

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**Jnana Sangama, Belagavi – 590018, Karnataka**



**A Mini Project Report  
on**

**“Department Library Management”**

**Submitted in partial fulfillment of the requirement for the DBMS Laboratory  
with mini project (18CSL58) of V semester**

**Bachelor of Engineering  
In  
Computer Science and Engineering**

**Submitted By**

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**GLOBAL ACADEMY OF TECHNOLOGY**

**Department of Computer Science and Engineering**

**(Accredited by NBA 2019-2022)**

**Raja Rajeshwari Nagar, Bengaluru – 560 098**

**2020-2021**





# GLOBAL ACADEMY OF TECHNOLOGY

Department of Computer Science and Engineering

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Raja Rajeshwari Nagar, Bengaluru – 560 098



## Certificate

This is to certify that V Semester Mini project entitled **“DEPARTMENT LIBRARY MANAGEMENT”** is a bonafide work carried out by **DIVYA BHAT N (1GA18CS055), SHARAN S (1GA18CS148)** as a partial fulfillment for the award of Bachelor's Degree in Computer Science and Engineering for DBMS Laboratory with Mini Project [18CSL58] as prescribed by **Visvesvaraya Technological University, Belagavi** during the year 2020-2021.

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Signature with date

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## **ABSTRACT**

A Library plays the most vital part in an Educational Institution. A library is a main element that thrives students to learn more about a particular subject. Digitalization is the next sensation. To encourage/improve digitalization, this project stands as an initiation. Bidding adieu to the process of data storing of library history in registers, it is time to implement a digitalized version of the same.

The website to be produced is the Digitalized Department Library Management. Here, there are 3 users. They are The Admin, The Teachers and The Students. The Admin has access to all the data and can make necessary changes or add in entries of new book arrivals, register students and also teachers along with the removal of the same. The Teachers and Students can also create their own personal accounts and view available books online and then borrow it later from the Department. The Student Information stored includes their Name, USN, Email ID, Date of Birth and a track of all the recently borrowed books. The Teacher Information stored includes their Name, Employee Code, Email ID, Date of Birth and a track of all the recently borrowed books. All the data and history of the person is stored using their unique member ID such as the USN or Employee Code. Finally, if the person wishes to quit, they can De-register by simply deactivating their account.

## ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of the people who made it possible and whose constant encouragement and guidance crowned our efforts with success.

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We would like to thank the faculty members and supporting staff of the Department of CSE, GAT for providing all the support for completing the Project work.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction to SQL

SQL is a language to operate databases; it includes database creation, deletion, fetching rows, modifying rows, etc. SQL is an **ANSI** (American National Standards Institute) standard language, but there are many different versions of the SQL language.

SQL is Structured Query Language, which is a computer language for storing, manipulating and retrieving data stored in a relational database.

SQL is the standard language for Relational Database System. All the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language.

Also, they are using different dialects, such as:

- MS SQL Server using T-SQL
- Oracle using PS/SQL

SQL is widely popular because it offers the following advantages:

1. Allows users to access data in the relational database management systems.
2. Allows users to describe the data.
3. Allows users to define the data in a database and manipulate that data.
4. Allows to embed within other languages using SQL modules, libraries & pre-compilers.
5. Allows users to create and drop databases and tables.
6. Allows users to create view, stored procedure, functions in a database.
7. Allows users to set permissions on tables, procedures and views.

## **1.2 Introduction to Frontend**

Front-end web development, also known as client-side development is the practice of producing HTML, CSS and JavaScript for a website or Web Application so that a user can see and interact with them directly. The challenge associated with front end development is that the tools and techniques used to create the front end of a website change constantly and so the developer needs to constantly be aware of how the field is developing.

The objective of designing a site is to ensure that when the users open up the site they see the information in a format that is easy to read and relevant. This is further complicated by the fact that users now use a large variety of devices with varying screen sizes and resolutions thus forcing the designer to take into consideration these aspects when designing the site. They need to ensure that their site comes up correctly in different browsers (cross-browser), different operating systems (cross-platform) and different devices (cross-device), which requires careful planning on the side of the developer.

A front-end developer architects and develops websites and applications using web technologies (i.e., HTML, CSS, DOM, and JavaScript), which run on the Open Web Platform or act as compilation input for non-web platform environments. A web browser is software used to retrieve, present, and traverse information on the WWW. Typically, browsers run on a desktop or laptop computer, tablet, or phone, but as of late a browser can be found on just about anything.

### **1.3 About Project**

The Project demonstrates working of a digitalized management of the department library. The project has been completed with the complete implementation of the frontend and backend along with the connection of the front and back ends. HTML, CSS, Bootstrap and JavaScript have been implemented for the designing of the webpages. The database has been implemented using MySQL. The linking of the front and back ends is established using “Flask” a Python framework for Web Development.

In the project, The Admin has access to all details of all the users. Separate templates have been implemented for teacher and student users. The database comprises of 4 tables. One exclusively for storing student user information, one for storing teacher user information, one for storing details of books and one for storing the book borrowing information. The Teacher and Student Users can register online and create an account for themselves with functionalities such as viewing their details, updating their details, viewing available books, and viewing their book borrowing history. The Admin, has functionalities to add and remove student users, teacher users and also new book arrivals. The Admin also has access to the consolidated history of book borrowing. The history can be viewed in 3 formats, one exclusively providing borrowing info of all students, one providing borrowing info of all teachers and one complete view of book borrowing history without any constraints.

The project is mainly based on Web Development which is an all time in the corporate world, especially with the nation moving towards digitalization. The project was initiated to overcome the tedious tasks of maintain records through huge and heavy registers. The project has currently been implemented using only basic necessity to reduce human effort which in further time will be upgraded to give out much sophisticated versions.



## **CHAPTER 2**

# **SYSTEM REQUIREMENTS**

### **2.1 Software Requirements**

1. Operating System (Windows-XP or Higher)
2. Efficient Search Engine
3. SQL Server Edition

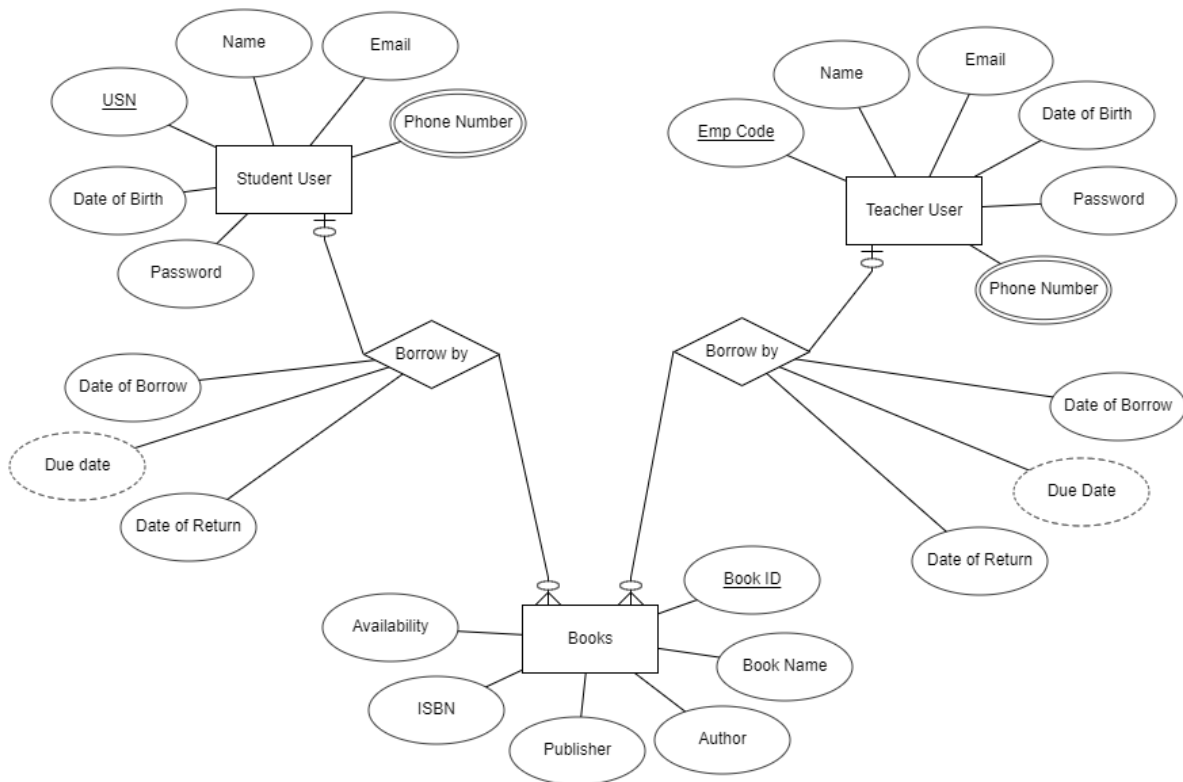
### **2.2 Hardware Requirements**

1. Pentium III or better processor
2. 256 MB RAM
3. 10GB hard disk
4. 10 – 50 Mbps of Stable Network

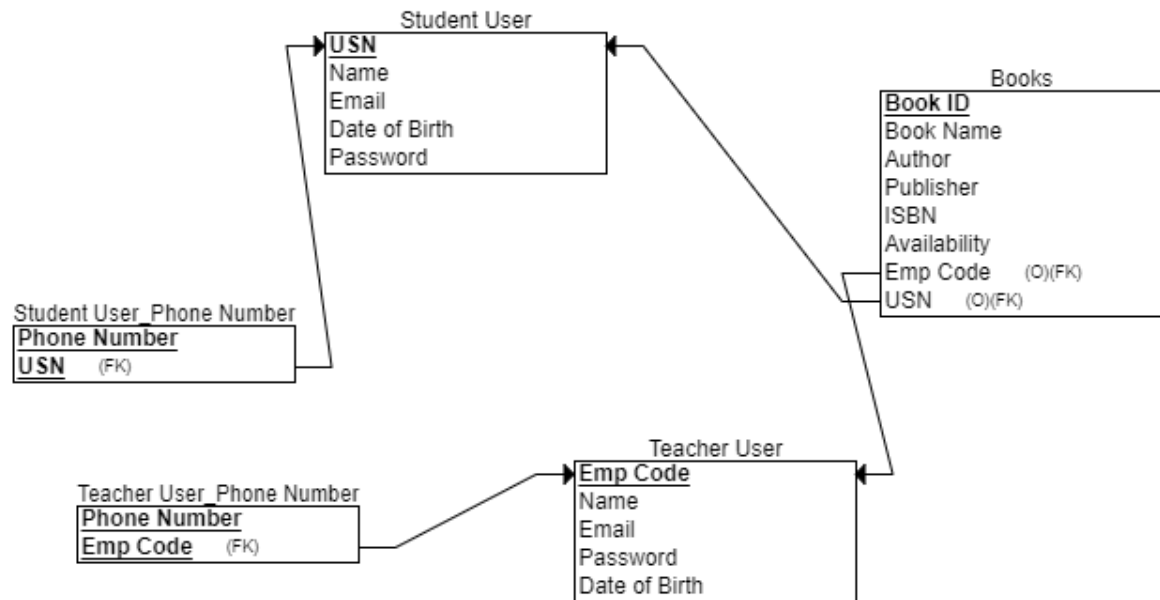
## CHAPTER 3

# IMPLEMENTATION

### 3.1 ER DIAGRAM



### 3.2 RELATIONAL SCHEMA DIAGRAM



### 3.3 TABLE CREATION

```
mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id     | varchar(10)   | NO   | PRI | NULL    |       |
| name   | varchar(50)   | YES  |     | NULL    |       |
| author | varchar(50)   | YES  |     | NULL    |       |
| publisher | varchar(100) | YES  |     | NULL    |       |
| isbn   | bigint        | YES  |     | NULL    |       |
| avail  | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.12 sec)
```

3.3.1: Table Creation for books

```
mysql> desc student_user;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| usn    | varchar(10)   | NO   | PRI | NULL    |       |
| name   | varchar(25)   | YES  |     | NULL    |       |
| email  | varchar(35)   | YES  |     | NULL    |       |
| pass   | varchar(35)   | YES  |     | NULL    |       |
| phone  | bigint        | YES  |     | NULL    |       |
| dob    | date          | YES  |     | NULL    |       |
| rdt    | varchar(25)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.09 sec)
```

3.3.2: Table Creation for student\_user

```
mysql> desc teacher_user;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| emp    | varchar(10)   | NO   | PRI | NULL    |       |
| name   | varchar(25)   | YES  |     | NULL    |       |
| email  | varchar(35)   | YES  |     | NULL    |       |
| pass   | varchar(35)   | YES  |     | NULL    |       |
| phone  | bigint        | YES  |     | NULL    |       |
| dob    | date          | YES  |     | NULL    |       |
| rdt    | varchar(25)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

3.3.3: Table Creation for teacher\_user

```
mysql> desc borrow;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| br_id | varchar(10)   | YES  |     | NULL    |       |
| b_id  | varchar(10)   | YES  |     | NULL    |       |
| dob   | date          | YES  |     | NULL    |       |
| due   | date          | YES  |     | NULL    |       |
| dor   | date          | YES  |     | NULL    |       |
| s_t   | varchar(1)    | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

3.3.4: Table Creation for borrow

### 3.4 INSERTION OF TUPLES

```
mysql> select * from books;
```

id	name	author	publisher	isbn	avail
BK102	Physics	S P Basavaraj	Subhas Stores	9789383214501	1
BK103	Maths	Chandrashekar K S	Sudha Publications	2453679854136	1
BK104	Data Structures using C & C++	Aaron M Tenenbaum	Brooklyn Publications	9788120311770	1

```
3 rows in set (0.01 sec)
```

3.4.1: Records in books Table

```
mysql> select * from student_user;
```

usn	name	email	pass	phone	dob	rdt
1GA18CS055	Divya Bhat N	divyabhat2000@gmail.com	divubhat07	7411375813	2000-04-30	2021-01-13 17:46:05
1GA18CS148	Sharan S	generationk08@gmail.com	happyday	7338689245	2000-01-26	2021-01-13 17:42:04

```
2 rows in set (0.03 sec)
```

3.4.2: Records in student\_user Table

```
mysql> select * from teacher_user;
```

emp	name	email	pass	phone	dob	rdt
1GA18CS055	Divya Bhat N	divyabhat2000@gmail.com	divubhat07	7411375813	2000-04-30	2021-01-13 17:47:36
1GA18CS148	Sharan S	generationk08@gmail.com	happyday	7338689245	2000-01-26	2021-01-13 17:46:48

```
2 rows in set (0.02 sec)
```

3.4.3: Records in teacher\_user Table

```
mysql> select * from borrow;
```

br_id	b_id	dob	due	dor	s_t
1ga18cs148	BK101	2020-12-29	2020-12-29	2020-12-29	s
1ga18cs121	BK101	2020-12-29	2020-12-29	2020-12-29	t
1ga18cs055	BK103	2020-12-31	2020-12-31	2020-12-31	t
1ga18cs133	BK104	2020-12-31	2020-12-31	2021-01-02	s
1ga18cs055	BK101	2021-01-02	2021-01-02	2021-01-02	s
1ga18cs148	BK104	2021-01-12	2021-01-12	2021-01-12	s
1ga18cs148	BK104	2021-01-12	2021-01-12	2021-01-12	s
1ga18cs148	BK104	2021-01-16	2021-01-16	2021-01-16	t

```
8 rows in set (0.03 sec)
```

3.4.4: Records in borrow Table

### 3.5 CREATION OF TRIGGERS

The triggers are implemented on student\_user and teacher\_user on rdt columns of both tables which stores the date and time of the user at the time of registration to the online portal.

#### **CODE:**

```
1)
CREATE DEFINER=`root`@`localhost` TRIGGER `student_user_BEFORE_INSERT`
BEFORE INSERT ON `student_user` FOR EACH ROW BEGIN
SET NEW.rdt=NOW();
END
```

```
2)
CREATE DEFINER=`root`@`localhost` TRIGGER `teacher_user_BEFORE_INSERT`
BEFORE INSERT ON `teacher_user` FOR EACH ROW BEGIN
SET NEW.rdt=NOW();
END
```

### 3.6 CREATION OF STORED PROCEDURES

The stored procedure is implemented to view all the records in the borrow table.

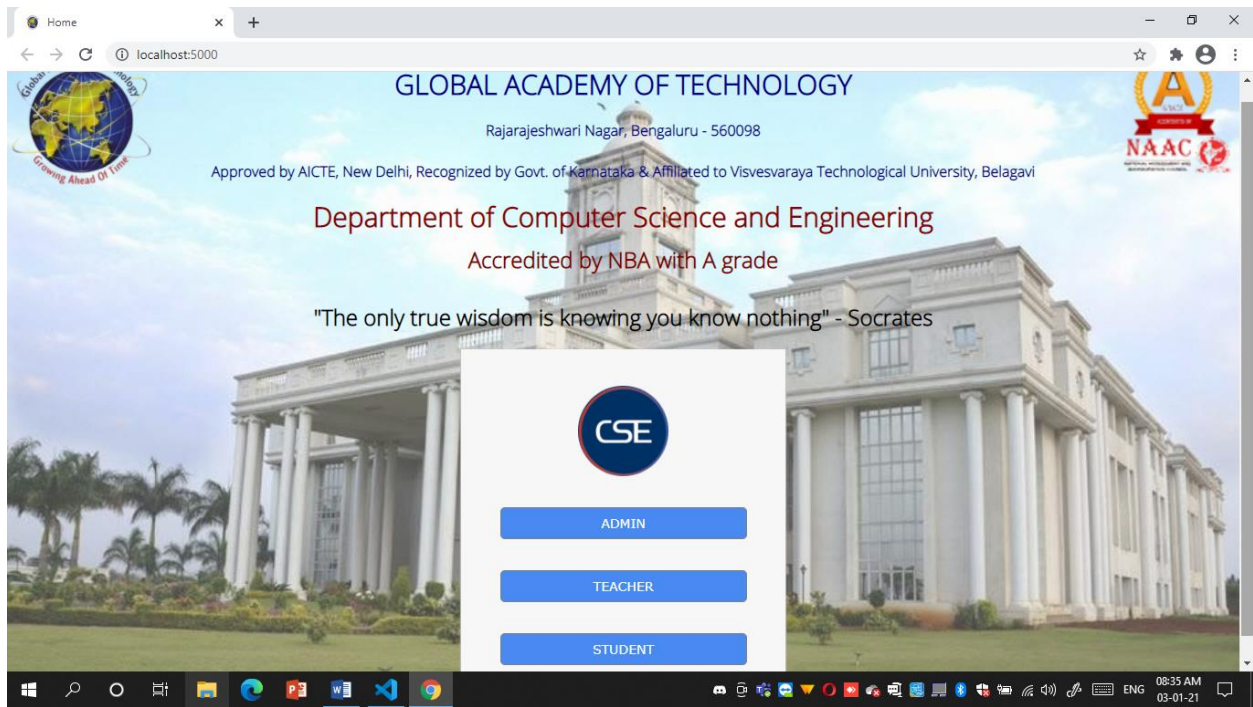
#### **CODE:**

```
CREATE DEFINER=`root`@`localhost` PROCEDURE `new_procedure`()
BEGIN
select * from borrow ;
END
```

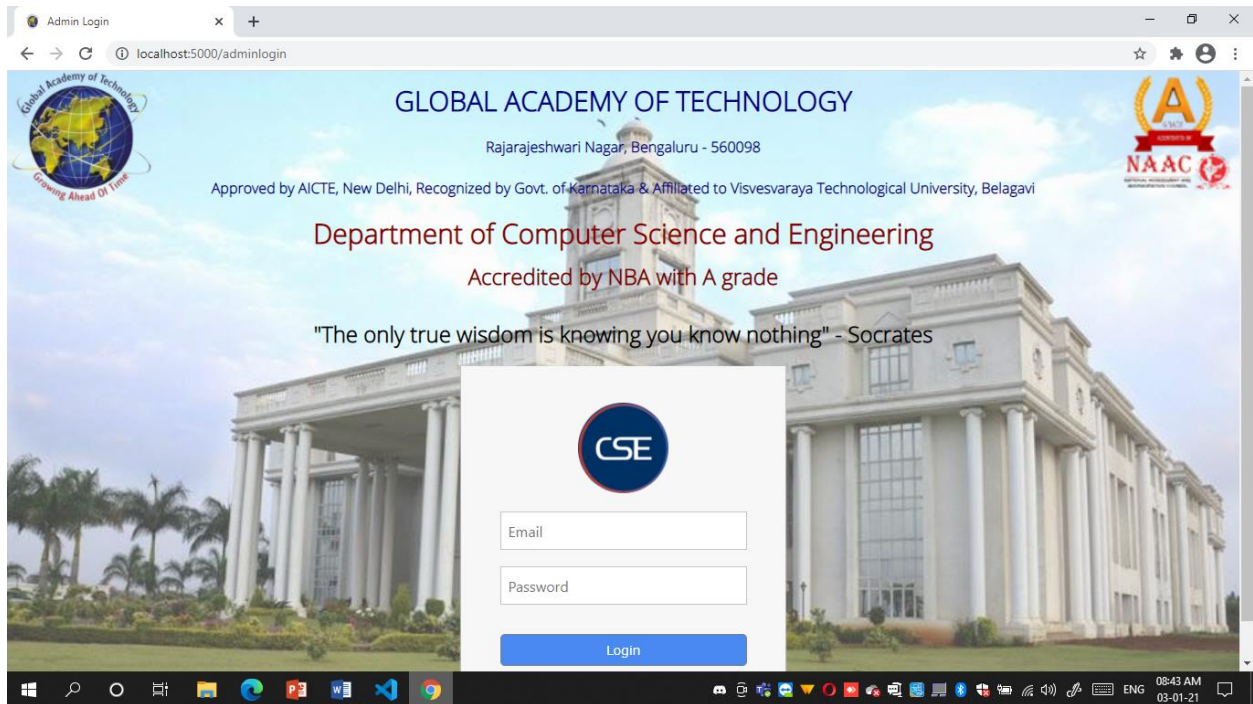
# CHAPTER 4

## RESULTS

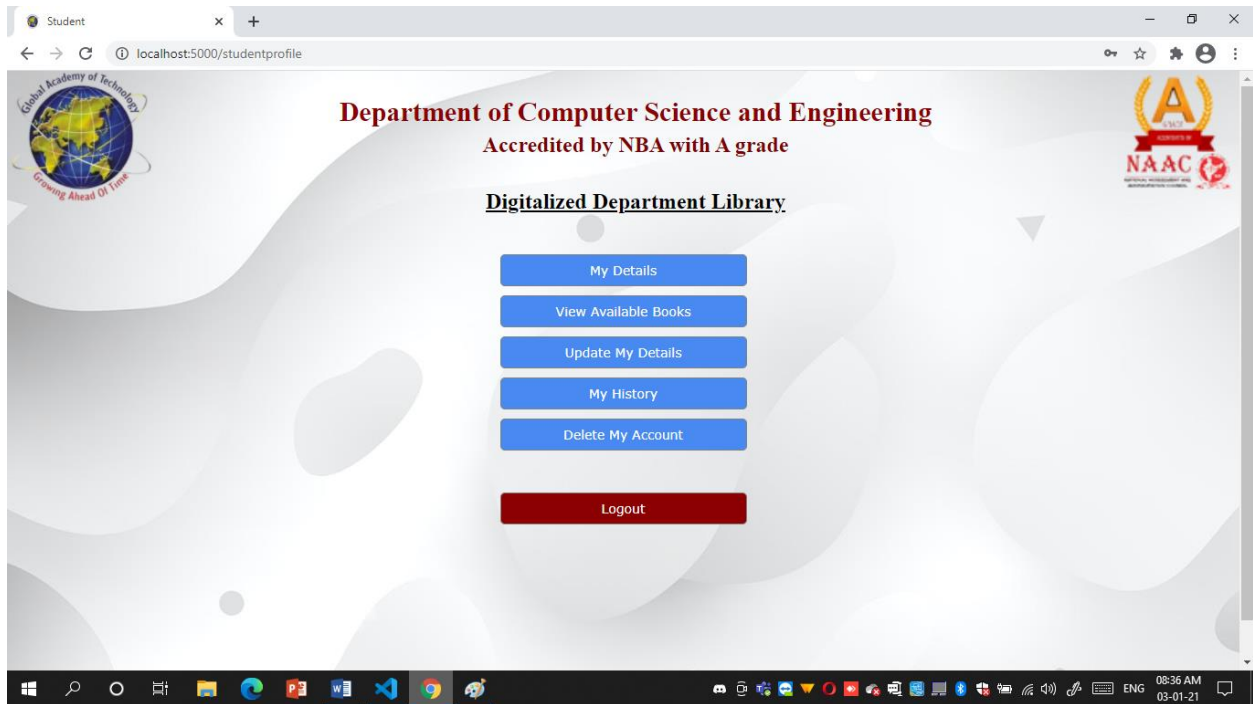
### 4.1 SNAPSHOTS



Snapshot 3.3.1 : Home page



Snapshot 3.3.2 : Admin Login (Similar for Student & Teacher Users)



**Snapshot 3.3.3 : Student Profile (Similar to Teacher Profile)**



**Snapshot 3.3.4 : Admin Profile**



## CONCLUSION

On working on this project, it helped us enhance our knowledge about python over a vast extent apart from the academics. It also helped us understand the need for the structuring of the storage format in the backend database. Immense amount of knowledge was gathered by either of us in order to understand the concept of web development in python using the micro framework “Flask”. The working on this project has also instilled a passion for Web Development. The micro framework Flask, the csv module, working with csv files, implementation of sessions, importing self-defined functions and organizing them into other folders and then importing and implementing them, and many more such new concepts were looked into and learnt to bring out a better working of the project. Organization of utility files helps in easy debugging of code in case of any bug encounters. Finally, not only as a part of academics but also a vast number of concepts were implemented thereby increasing a wide amount of knowledge. The ease in using python compared to other programming languages has instilled the urge to learn more about python for various other domains apart from Web Development.

Apart from Computer Programming Skills and Programming Knowledge, the project helped us learn a lot about the need of soft skills. We learnt major soft skills such as Time Management, Team Work and above all the Patience. While one worked on the structure of the backend the other worked on the frontend design (Time Management). After the necessary templates and backend queries were implemented, working together in order to enhance the functionality and taking into account one another’s solution taught us immensely about Team Work. During execution if there encountered and error, working together on the error or the bug taught us the need for Patience.

Overall, This Project was a very good entity that helped improve ourselves not only in academics point of view but also improved our soft skills. It is thereby been our pleasure to have worked with each other along with our guide to successfully complete the project on time with all necessary functionalities.

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