/07/2022	02/08/2022						
12	5	DFD	5	03/08/2022	08/08/2022						
13	6	Database	6	09/08/2022	15/08/2022						
14	7	Implementing	25	16/08/2022	10/09/2022						
15	8	Testing	5	11/09/2022	16/09/2022	X	X	X	X	X	X

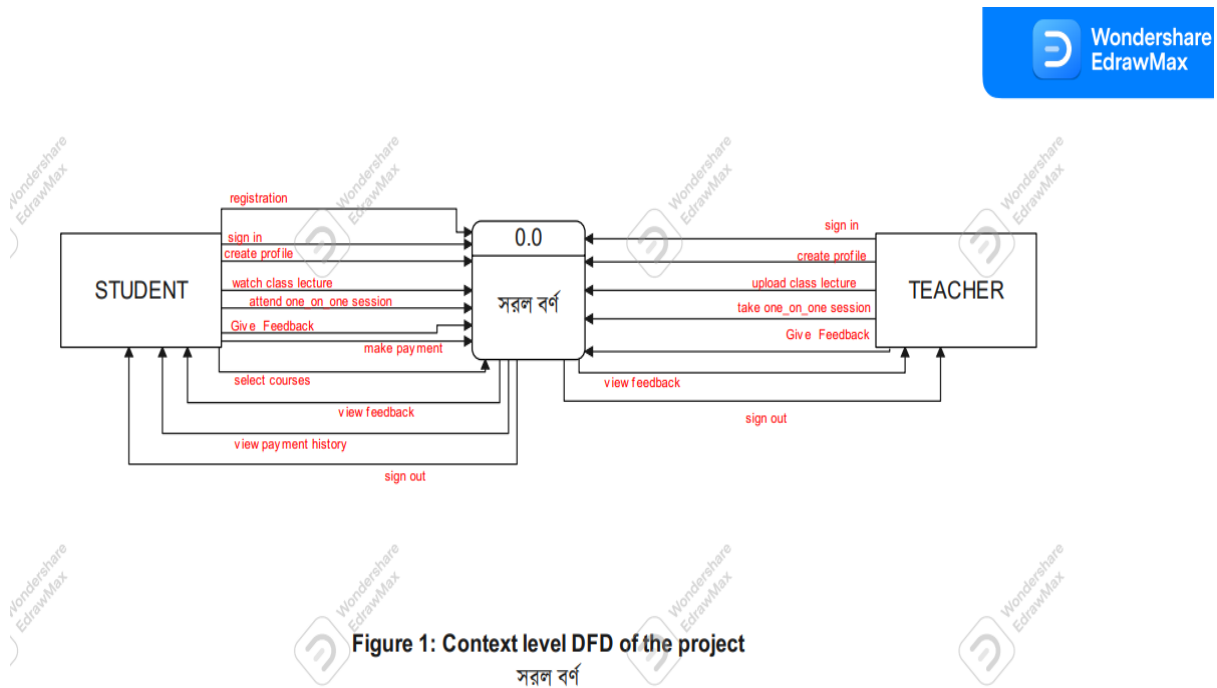
Figure: Gantt Chart of the project

In here most of the task has been completed on time and I can predict that the whole project will be completed as per the schedule I have mentioned. Thus, it can be feasible.

System Design

To accomplish my project, I have used several software like to draw all the Diagram I have used EdrawMax. And to design the interface I have used "Figma". All the diagram is given below here.

Context Level DFD



Level 1 DFD

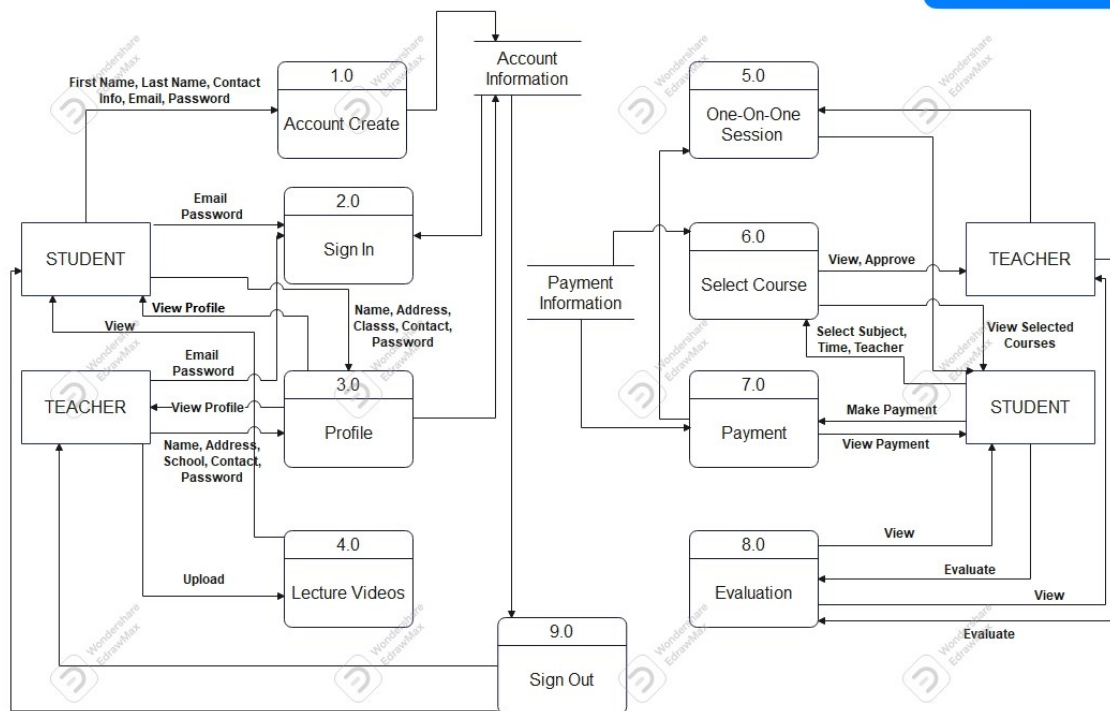


Figure: Level 1 DFD of project সরল বর্ণ

UML Use Case Diagram

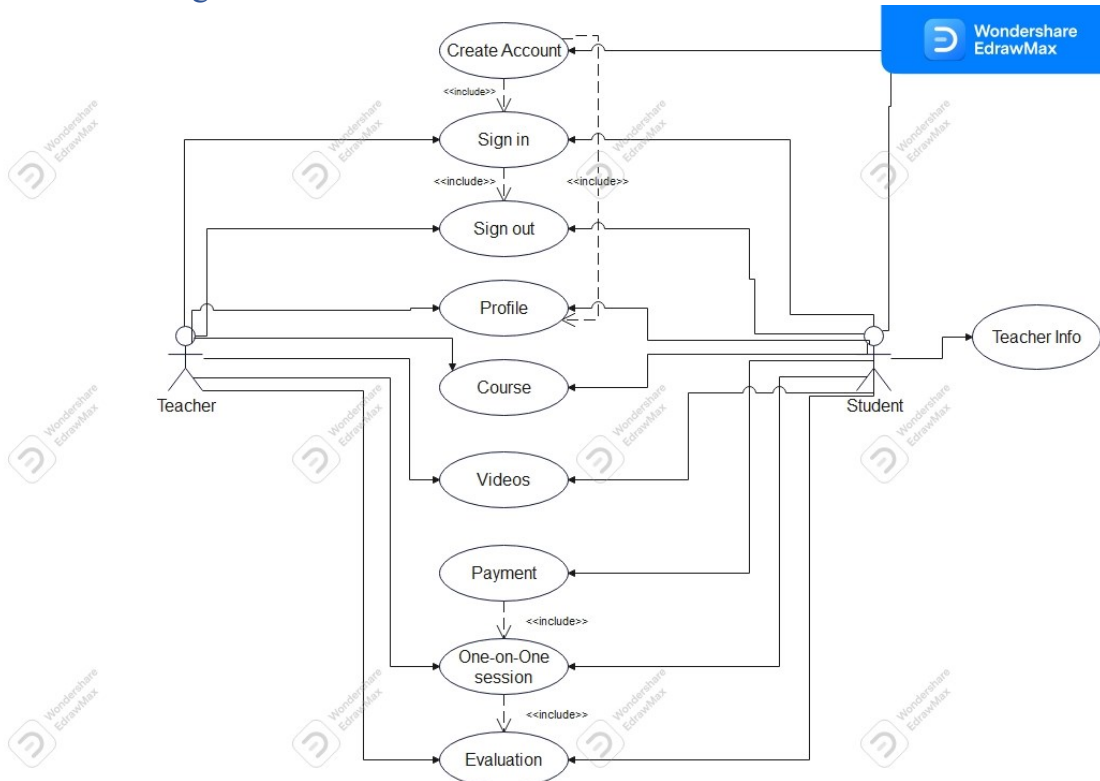


Fig 3 : UML Use Case Diagram of the project সরল বর্ণ

UML Activity Diagram

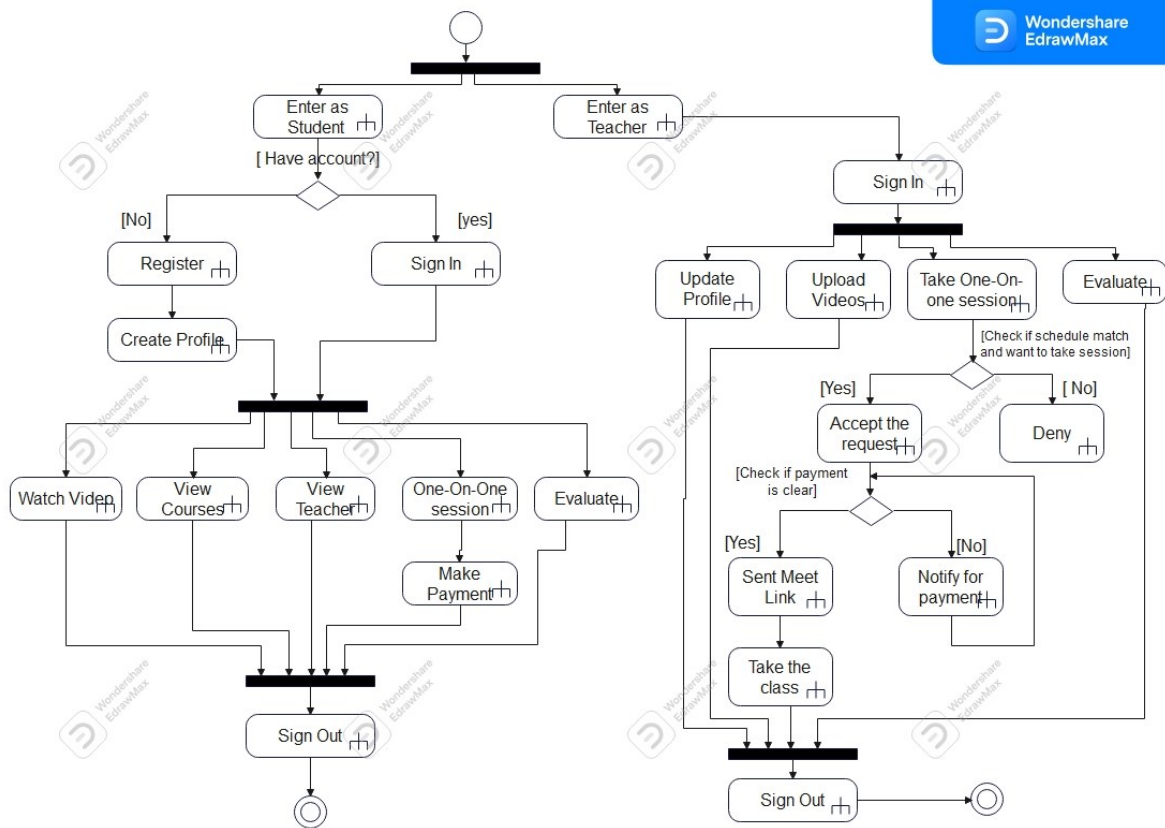


Figure: UML Activity Diagram

UML Class Diagram

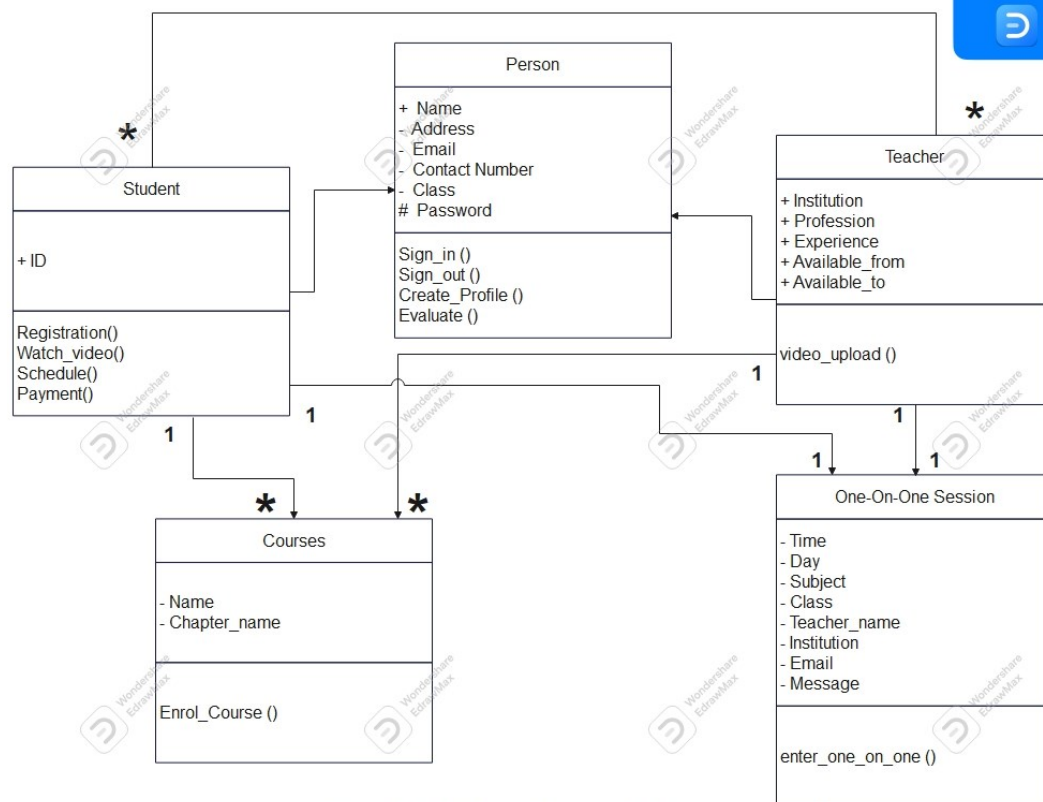


Figure 5: UML Class Diagram of the project সরল বর্ণ

ER Diagram

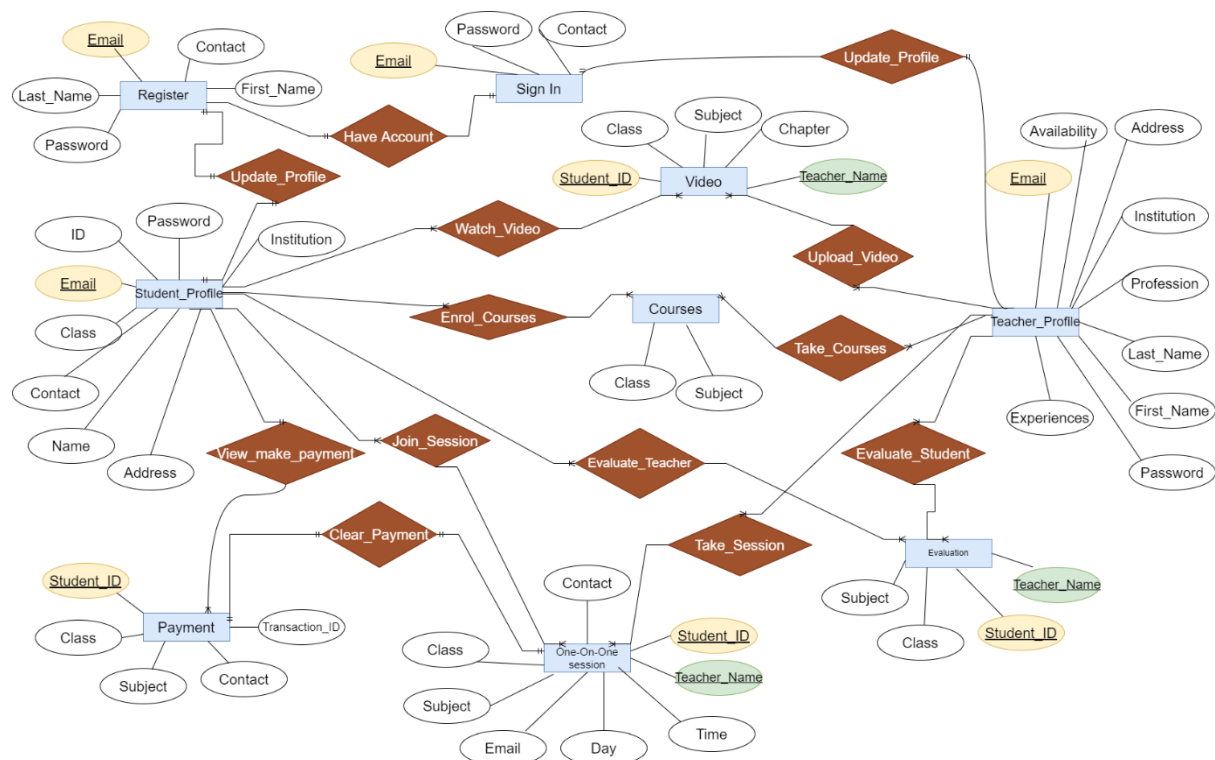


Figure: ER Diagram Of The Project

Social Impact

In our country the education system is centralised. As a result, most of the students are heading to the city for better education. But the problem is those who can't afford it is lagging far behind the education system. They are losing interest, going through lots of mental trauma and because of lack of resources they are getting engaged in unethical activities. All these issues could be solved through my system as students from all over Bangladesh can access my system “সরল বর্গ” and with proper knowledge they can enrich their knowledge. It will decrease the financial burden of the parents which will help to inspire them to send their children for higher education.

As senior students also can add here as a tutor thus, they can earn money in student life which is a great initiative for them. As a result, it will help to eradicate the unemployment in the society.

This present world is completely online based. Most of the children are using this source for games. Some of them are getting distracted, spending most of the time in YouTube. Through using my system, they can get used to that how to utilize the online resources efficiently.

Again, it will help to maintain the decentralized system. And the problems like traffic jam, human traffic will be minimized a little bit in the town or city.

Conclusion

To eradicate centralisation of the education system this project could be very effective. From the idea generation phase to designing phase everything happened as I have planned. Starting time and the ending time till now is as I have predicted. Again, all the requirements have been fulfilled. Thus, this project is feasible. This project has a positive impact on the society. Students can enrich their knowledge; some can earn money. Last but not the least, in future this project will be improved. Lots of feature will be added if necessary.