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# **Academic Journey Tracker and Browser**

**Bachelor of Science in Computer Science**

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# Certificate

We accept the work contained in the report titled “Academic Journey Tracker and Browser”, written by Ms. Mahnoor Sohail AND Mr. Saad Ahmad as a confirmation to the required standard for the partial fulfilment of the degree of Bachelor of Science in Computer Science.

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# Abstract

Tracking academic journey is the process of storing, viewing, grading and saving academic work like assignments and projects for later use. Tracking the academic journey of a student can play an important role in improving the productivity of a student. It can be a good tool for self-assessment as well as teacher and parents can provide useful feedback to student. Tools like Google Classroom, Piazza and Turnitin can be used for individual courses but don't help in tracking the academic journey of students over the course of degree program. Google Classroom, Piazza and Turnitin provide this facility upto some extent but their purpose is different.

A tool namely Academic Journey Tracker and Browser is a web application developed to keep track of all the academic journey of a student and for the students who face some difficulties in doing their academic work so they can search here their related work. The system should serve the information need of users to work on a relevant topic. So, main focus in on tracking the whole academic journey and helping people in solving any difficulty which they face in doing their academic work. This system will monitor the whole academic journey of student. So, when, where and whom want to seek knowledge about the relevant topic or wants to see the whole academic journey then he/she can browse any relevant topic on this tracker. On the other perspective, this application also simplify it for teachers to check academic work of students online and give them grades using this platform.



# Acknowledgments

We dedicate all our efforts and struggles of the educational life to our dear parents and respected teachers; without them we are meaningless. Also, we devote the work of this project report to our respectable supervisor Dr. Arif ur Rahman who taught and supported us at each and every step.

We would like to express our gratitude to Allah almighty that He allows us to do this research and make it lucrative and applied.

Our respected supervisor helped us a lot to complete this project in a successful manner. His sage advice, insightful criticisms, and patient encouragement aided the completion of this final year project in innumerable ways. We would really like to thank our supervisor whose steadfast support of this project was greatly needed and deeply appreciated, who gave us a lot of insights, feedback and positive criticism due to which we were able to incline our project with real world application and scenarios.

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*“The time will come when the knowledge of man will reach the level where his faith will be that jealousy is ignorance and imitation is suicide. And one will accept his own self, as he is, no matter what the circumstances, because that is his lot. Also, despite the fact that the world is filled with good things, one will not accomplish anything until he plants and cares for the land that was given to him. Hidden strengths that are inside of him are new to world, and he does not know the extent of his abilities until he tries”*

Ralph Waldo Emerson



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# Acronyms and Abbreviations

AJTB	Academic Journey Tracker and Browser
CSS	Cascading Style Sheets
DBMS	Database Management System
HTML	Hypertext Markup Language
MVC	Model-View-Controller
NoSQL	Not only SQL
SQL	Structured Query Language
TA	Teaching Assistant



# Chapter 1

## Introduction

This chapter describes the introduction of project in detail. It presents the overview, problem description, project objectives and scope.

Students experience an academic journey to achieve the final goal i.e. get the degree. This journey carry's out various exercises in the form of assignments, class projects and presentations. It will be very useful if we record the journey in a proper manner. Students of successor batches may use the material already developed by their predecessors as a starting point and build upon.

Certain tools for assignments submission like Turnitin are available but the tools' purpose is different [1]. For example, the basic goal of Turnitin calculates the similarity of a document with other documents. Other tools like Moodle are also available but they are used for a course and the material uploaded by students is then not available to other students in the future [2].

Piazza is a tool for assignments submission and other documents e.g. lectures, important notes etc. for students but the main issue regarding this tool occurs because it does not keep the record of documents for long time. The data start to lose with the passage of time [3].

Development of a software required to store work done by students during their degree. Make work public so that other students take help. However, the tool should give proper searching functionality based on various criteria such as material related to a course, topic or submitted in a particular time period like semester.

### 1.1 Overview

Now a days, technology has become so sharp that everything can be accessed remotely through Internet. In almost every university, academic work have been changed from paper

work to softcopy (where students do their assignments on PC, LAPTOPS) and send to their respected teacher through Email or some assignment management applications. Teacher checks and mark the assignments online. Teacher-student communication has become less regarding assignments case. This has made students life easier and time saving. So, for new students, it is difficult to understand some questions and they face difficulty in doing their academic work. So, AJTB can be beneficial for them to take idea about any particular question from their successor batches' academic work because it will keep record of all the work done by students. Although students can't get the exact answer of question for which they are searching because every time teachers do a little bit changing in all questions, so it is a good thing that no one will do copy/paste but they can get idea about the solution.

MongoDB Atlas is an open source database[4]. It is used for unstructured data. It uses several instances of Amazon, Azure etc. for flexibility, Availability, data replication and many more. Our application is storing unstructured data i.e. assignments. Therefore, we are using MongoDB Atlas because it is an appropriate and flexible platform for storing unstructured data.

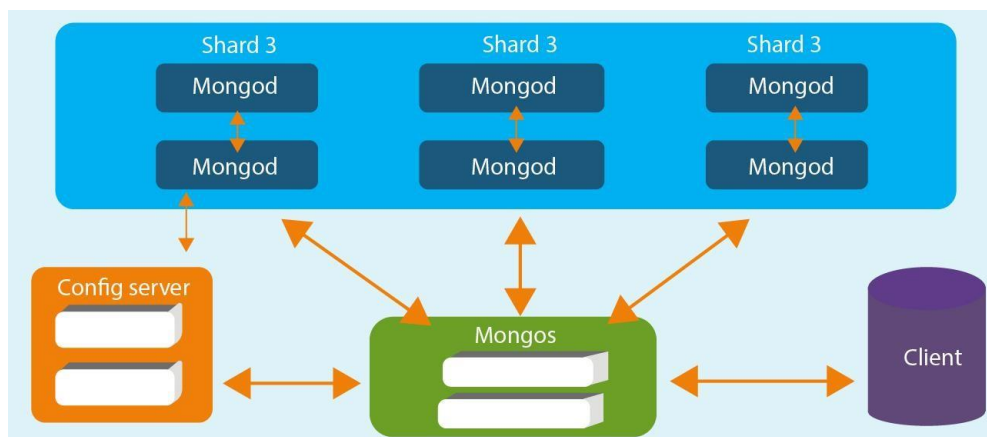


Figure 1.1: MongoDB Architecture

Three important parts can be seen in the architecture of MongoDB Atlas as presented in figure 1.1. The components are explained in the sequence.

1. **Database:** The database is the physical container. It has its own set of files on the file system with several databases connected on a single server.
2. **Collection:** Entire collection (group of database documents) exists within a single database. There is no schema due to which easily stored unstructured data.
3. **Document:** It can store various types of data with various types of fields because documents are associated with dynamic schema.

## 1.2 Problem Description

Students are facing difficulty in collecting academic work. There are lots of academic work and to keep every academic work there are two ways i.e. handwritten and save a soft copy. Due to lots of academic work hand written work lost its importance and people are going towards saving a soft copy. But data crash and we lost our work. So, a system needed which will gather student academic record i.e. assignments and projects for later use. So, our system is basically an academic work management system. In this system, we can collect data, or a history of academic work done so far. So, every academic work gathers at a platform. Plus, we add some functionalities which never done before like when a user will add something on the system having more than one author than our system will automatically send a notification to the other author like someone added an assignment to your profile. If he/she don't want the respected assignment then he/she can remove it from his/her profile. Problems we are facing in our existing systems are:

- Collect every academic history/Journey of students at a place
- Uploading academic work without the permission of the other author (limited group work)

We will provide and gather information to overcome these issues. Gathering information at a platform with this type of strategy have never done before. We made this system because there is a need of these types of system e.g. our batch adds assignments on this system then when a new batch come, they find their desires assignments on this platform and if they want, they add more information on this assignment. If there exists more than one author then it will send notification to other author. These things will make a system more reliable, more secure. And using this system a user finds academic work in no-time. So, it is feasible and performance wise highly efficient. And it takes no-cost.

## 1.3 Project Objective

Following are project objectives:

### 1.3.1 Academic Objective

To learn and explore how to apply the concepts, theories and techniques that we have learned throughout the 4 years degree of Computer Science, to solve the practical problems through these techniques and technologies that we have learned and we are also focusing on development of the new product by learning new techniques and methods that will be expected to be known in market by us.

### **1.3.2 Product Objective**

To help students to achieve their goal in doing academic work even if they have no access to their respective teachers.

## **1.4 Project Scope**

This application will be very helpful for new students as every work will be categorised according to their specific course name and it will be easier for students to search for any subject. Also, students can upload their work on same application and teacher after checking the work, will mark grade on this platform. This application is cloud based, user must have internet connection to run this application.

This is a data collection system and storing all the assignments in a single repository. So, our system of saving or gathering information is a thing which never done before with this type of specifications. Developing such a tool will provide availability and accessibility of assignment and projects. Therefore, a new batch will find every related assignment there and they read it and if they want they will update it. It will provide security that's why no misuse of information occur because every time one wants to upload assignment who have more than one author it will then send a notification to other author that a student adds an assignment to your profile. If he/she don't want this assignment than he/she can remove it from profile.

Our system will not give any personal information of its users to anyone.

The system will only allow to add files including text files i.e. txt, doc, docx, presentation file i.e. .ppt, pptx and PDF and also Excel files i.e. xls,xlsx etc. It will not allow to add videos and other file types.

## Chapter 2

# Literature Review

In this chapter we will see how this application will be marketed along with already developed application that works similarly.

This project is basically based on an implementation. The review of the literature focuses on the subject, i.e. "Academic Journey Tracker and Browser". First, gathered research papers related to this topic, and then studied each research paper. In the research papers, we studied about the work done by the researchers. After reading some articles, they were only the closest articles to this subject. The main attention has been to find researchers who work on these assignment gathering systems and on Cloud and it's work. After studying this, analyse their work and how the data is track on a single platform and backed up on the cloud and what security risks are involved.

### 2.1 An Effective Method of Enhance Marketing

It is obvious that sale of a product depends on how it is marketed, how nicely it is represented to clients/viewers of advertisement. Application can be advertised through posting ads on different newspapers or by making nice advertisement for televisions, or by sending salesmen to distinctive business and residential areas. People are continuously looking for something new or some ease that's why employer always succeeds in launching new products within market, and they keep updating by adding new features and interface, so they can compete with other developers or applications.

Sometimes updates are not needed but developer keep updating the application, so they can stay in market and users keep on using the product. Let's look on a social networking application "Facebook". Which was founded in February 4, 2004 13 years ago, the Facebook has changed the privacy, security, authentication, interfaces or features so often that most of the time these modifications are not required by users. However, for the

users they keep updating their 7 interface to keep them engage in the application so that users don't get bored and market value of the application don't get down. We can also look on other social applications like twitter, Snapchat, Instagram and lots of other applications which gets in market with not so good interfaces but now they are trending in the market and are used by almost everyone now. In addition, the drifts of advertising also keep on changing in the market. The technique that we want to explore already being in worldwide markets. Some software companies are working on this concept.

## **2.2 Previous Research and Study**

Several applications have been launched for submitting academic work and for checking assignments by teachers which also provide the facility to teachers to mark them as well but their purpose is different. Some of them are explained in the sequence.

### **2.2.1 Piazza**

Piazza is a nicely-made platform that gives smart answers to two major problems. The task is that their solutions are non-proprietary, and there are many creative competitors who have a deep interest in their space.

#### **2.2.1.1 Model**

Piazza began as a reaction to a tremendous classroom issue: a lot of questions and data among students and teachers was often wildly efficient. Operating below the vintage one-to-one system, a professor or TA may provide solution to the identical question through e-mail many times. Additionally, students could gain information from others know-how in the event that they have been within the equal observe-institution.

Because Piazza's middle product is ever-unfastened, they decided to monetize by way of fixing any other hassle: the challenge of tech organizations in gaining access to top rate college students (especially within the engineering and CS streams). Their answer was Piazza Careers — a platform hyperlink that permits recruiters to directly contact college students by using stream.

Their software program is fashionable and standard properly-perfect to both niches. That stated, in commercial enterprise phrases, I'm pessimistic that they've finished enough to solidify their early lead.



Users can publicly (and anonymously, if the head instructor allows it) ask questions, answer questions, and post notes. Each question prompts a collective answer to which any user can contribute and an instructor answer, shown directly below, which can only be edited by instructors. Multiple students are allowed contribute to each answer and each answer have a version history that shows what each student wrote. Users are allowed to attach external files to posts, view a post's edit history, add follow-up questions, and receive email notifications when new content is added.

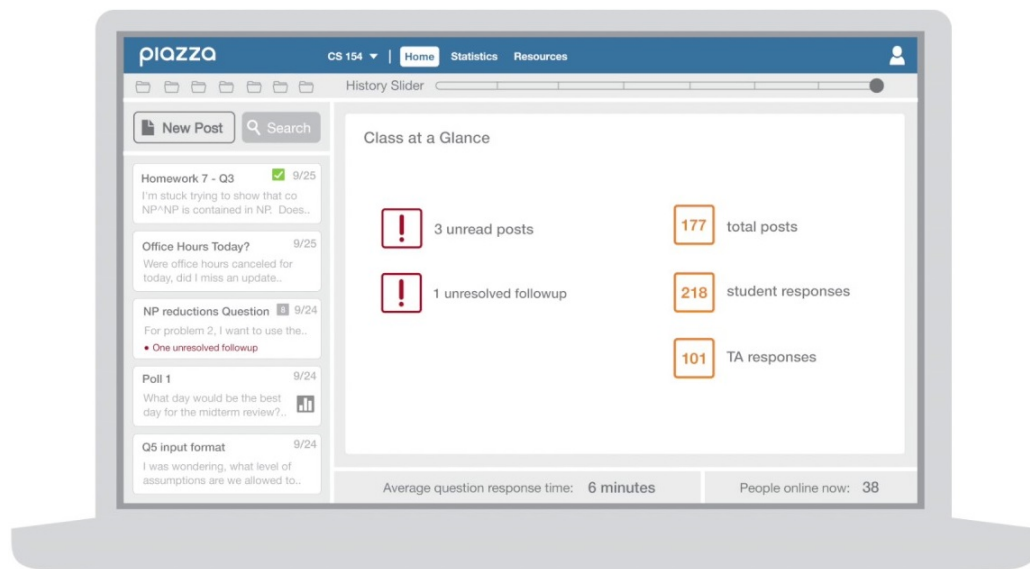


Figure 2.1: Piazza-Ask.Answer.Explore.Whenever

### 2.2.2 Schoology

Schoology is a Software. Schoology is a cloud-based learning the board arrangement spend significant time in educational plan the executives, course guidance and system-wide resource sharing and joint effort. Users can transfer course substance and assignments into the database to make their site, which is facilitated by the vendor.

The service includes attendance records, online gradebook, tests and quizzes, and homework drop boxes. The social media features facilitate collaboration among a class, a group, or a school. The system can be integrated with existing school reporting and information systems and also provides the security, filters and support that school districts require.

Schoology is an online learning, classroom management, and social networking platform that attempts to improve learning through better communication, collaboration, and increased access to curriculum and supplemental content.

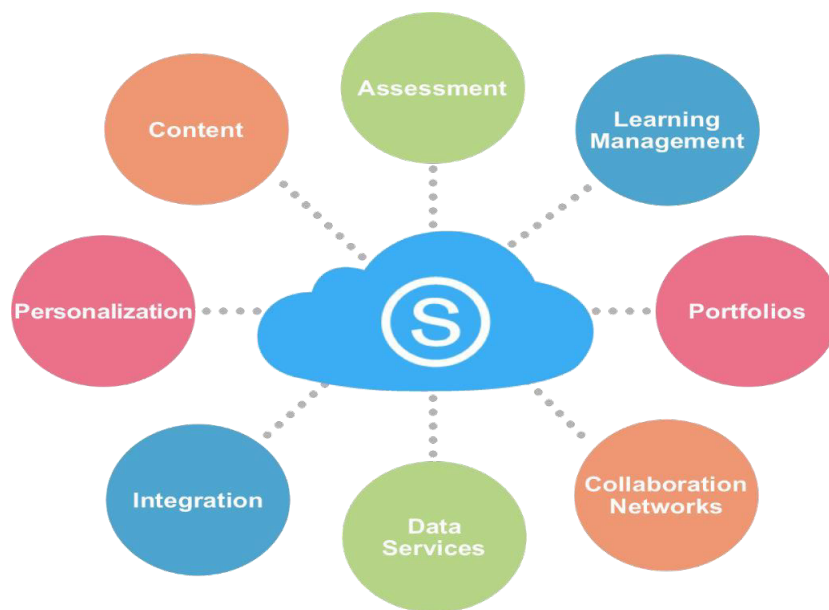


Figure 2.2: Schoology Workshop

### 2.2.3 Turnitin

Turnitin<sup>1</sup> is an originality checking and plagiarism counteractive action administration that checks your composition for reference mistakes or wrong duplicating. At the point when you present your paper, Turnitin looks at it to content in its big database of understudy work, sites, books, articles, and so on.

Turnitin is integrated into the Assignments tool in all online classrooms and is managed by Classroom Support. This means that when you upload your paper to your classroom for grading, it will automatically be sent through Turnitin's repository. The Similarity Report that it generates will help identify possible instances of plagiarism.

Engage understudies to think basically and take responsibility for work. Simple to-utilize feedback and grading features encourage instructional intercession and spare time both in and outside of the classroom.

It can enhance academic skills. Plan understudies for achievement in auxiliary instruction, advanced education, and past. Establish the framework for unique reasoning, bona fide composition, and scholarly uprightness rehearses that will endure forever.

<sup>1</sup><https://www.turnitin.com/>

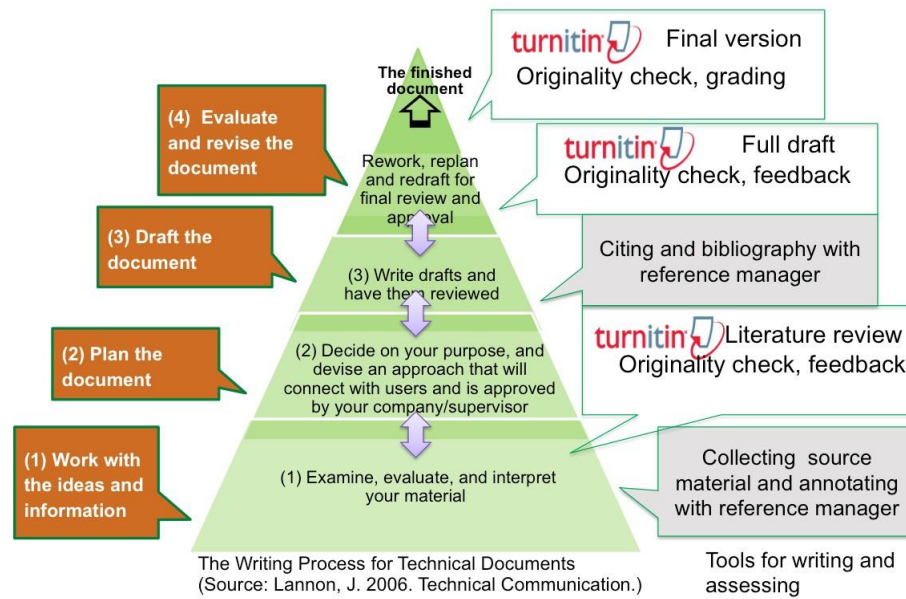


Figure 2.3: Turnitin Architecture

#### 2.2.4 Google Classroom

Google classroom<sup>2</sup> is an online classroom where students can upload assignments, their research work [5]. It is the best platform for enhancing teachers' workflow. It helps teachers in organising work and saves time. It is a good platform for interaction between student and teacher. So, when they have a query they communicate easily with each other. That's why it is easy to use, saves time, cloud based, flexible, free, mobile friendly. but it is specific for teachers and don't provide student academic work to other students.

Google Classroom is a Software developed by Google Inc. It is a cloud-based learning management framework that is a piece of Google Apps for Education. It empowers understudies to get to the stage from PCs, tablets and cell phones.

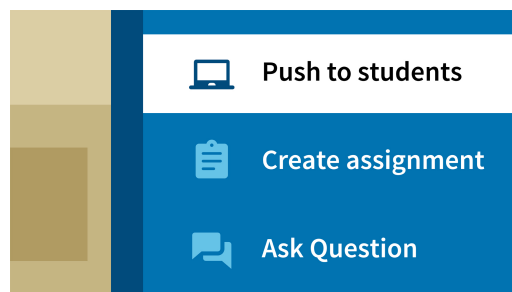


Figure 2.4: Google Classroom Interface

<sup>2</sup><https://classroom.google.com/>

Previous research and studies shows that there are a lot of systems or applications available which are designed to save work and provide ease but they don't provide the work to all users and some systems are specified for plagiarism checking, some for grading but there is no specific platform which can record all academic work of students and provide it to successor batches.

### **2.3 Developers Work**

After reading research papers, it was finally decided to do this project. Research paper shows that there is a need of system which gathers all the academic record at a single place and keep track for later use. Therefore, we developed Academic Journey Tracker and Browser. An application which will keep track of all the journey of students. To develop this application, the language used is C# and platform is Visual Studio 2019 IDE.

## **Chapter 3**

# **Requirement Specifications**

This chapter presents a review of existing systems and establishes requirements specifications for the proposed tool.

### **3.1 Application Overview**

The proposed application is expected to focus on helping the user from already existing material in solving his/her problem. This is a web application which is designed on Visual studio using .Net framework with C# language to develop application. The database which we used is MongoDB Atlas.

### **3.2 Existing Systems**

An assignment management system was established for collecting assignments namely piazza. This provide ease for students as well as for teachers. But it also don't fulfil all requirement of user. There are classes in piazza and the student who enrolled in that class can access his/her assignment or work but due to privacy issues he cannot view work of other students. In this system there is not a proper system to keep record of the whole journey of a student.

### **3.3 Proposed System**

The main purpose of this application is to gather the whole academic journey of students for successor batches. So, they can find their desire work and do researches and update it (provide new versions). In this application we use these following technologies:

- Visual Studio 2019 Preview

- C#
- HTML
- CSS
- JavaScript
- ASP.NET
- NoSQL (MongoDB)

With Following Features:

1. User Friendly
2. Duplication of Data
3. Replication
4. Load Balancing
5. Availability

To develop this application, we use programming languages like C# HTML, CSS, JavaScript. By programming in different layers of .NET we create an application which collects all the academic journey of students. When student uploads something in a group of two people then system sends notification to second tagged student. All the data recorded on this system is saved in a NoSQL Database (MongoDB). This database provides availability, replication, encryption which ensures its security and high performance.

### **3.3.1 Product Function**

AJTB is a web application for recording the whole academic journey of students.

- Open the AJTB website
- Login/Register
- Then join a class
- Upload assignment
- To search anything type in the search box e.g. the whole academic work of a student or some specific assignment.
- If there is a group assignment, then mention the other student and system will send notification to the other student.

- If want to use system as teacher then join the system as a teacher, you can now have option to upload a task(assignment), to view an assignment, upload grades etc.
- Then history of all uploaded data will automatically upload on NoSQL (MongoDB) which ensures data security and availability.

## 3.4 Requirement Specifications

Requirement Specification includes User Requirements, system Requirements, Use Case, Software Requirement, Hardware Requirement which are as follows:

### 3.4.1 User Requirements

The user of the system which can have a contact with system directly or indirectly are identified below:

1. **Developer:** Complete control of all aspects of this application. Any time he makes changes in application like update or change visual interaction.
2. **Technical User:** The user who have full command on databases and uses of other programmed applications.
3. **Non-Technical User:** These are end users of AJTB application who only read specific file according to their need.

### 3.4.2 System Requirements

#### 1. Functional Requirements

- For uploading PDF, Word File (doc, docx), txt and Zip files., user will have personal account.
- Person login to the system by entering user credentials.
- System will check information by using cloud instances if corrects then it will allow to log in.
- If person wants to upload an assignment etc., he/she upload it using cloud instances.
- Data will be saved automatically.
- When some other person wants to tag you as any assignment author, system will ask you through notification.

## 2. Non-Functional Requirements

- **Reliability:** System should be reliable to operate with the cloud.
- **Performance:** System should be quite efficient to save data.
- **Maintainability:** Developers are responsible to train the user who uses this application.
- **Re-usability:** System modules should be able to reuse for some other data storing purpose.
- **Availability:** System should be available every time in a day.
- **Fast access:** System should work fast.

### 3.4.3 Use Case

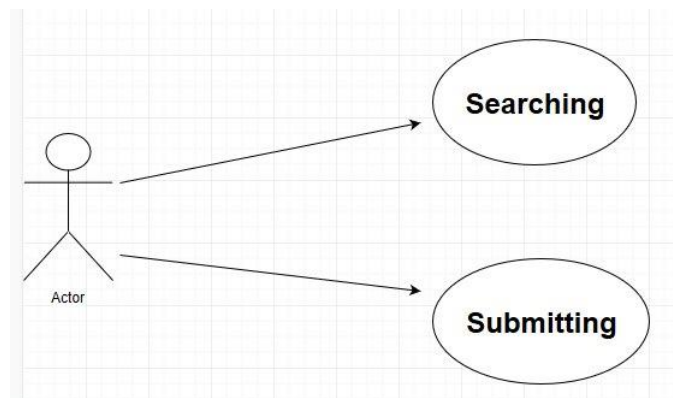


Figure 3.1: Use Case

Figure 3.1 shows a summary of the main purposes that the system will execute. Establish the purposes to be comprehensible to users. User scenario of this application:

1. The user who wants to use this application must have register himself/herself.
2. The system will ask user to enter enrollment in a proper format.
3. System will ask user to save password or not.
4. After verification he/she can enter the system.
5. User must have a login ID.
6. For uploading and viewing the required work user must have join a class.
7. To tag someone other user must have join the class.
8. To search any related work user can search semester wise, course wise.



9. User have the option to download, delete and edit assignment.
10. Then if he/she wants to logout then click the logout button and application closed.

#### 3.4.4 Software Requirements

The software requirements for AJTB application is shown in table 3.1

Development Tool	Operating System	Database System
Visual Studio 2019	Windows 10	NoSQL(MongoDB)
C#	-	Microsoft SQL Server
CSS, HTML, JavaScript	-	-

Table 3.1: Software Requirements

#### 3.4.5 Hard Requirements

The hardware requirements for AJTB application is shown in table 3.2

Hardware	Client
Processor	Dual Core 1.8 or above
Memory	1GB or above
Hardware Capacity	40GB or above
Desktop or Laptop	YES
Internet	Broadband (highspeed) Internet connection with a speed of 4 Mbps or higher.

Table 3.2: Hardware Requirements



## Chapter 4

# System Design and Implementation

This chapter presents the system design and the functionality of the software developed. Moreover, the type of data which will be used as input, the various modules and graphical user interface (GUI) of the system are presented.

This chapter also give overview of all the tools, development techniques, algorithms and libraries used to develop the application.

### 4.1 System Architecture

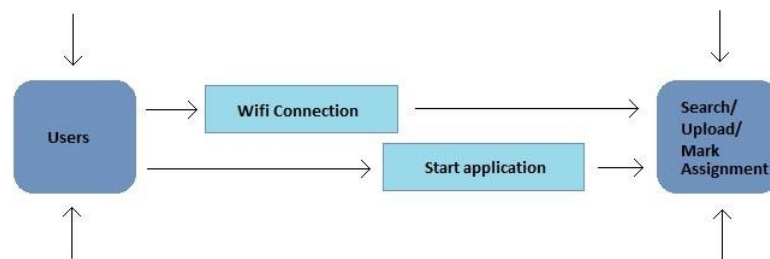


Figure 4.1: System Architecture

The application, which is intended to be developed, is to be used on mobile devices as well as desktop. The application consists of very simple architecture design. Figure 4.1 shows that how the different task (searching, uploading, checking etc.) will be done to achieve the final output and is described in the following steps.

- Device is connected to Wi-Fi.
- If the user is teacher, it can create a new class to upload assignment (unsolved) or can upload assignment (unsolved) in existing class.

- If the user is student and want to submit assignment (solved) to teacher then he/she can upload it in specific class after joining that class.
- If the user is student and is submitting assignment to teacher then he/she will be asked if they want their assignment to be public. If NO then system will ignore, If YES then system will show it to his/her profile as a public post.
- If the user is student and want to search specific assignment, he/she will write name of that specific assignment and all the assignments related to that will be shown.

AJBT is used to guide the successor batch if they face any difficulty regarding their assignments, projects or quizzes as well.

Figure 4.1 shows that when the user will start application the process of the searching, submitting, marking would start when connection is established.

## 4.2 Design Constraints

1. Internet facility must be available.
2. This application is Web based.
3. Targeted users are educated enough to operate a computer and understand the system as well as the application to be perform.

## 4.3 Design Methodology

Various software development models are available like waterfall model, incremental model, spiral model and agile. Various models have different strengths and are to be used in various software development projects. In our case, we will be using the Agile model for developing the product. Agile is generally shorthand for either agile software development, agile product development or agile project management. Agile software development is a conceptual framework for software engineering that promotes development iterations throughout the life-cycle of the project.

- We are using agile model because our projects satisfy this model in a way that we are dividing our project in different time span to deliver specific feature
- Functionality can be added rapidly and demonstrated
- It uses iterative or phased planning.
- Agile project management uses continuous integration throughout the life of the project.

**Advantages:**

- Improved Quality
- Risk Management
- Customer Satisfaction
- Quick Release
- Right Product

We have followed a methodology throughout the project and that methodology is agile approach, we basically started with the brainstorming with the supervisor than we moved forward towards the design phase which is being constantly rechecked throughout the development of the project. When we are done with designing and development, the last phase that we have consider is testing phase.

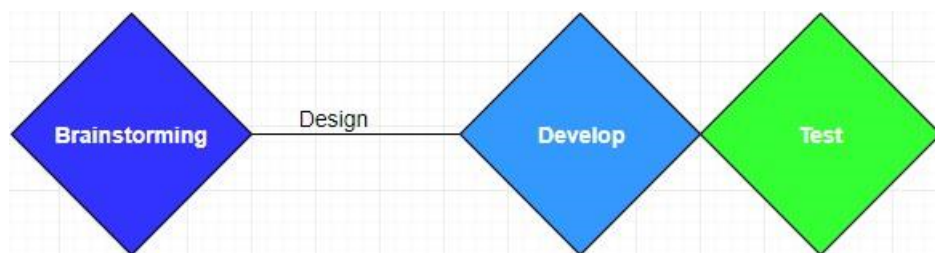


Figure 4.2: Methodology

**4.3.0.1 Sequence Diagrams**

The following sequence diagram shows how the process interacts with each other and in what order.

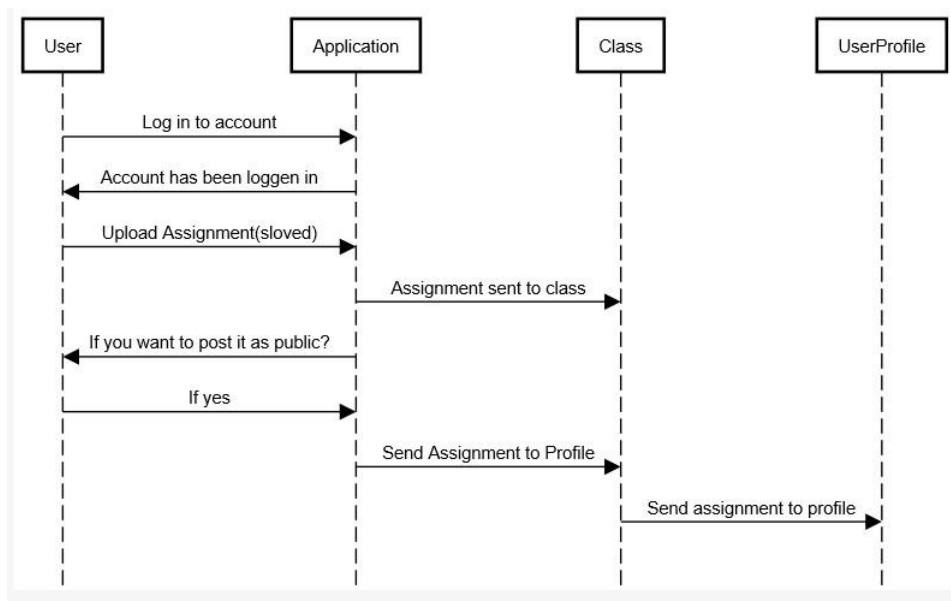


Figure 4.3: Uploading Assignments

Figure 4.3 shows that how a user will interact with application if he/she wants to submit an assignment in related class. First he/she must sent a login request. when account has been logged in then student can upload his/her assignment. At the time of submission, user will be asked if they want their assignment as a PUBLIC post than can be visible for others else it cannot be public.

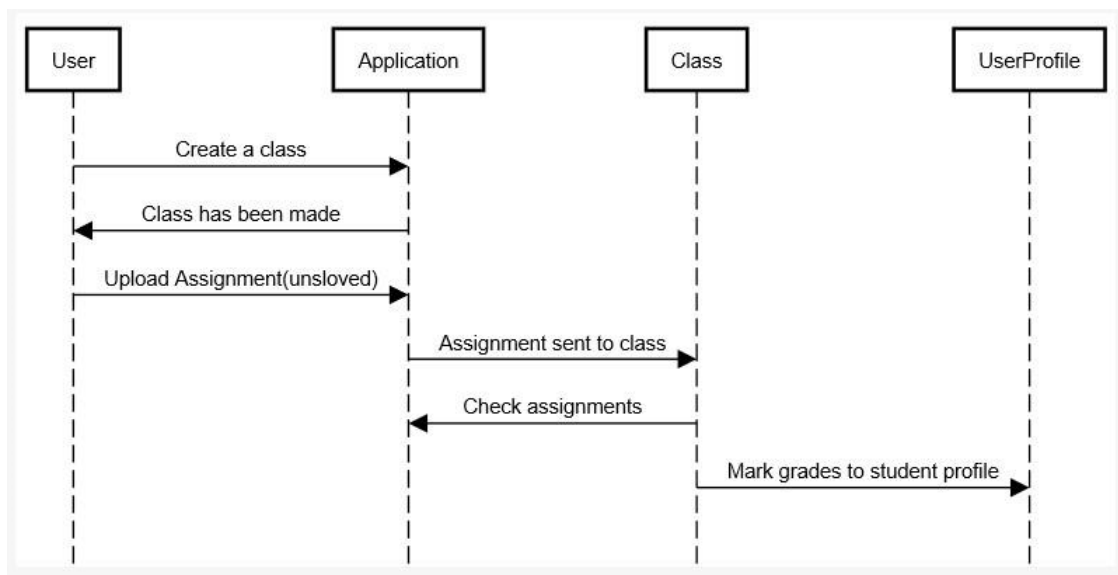


Figure 4.4: Joining Class

Figure 4.4 shows that if the user is a teacher he can create a new class in which he/she can upload an assignment for students. Students will be awarded with grades after checking of their assignments.

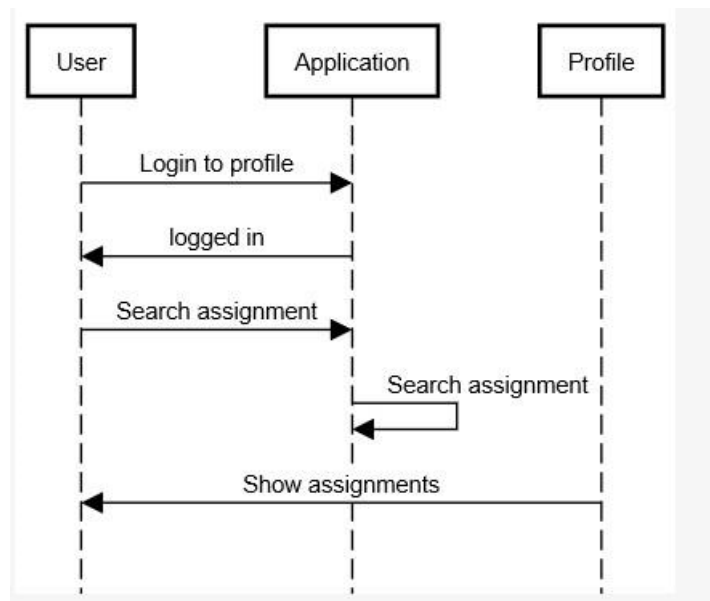


Figure 4.5: Searching Assignment

Figure 4.5 shows that if user wants to search for any assignment, he will search by the name and system will show all related assignments. For which user must be logged in the system.

## 4.4 Process Interaction Model

Process model tells us how an application starts and what process it takes to reach a successful end. The following are the process interaction models of the application:

### 4.4.1 Connection Establish

To start an application user must need a fast internet. So, that when an application is started by user then the connection must be established.



Figure 4.6: Connection Established

Process Model	P1
Title	Connection Establish
Description	In this module when the user will launch the app, the Wi-Fi should be connected to start the app.
Pre-Condition	User Opens Application
Post- Condition	Connection is establish

Table 4.1: Connection Established

#### 4.4.2 Sign in or Sign up

When user wants to enter into the system then he/she must logged in the system after connection established. So, account has been logged in.



Figure 4.7: Sign in or Sign up

Process Model	P2
Title	Sign in or Sign up
Description	In this module after establishing connection, users will log in to their accounts.
Pre-Condition	User starts application and establish connection
Post Condition	Account is logged in.

Table 4.2: Sign in or Sign up

#### 4.4.3 Creating a new Class

To upload an assignment user(teacher) must create a class first. Then students can join that class. After joining class work will be uploaded in related class.

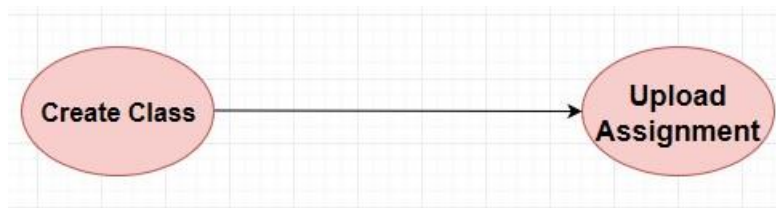


Figure 4.8: Creating a new Class



Process Model	P3
Title	Creating a new class
Description	User(teacher) will create a new class for uploading assignments as a task for students.
Pre Condition	User logged in to account
Post Condition	Upload assignment

Table 4.3: Creating a new Class

#### 4.4.4 Search for Assignment

If you want to search an assignment user must logged in to system. Then he/she will type the name of that specific assignment and all the related assignments will be shown.

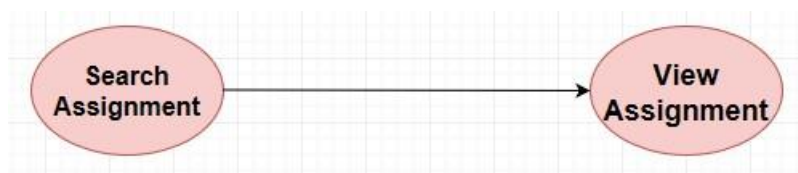


Figure 4.9: Search for Assignment

Process Model	P4
Title	Search for Assignment
Description	User will search for specific assignment.
Pre Condition	User logged in to account
Post Condition	application will show him/her all related assignments

Table 4.4: Search for Assignment

## 4.5 Tools and Technologies

Following are the main tools and technologies that we have used in the development of the application.

- Visual Studio 2019
- ASP.NET
- MVC
- Razor Engine
- MongoDB

### 4.5.1 Integrated Development Environment

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is utilized to create PC programs, just as sites, web applications, web administrations and versatile applications.

Visual Studio incorporates a code editorial manager supporting IntelliSense (the code fruition part) just as code refactoring.

### 4.5.2 ASP.NET

ASP.NET is an open-source server-side web application framework designed for web development to produce dynamic web pages [6]. It was developed by Microsoft to allow programmers to build dynamic websites, web applications and web services.

### 4.5.3 MVC

Stands for "Model-View-Controller." MVC is an application design model comprised of three interconnected parts. They include the model (data), the view (user interface), and the controller (processes that handle input). The MVC model or "pattern" is commonly used for developing modern user interfaces. Stands for "Model-View-Controller." MVC is an application design model comprised of three interconnected parts. They include the model (data), the view (user interface), and the controller (processes that handle input). The MVC model or "pattern" is commonly used for developing modern user interfaces.

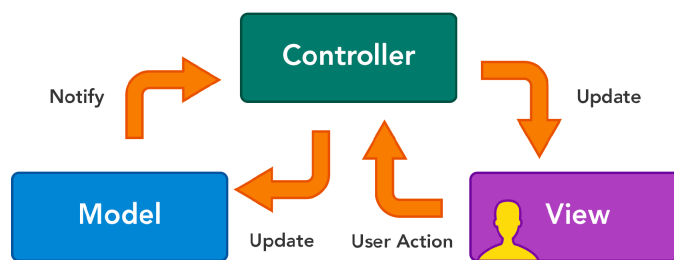


Figure 4.10: MVC(Model-View-Controller)

### 4.5.4 Razor Engine

Razor is a markup syntax that lets you embed server-based code into web pages using C# and VB.Net[7]. It is not a programming language. It is a server side markup language.

Razor has no ties to ASP.NET MVC because Razor is a general-purpose templating engine. You can use it anywhere to generate output like HTML. It's just that ASP.NET MVC has implemented a view engine that allows us to use Razor inside of an MVC application to produce HTML.

### 4.5.5 MongoDB

MongoDB[8] is a cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with schema. MongoDB is developed by MongoDB Inc. and licensed under the Server Side Public License.

## 4.6 Libraries

The following libraries are used in the project:

- System
- System.Collection.Generic
- System.Linq
- System.Web
- System.Web.Mvc
- System.IO
- MongoDB.Driver

## 4.7 Languages

The languages that has been used in development of the application is

- C#
- HTML
- CSS
- JavaScript

As we have used MVC so it is compatible with C# and other languages.

C# is used in controller and model section while HTML is being used in view section.



## **Chapter 5**

# **System Testing and Evaluation**

In this Chapter different testing systems are used for assessment and validation of this application. Testing plays an important role in the product software development process. It helps to validate the system will meet its requirements and the working of the application. Every project has few constraints and these constraints will be investigated during the test cases which are talk about in this chapter.

### **5.1 Usability Testing**

Usability testing gives the information about how much time will it require performing a specific task of the system. Usability testing is assessed by the target audience group of the application. In our application, our audience is general Users. This application is use to track the academic journey of students and storing it on cloud. Usability testing tells that the system is performing the tasks that it is planned to do or, on the other hand not. The application performs the task the client want to perform from the application or not.

#### **5.1.1 Easy to use**

This project is easy to use and project is self-explanatory that the user can easily Interpret what the system is intend to do.

#### **5.1.2 Easy to learn**

Our system is very simple basic and consistent, visible and clear. The system is very easy to learn for the new users. It has very simple and easy GUI and self-explanatory new user can easily understand it.

## 5.2 Software Performance Testing

Software performance testing use to check how efficiently the system performs the task through this application. This will help us to determine the system capability, reliability and efficiency. Following steps were taken to increase the application performance.

- Extracting any work from cloud when a user request it by entering its name in the search box will increase the speed and consume less time.
- If there is no matching work related to user request then it will simply not suggest any work in the requested page.
- System will not take or waste time to extract or checking the videos and images because they are not relevant for system.
- System will take some time 1 to 2 minutes for automatic performance of given content and storing it on cloud.

## 5.3 Compatibility Testing

Compatibility Testing is a kind of non-functional testing. Compatibility implies on what conditions the system will perform well with no issues. This testing technique will help us to know the compatibility with which hardware and software resources need to use this application. Following are the compatibility feature should be having:

- Processor must be quick reason it performs to many processes to be taken so processing must be fast for example core i3 or more and RAM 4 GB.
- This application is developed on the C#. So, system must have the ASP.NET platform to run this type of application.
- This application is cloud based. So, user must have strong internet connection.

## 5.4 Exception Handling

In this system there are many exceptions are to be handle.

- HTTP exception case show if there is any issue regarding the internet connection exception will be shown.
- Exception will be displayed if the user input is not text related file for example some jpg file, mp3 etc. files will never be uploaded.
- Time out Socket exception is there as well.

## 5.5 Load Testing

Load testing is the way toward putting request on a software system or registering gadget and measuring its reaction. Load testing is performed to determine a system's behaviour under both normal and anticipated peak load conditions. Load testing is that to test the framework under the strange circumstance applying stress to a software and decide the behaviour of the system under this kind of circumstance. In this system stress may apply when Internet connection is disconnected over and over it will apply too much load on a system. In other case when a given article is too large it will take too long to search and store assignment. And the last thing is when the processing speed is slow then it applies all the load on the processor it will slow down the speed and consume lots of the time.

## 5.6 Stress Testing

Stress testing is a type of software testing that is utilised to decide the stability of a given framework. It put more prominent accentuation on heartiness, accessibility, and mistake dealing with under a substantial load, as opposed to on what might be viewed as right conduct under typical conditions. We apply stress test to our application by searching and storing on about 50+ assignments at a time. The application successfully performs the test on them it took about 20 seconds to complete its storing and searching.

## 5.7 Security Testing

Security testing is a procedure expected to uncover imperfections in the security instruments of a data framework that ensure information. Ordinary security prerequisites may incorporate particular components of privacy, authentication, verification, accessibility, approval and non-repudiation. As our system automatic store data and this data can be extracted from the cloud where security is their priority. Our Application not display those types of data which will break the security terms and condition. No one can misuse this type of data.

## 5.8 Installation Testing

Installation testing refers to the testing of installation of the application. To run the project, there must be the Microsoft operating system installed in the system. This project is developing on C#. In this way, system must have ASP.NET platform and C# platforms. These things must need to run this sort of application.





# Chapter 6

## Conclusions

### 6.1 Conclusions

This project takes assignments and projects and stores as an academic work in a repository. Moreover, it facilitates users in searching for relevant information. The repository is hosted on cloud which enables user to access it.

To store work manually is difficult. So, a system needed to store all their work at a place and then store it on cloud to access it from anywhere and at anytime.

To save assignments there exists systems but their purpose is different. Systems exists such as Turnitin but it is for checking plagiarism not to collect academic work.

By using this application user find ease in doing their academic work because they will find all their required work on this platform in seconds and do further work on that assignment and upload it.

If a group of two or more students, then they upload assignment by tagging the others two. The assignment will upload on others student profile too. If student wants the tagged assignment he allowed it to remain it in his/her profile otherwise delete it.

Storing academic work of students at a place and by using that work they will accomplish more work on that which makes a better future. This work stored on MongoDB Atlas cluster, in relevant tables. This is secure and accessible from anywhere and the application successfully done its task.

### 6.2 Future Work

- The focus of this application is only assignment type data given to it. In future we will further expand this application, so it will also also store other formats like videos, images etc.

- This application only searching assignment related work but in future it also help user to search videos and pictures related to it.
- In further we can create a graph for it. So, user can see how much data save on cloud in each cluster.
- To prevent user from copying data, in future we add a plagiarism checker. So, no one can copy any type of data and all the work of student remain safe from copyright issues.
- By adding plagiarism checker in future, grading becomes easy. Teacher will know that who can copy and give marks according to that.

# Appendix A

## User Manual

AJTB is user friendly software which is helpful for storing the academic work of student at a place and storing it on cloud for technical users and also for non-technical users.

- AJTB is user friendly software which is helpful for storing the academic work of student at a place and storing it on cloud for technical users and also for non-technical users.
- Run AJTB directly.
- Main window will pop up which will ask you to login or register if you are not a user.

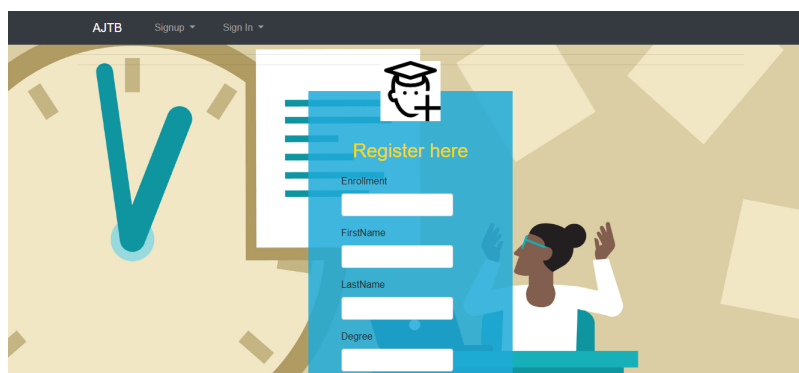


Figure A.1: Register

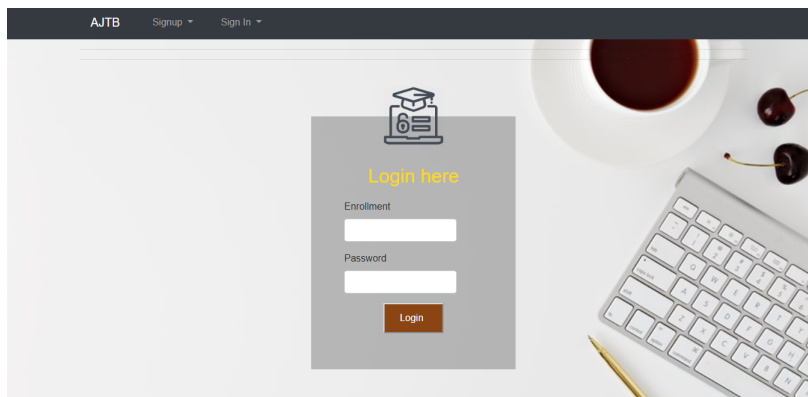


Figure A.2: Login

- And if you click on profile. Here all the information related to the person will be showed.

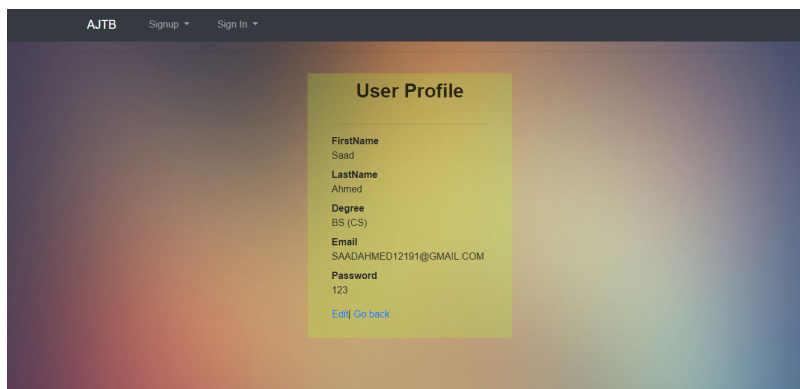


Figure A.3: User profile

- After that it will ask you to select semester.

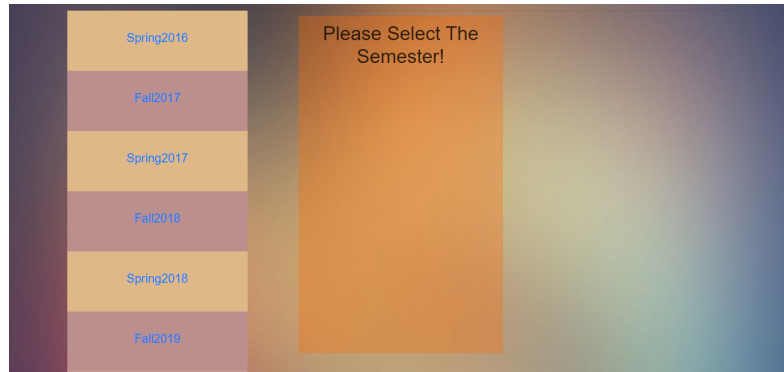


Figure A.4: Selecting semester

- For searching an assignment, user will give subject name and semester.

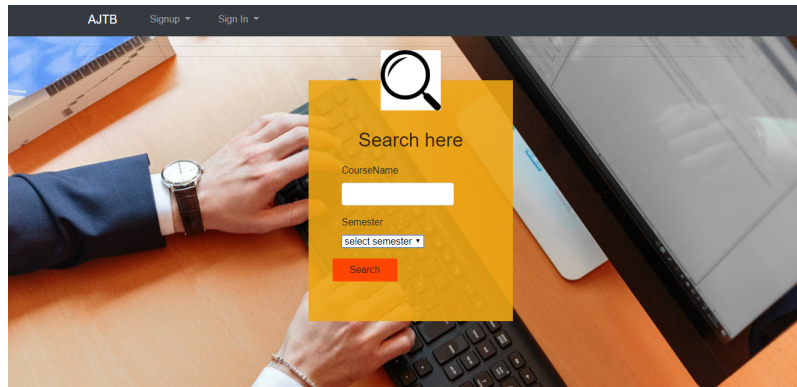


Figure A.5: search assignment

- Click on logout, it will redirect you to the login page.



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