**THE KERERICHO TOWNSHIP TECHNICAL TRAINING INSTITUTE**

**FACULTY OF INFORMATION COMMUNICATION TECHNOLOGY**

**SCHOOL OF INFORMATION AND COMMUNICATION STUDIES**

**DEPARTMENT OF INFORMATION COMMUNICATION TECHNOLOGY**

**STUDENT MANAGEMENT SYSTEM**

**BY**

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**DICT/591/22M**

**A RESEARCH PROJECT SUBMITTED TO THE KENYA NATIONAL EXAMINATION COUNCIL, DEPARTMENTOF INFORMATION COMMUNICATION TECHNOLOGY, IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF THE AWARD OF DIPLOMA IN INFORMATION TECHNOLGY:**

**DECLARATION**

**STUDENT**

I hereby declare that this is my original work and has never been presented in any other knec examination. For an award of diploma in ICT.

Name: Brian kipkoech chebochok

College Number: Dict/591/22m

Sign: ………………………………………………………..

Date: ………………………………………………………..

**SUPERVISOR**

This project has been presented to examination with my approval as the supervisor in The

Kericho township college..

Name: Mr vincent ngeno

Sign: …………………………………………………………..

Date: ……………

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**CHAPTER-1**

# INTRODUCTION

**1.1 OBJECTIVES**:

* The main objective of the project is to design and develop a user friendly-system  Easy to use and an efficient computerized system.
* To develop an accurate and flexible system, it will eliminate data redundancy.
* To study the functioning of Students management System.
* To make a software fast in processing, with good user interface.
* To make software with good user interface so that user can change it and it should be used for a long time without error and maintenance.
* To provide synchronized and centralized farmer and seller database.
* Computerization can be helpful as a means of saving time and money.
* To provide better Graphical User Interface (GUI).
* Less chances of information leakage.
* Provides Security to the data by using login and password method.
* To provide immediate storage and retrieval of data and information.
* Improving arrangements for students’ coordination.
* Reducing paperwork.

**1.2 LIMITATIONS:**

* Time consumption in data entry as the records are to be manually maintained faculties a lot of time.
* Lot of paper work is involved as the records are maintained in the files and registers.
* Storage Requires as files and registers are used the storage space requirement is increased.
* Less Reliable use of papers for storing valuable data information is not at all reliable.

# CHAPTER-2

# STUDY OF EXISTING SYSTEM

**2.1 CASE STUDY**

The success of any organization such as School of Public Health, kericho township technical college hinges on its ability to acquire accurate and timely data about its operations, to manage this data effectively, and to use it to analyze and guide its activities. Integrated student database system offers users (Student, Registrar, HOD) with a unified view of data from multiple sources. To provide a single consistent result for every object represented in these data sources, data fusion is concerned with resolving data inconsistency present in the heterogeneous sources of data. The main objective of this project is to build a rigid and robust integrated student database system that will track and store records of students. This easy-to-use, integrated database application is geared towards reducing time spent on administrative tasks. The system is intended to accept process and generate report accurately and any user can access the system at any point in time provided internet facility is available. The system is also intended to provide better services to users, provide meaningful, consistent, and timely data and information and finally promotes efficiency by converting paper processes to electronic form. The system was developed using technologies such as, HTML, CSS, JS and MySQL. PYTHON- FLASK, HTML and CSS are used to build the user interface and database was built using MySQL. The system is free of errors and very efficient and less time consuming due to the care taken to develop it. All the phases of software development cycle are employed and it is worthwhile to state that the system is very robust. Provision is made for future development in the system.

**2.2 PROPOSED SYSTEM**

While there has been no consensus on the definition of Students Management in the literature, they have proposed that researchers adopt the below definition to allow for the coherent development of theory in the colleges. In order to have a successful students management, we need to make many decisions related to the flow of marks, attendance, and data. Each record should be added in a way to increase the scalability. Student management is more complex in colleges and other universities because of the impact on people’s number requiring adequate and accurate information of students need.

# CHAPTER 3

# 3.0 DATABASE DESIGN

**3.1 SOFTWARE REQUIREMENTS SPECIFICATION**

**3.1.2 SOFTWARE REQUIREMENTS:**

Frontend- HTML, CSS, Java Script, Bootstrap

Backend-Python flask (Python 3.11.0), SQLAlchemy,

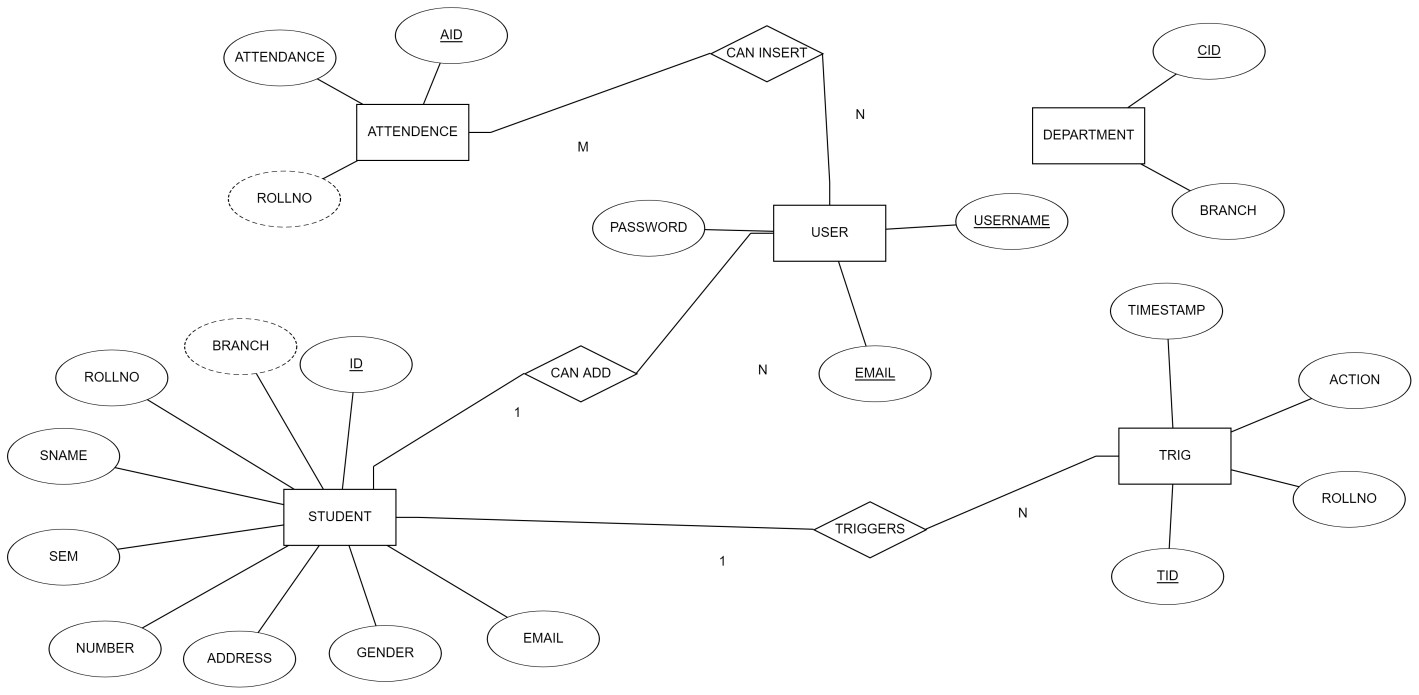
* Operating System: Windows 10
* Google Chrome/Internet Explorer
* XAMPP (Version-3.7)
* Python main editor (user interface): PyCharm Community
* workspace editor: Sublime text 3

**HARDWARE REQUIREMENTS:**

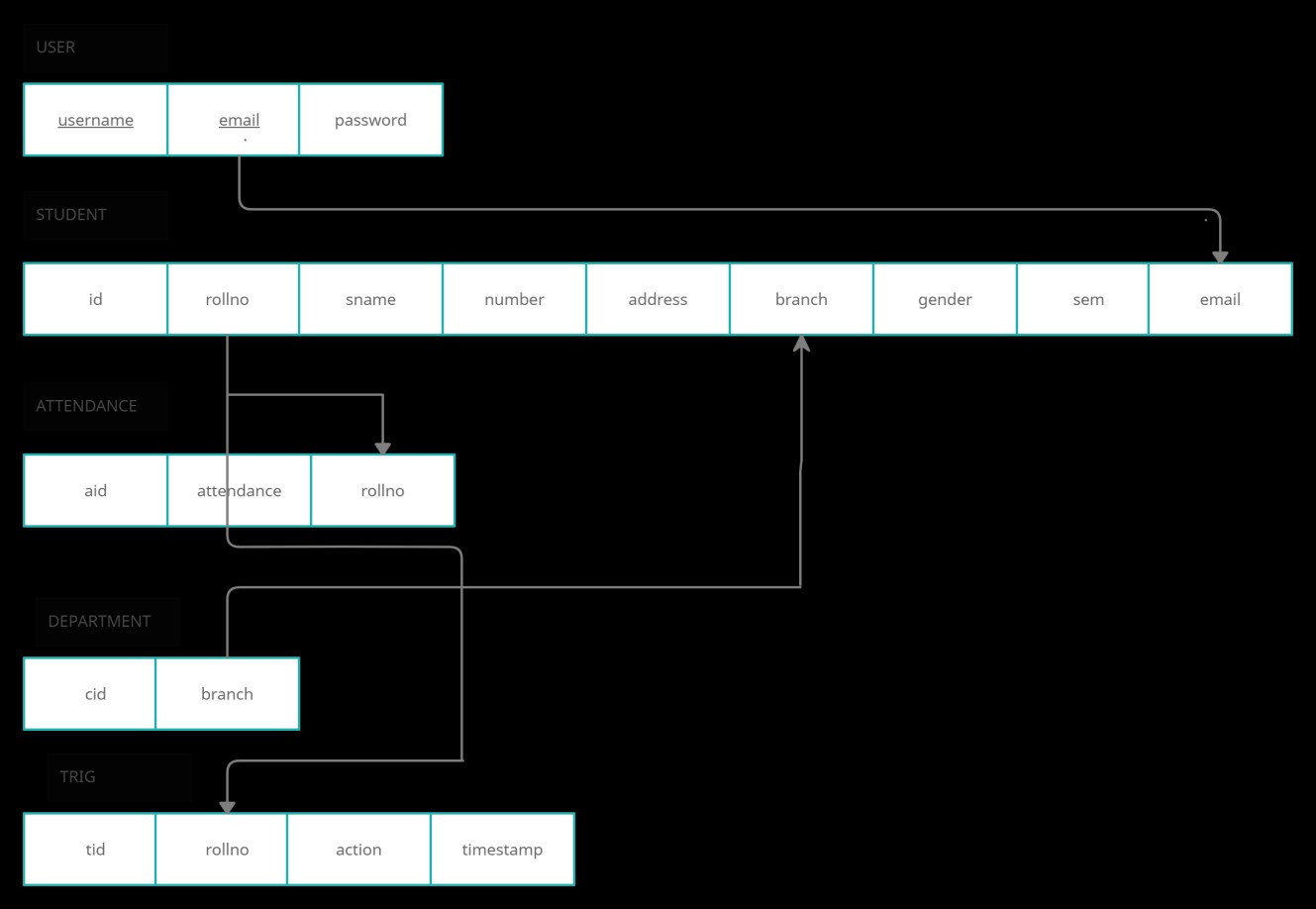
* Computer with a 1.1 GHz or faster processor
* Minimum 2GB of RAM or more
* 2.5 GB of available hard-disk space
* 5400 RPM hard drive
* 1366 × 768 or higher-resolution display
* DVD-ROM drive

**3.2 CONCEPTUAL DESIGN:**

* + 1. **E-R DIAGRAM:**



* + 1. **SCHEMA DIAGRAM:**



**3.3 IMPLEMENTATION:**

An "implementation" of Python should be taken to mean a program or environment which provides support for the execution of programs written in the Python language, as represented by the [Python r](https://wiki.python.org/moin/CPython)eference implementation.

There have been and are several distinct software packages providing of what we all recognize as Python, although some of those are more like distributions or variants of some existing implementation than a completely new implementation of the language.

**CHAPTER 4**

**4.0 Back E(MySQL)Database:**

A Database Management System (DBMS) is computer software designed for the purpose of managing databases, a large set of structured data, and run operations on the data requested by numerous users. Typical examples of DBMSs include Oracle, DB2, Microsoft Access, Microsoft SQL Server, Firebird, PostgreSQL, MySQL, SQLite, FileMaker and Sybase Adaptive Server Enterprise. DBMSs are typically used by Database administrators in the creation of Database systems. Typical examples of DBMS use include accounting, human resources and customer support systems. Originally found only in large companies with the computer hardware needed to support large data sets, DBMSs have more recently emerged as a fairly standard part of any company back office.

A DBMS is a complex set of software programs that controls the organization, storage, management, and retrieval of data in a database. A DBMS includes:

* A modeling language to define the schema of each database hosted in the DBMS, according to the DBMS data model.
* The dominant model in use today is the ad hoc one embedded in SQL, despite the objections of purists who believe this model is a corruption of the relational model, since it violates several of its fundamental principles for the sake of practicality and performance. Many DBMSs also support the Open Database Connectivity API that supports a standard way for programmers to access the DBMS.
* Data structures (fields, records, files and objects) optimized to deal with very large amounts of data stored on a permanent data storage device (which implies relatively slow access compared to volatile main memory). A database query language and report writer to allow users to interactively interrogate the database, analyze its data and update it according to the users’ privileges on data.
* Data security prevents unauthorized users from viewing or updating the database. Using passwords, users are allowed access to the entire database or subsets of it called sub schemas. For example, an employee database can contain all the data about an individual employee, but one group of users may be authorized to view only payroll data, while others are allowed access to only work history and student data.
* If the DBMS provides a way to interactively enter and update the database, as well as interrogate it, this capability allows for managing personal databases. However, it may not leave an audit trail of actions or provide the kinds of controls necessary in a multi-user organization. These controls are only available when a set of application programs are customized for each data entry and updating function.

 A transaction mechanism, that ideally would guarantee the ACID properties, in order to ensure data integrity, despite concurrent user accesses (concurrency control), and faults (fault tolerance).

* + It also maintains the integrity of the data in the database.
  + The DBMS can maintain the integrity of the database by not allowing more than one user to update the same record at the same time. The DBMS can help prevent duplicate records via unique index constraints; for example, no two customers with the same customer numbers (key fields) can be entered into the database. See ACID properties for more information (Redundancy avoidance).

When a DBMS is used, information systems can be changed much more easily as the organization's information requirements change. to the Organizations may use one kind of DBMS for daily transaction processing and then move the detail onto another computer that uses another DBMS better suited for random inquiries and analysis. Overall systems design decisions are performed by data administrators and systems analysts. Detailed database design is performed by database administrators.

**4.1 SQL:**

Structured Query Language (SQL) is the language used to manipulate relational databases.

SQL is tied very closely with the relational model.

* In the relational model, data is stored in structures called relations or tables*.*

SQL statements are issued for the purpose of:

* Data definition: Defining tables and structures in the database (DDL used to create, alter and drop schema objects such as tables and indexes)

.

## 4.2: Stored Procedure

Routine name: proc

Type: procedure

Definition: Select \* from register;

## 4.3: Triggers

It is the special kind of stored procedure that automatically executes when an event occurs in the database.

Triggers used:

1: Trigger name: on insert

Table: register

Time: after

Event: insert

INSERT INTO trig VALUES(null,NEW.rid,'Farmer Inserted',NOW())

2: Trigger name: on delete

Table: register

Time: after

Event: delete

Definition: INSERT INTO trig VALUES(null,OLD.rid,'FARMER DELETED',NOW())

3: Trigger name: on update

Table: register

Time: after

Event: update

Definition: INSERT INTO trig VALUES(null,NEW.rid,'FARMER UPDATED',NOW())

# CHAPTER FIVE

# 5.0 BACKEND PYHTON WITH MYSQL CODE

from flask import Flask,render\_template,request,session,redirect,url\_for,flash from flask\_sqlalchemy import SQLAlchemy from flask\_login import UserMixin

from werkzeug.security import generate\_password\_hash,check\_password\_hash from flask\_login import login\_user,logout\_user,login\_manager,LoginManager from flask\_login import login\_required,current\_user import json

# MY db connection local\_server= True app = Flask(\_\_name\_\_)

app.secret\_key='kusumachandashwini'

# this is for getting unique user access login\_manager=LoginManager(app) login\_manager.login\_view='login'

@login\_manager.user\_loader def load\_user(user\_id):

return User.query.get(int(user\_id))

#

app.config['SQLALCHEMY\_DATABASE\_URL']='mysql://username:password@localhost/databas\_table\_ name'

app.config['SQLALCHEMY\_DATABASE\_URI']='mysql://root:@localhost/students' db=SQLAlchemy(app)

# here we will create db models that is tables class Test(db.Model):

id=db.Column(db.Integer,primary\_key=True) name=db.Column(db.String(100)) email=db.Column(db.String(100))

class Department(db.Model):

cid=db.Column(db.Integer,primary\_key=True) branch=db.Column(db.String(100))

class Attendence(db.Model):

aid=db.Column(db.Integer,primary\_key=True) rollno=db.Column(db.String(100)) attendance=db.Column(db.Integer())

class Trig(db.Model):

tid=db.Column(db.Integer,primary\_key=True) rollno=db.Column(db.String(100)) action=db.Column(db.String(100)) timestamp=db.Column(db.String(100))

class User(UserMixin,db.Model): id=db.Column(db.Integer,primary\_key=True) username=db.Column(db.String(50)) email=db.Column(db.String(50),unique=True) password=db.Column(db.String(1000))

class Student(db.Model):

id=db.Column(db.Integer,primary\_key=True) rollno=db.Column(db.String(50)) sname=db.Column(db.String(50)) sem=db.Column(db.Integer) gender=db.Column(db.String(50)) branch=db.Column(db.String(50)) email=db.Column(db.String(50)) number=db.Column(db.String(12)) address=db.Column(db.String(100)) @app.route('/') def index():

return render\_template('index.html')

@app.route('/studentdetails') def studentdetails():

query=db.engine.execute(f"SELECT \* FROM `student`") return render\_template('studentdetails.html',query=query)

@app.route('/triggers') def triggers():

query=db.engine.execute(f"SELECT \* FROM `trig`") return render\_template('triggers.html',query=query)

@app.route('/department',methods=['POST','GET']) def department(): if request.method=="POST": dept=request.form.get('dept')

query=Department.query.filter\_by(branch=dept).first() if query:

flash("Department Already Exist","warning") return redirect('/department') dep=Department(branch=dept) db.session.add(dep) db.session.commit() flash("Department Addes","success") return render\_template('department.html')

@app.route('/addattendance',methods=['POST','GET']) def addattendance():

query=db.engine.execute(f"SELECT \* FROM `student`") if request.method=="POST": rollno=request.form.get('rollno') attend=request.form.get('attend') print(attend,rollno)

atte=Attendence(rollno=rollno,attendance=attend) db.session.add(atte) db.session.commit()

flash("Attendance added","warning")

return render\_template('attendance.html',query=query)

@app.route('/search',methods=['POST','GET']) def search(): if request.method=="POST": rollno=request.form.get('roll')

bio=Student.query.filter\_by(rollno=rollno).first() attend=Attendence.query.filter\_by(rollno=rollno).first() return render\_template('search.html',bio=bio,attend=attend)

return render\_template('search.html')

@app.route("/delete/<string:id>",methods=['POST','GET'])

@login\_required def delete(id):

db.engine.execute(f"DELETE FROM `student` WHERE `student`.`id`={id}") flash("Slot Deleted Successful","danger") return redirect('/studentdetails')

@app.route("/edit/<string:id>",methods=['POST','GET'])

@login\_required def edit(id):

dept=db.engine.execute("SELECT \* FROM `department`") posts=Student.query.filter\_by(id=id).first() if request.method=="POST":

rollno=request.form.get('rollno') sname=request.form.get('sname') sem=request.form.get('sem') gender=request.form.get('gender') branch=request.form.get('branch') email=request.form.get('email') num=request.form.get('num') address=request.form.get('address')

query=db.engine.execute(f"UPDATE `student` SET

`rollno`='{rollno}',`sname`='{sname}',`sem`='{sem}',`gender`='{gender}',`branch`='{branch}',`email`='{em ail}',`number`='{num}',`address`='{address}'")

flash("Slot is Updates","success") return redirect('/studentdetails')

return render\_template('edit.html',posts=posts,dept=dept)

@app.route('/signup',methods=['POST','GET']) def signup(): if request.method == "POST": username=request.form.get('username') email=request.form.get('email') password=request.form.get('password') user=User.query.filter\_by(email=email).first() if user:

flash("Email Already Exist","warning") return render\_template('/signup.html') encpassword=generate\_password\_hash(password)

new\_user=db.engine.execute(f"INSERT INTO `user` (`username`,`email`,`password`) VALUES ('{username}','{email}','{encpassword}')")

# this is method 2 to save data in db

# newuser=User(username=username,email=email,password=encpassword)

# db.session.add(newuser) # db.session.commit()

flash("Signup Succes Please Login","success") return render\_template('login.html')

return render\_template('signup.html')

@app.route('/login',methods=['POST','GET']) def login(): if request.method == "POST": email=request.form.get('email') password=request.form.get('password') user=User.query.filter\_by(email=email).first() if user and check\_password\_hash(user.password,password):

login\_user(user)

flash("Login Success","primary") return redirect(url\_for('index')) else:

flash("invalid credentials","danger") return render\_template('login.html')

return render\_template('login.html')

@app.route('/logout') @login\_required def logout(): logout\_user()

flash("Logout SuccessFul","warning") return redirect(url\_for('login'))

@app.route('/addstudent',methods=['POST','GET'])

@login\_required def addstudent():

dept=db.engine.execute("SELECT \* FROM `department`") if request.method=="POST":

rollno=request.form.get('rollno') sname=request.form.get('sname') sem=request.form.get('sem') gender=request.form.get('gender') branch=request.form.get('branch') email=request.form.get('email') num=request.form.get('num') address=request.form.get('address') query=db.engine.execute(f"INSERT INTO `student`

(`rollno`,`sname`,`sem`,`gender`,`branch`,`email`,`number`,`address`) VALUES

('{rollno}','{sname}','{sem}','{gender}','{branch}','{email}','{num}','{address}')") flash("Booking Confirmed","info")

return render\_template('student.html',dept=dept)

@app.route('/test') def test(): try:

Test.query.all() return 'My database is Connected' except:

return 'My db is not Connected'

app.run(debug=True)

# 5.1 FRONT END CODE

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="utf-8">

<meta content="width=device-width, initial-scale=1.0" name="viewport">

<title>{% block title %}

{% endblock title %}</title>

<meta content="" name="description">

<meta content="" name="keywords">

{% block style %}

{% endblock style %}

<link

href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,700,700i|Raleway:3 00,400,500,700,800" rel="stylesheet">

<!-- Vendor CSS Files -->

<link href="static/assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">

<link href="static/assets/vendor/venobox/venobox.css" rel="stylesheet">

<link href="static/assets/vendor/font-awesome/css/font-awesome.min.css" rel="stylesheet">

<link href="static/assets/vendor/owl.carousel/assets/owl.carousel.min.css" rel="stylesheet"> <link href="static/assets/vendor/aos/aos.css" rel="stylesheet">

<!-- Template Main CSS File -->

<link href="static/assets/css/style.css" rel="stylesheet">

</head>

<body>

<!-- ======= Header ======= -->

<header id="header">

<div class="container">

<div id="logo" class="pull-left">

<a href="/" class="scrollto">S.M.S</a>

</div>

<nav id="nav-menu-container">

<ul class="nav-menu">

<li class="{% block home %}

{% endblock home %}"><a href="/">Home</a></li>

<li><a href="/addstudent">Students</a></li>

<li><a href="/addattendance">Attendance</a></li>

<li><a href="/department">Department</a></li>

<li><a href="/triggers">Records</a></li>

<li><a href="/studentdetails">Student Details</a></li>

<li><a href="/search">Search</a></li>

<li><a href="/about">About</a></li>

{% if current\_user.is\_authenticated %}

<li class="buy-tickets"><a href="">Welcome</a></li>

<li class="buy-tickets"><a href="/logout">Logout</a></li>

{% else %}

<li class="buy-tickets"><a href="/signup">Signin</a></li>

{% endif %}

</ul>

</nav><!-- #nav-menu-container -->

</div>

</header><!-- End Header -->

<!-- ======= Intro Section ======= -->

<section id="intro">

<div class="intro-container" data-aos="zoom-in" data-aos-delay="100">

<h1 class="mb-4 pb-0">STUDENT MANAGEMENT SYSTEM </span> </h1>

<p class="mb-4 pb-0">DBMS Mini Project Using Flask & MYSQL</p>

<a href="" class="about-btn scrollto">View More</a>

</div>

</section><!-- End Intro Section -->

<main id="main">

{% block body %}

{% with messages=get\_flashed\_messages(with\_categories=true) %}

{% if messages %}

{% for category, message in messages %}

<div class="alert alert-{{category}} alert-dismissible fade show" role="alert"> {{message}}

</div>

{% endfor %}

{% endif %}

{% endwith %}

{% endblock body %}

<a href="#" class="back-to-top"><i class="fa fa-angle-up"></i></a>

<!-- Vendor JS Files -->

<script src="static/assets/vendor/jquery/jquery.min.js"></script>

<script src="static/assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>

<script src="static/assets/vendor/jquery.easing/jquery.easing.min.js"></script>

<script src="static/assets/vendor/php-email-form/validate.js"></script>

<script src="static/assets/vendor/venobox/venobox.min.js"></script>

<script src="static/assets/vendor/owl.carousel/owl.carousel.min.js"></script>

<script src="static/assets/vendor/superfish/superfish.min.js"></script>

<script src="static/assets/vendor/hoverIntent/hoverIntent.js"></script>

<script src="static/assets/vendor/aos/aos.js"></script>

<!-- Template Main JS File -->

<script src="static/assets/js/main.js"></script>

</body>

</html>

2.Students.html

{% extends 'base.html' %}

{% block title %}

Add Students

{% endblock title %}

{% block body %}

<h3 class="text-center"><span>Add Student Details</span> </h3>

{% with messages=get\_flashed\_messages(with\_categories=true) %}

{% if messages %}

{% for category, message in messages %}

<div class="alert alert-{{category}} alert-dismissible fade show" role="alert">

{{message}}

</div>

{% endfor %}

{% endif %}

{% endwith %}

<br>

<div class="container">

<div class="row">

<div class="col-md-4"></div>

<div class="col-md-4">

<form action="/addstudent" method="post">

<div class="form-group">

<label for="rollno">Roll Number</label>

<input type="text" class="form-control" name="rollno" id="rollno">

</div>

<br>

<div class="form-group">

<label for="sname">Student Name</label>

<input type="text" class="form-control" name="sname" id="sname">

</div>

<br>

<div class="form-group">

<label for="sem">Sem</label>

<input type="number" class="form-control" name="sem" id="sem">

</div>

<br>

<div class="form-group">

<select class="form-control" id="gender" name="gender" required>

<option selected>Select Gender</option>

<option value="male">Male</option>

<option value="female">Female</option>

</select>

</div>

<br>

<div class="form-group">

<select class="form-control" id="branch" name="branch" required>

<option selected>Select Branch</option>

{% for d in dept %}

<option value="{{d.branch}}">{{d.branch}}</option>

{% endfor %}

</select>

</div>

<br>

<div class="form-group">

<label for="email">Email</label>

<input type="email" class="form-control" name="email" id="email">

</div>

<br>

<div class="form-group">

<label for="num">Phone Number</label>

<input type="number" class="form-control" name="num" id="num">

</div>

<br>

<div class="form-group">

<label for="address">Address</label>

<textarea class="form-control" name="address" id="address"></textarea> </div>

<br>

<button type="submit" class="btn btn-danger btn-sm btn-block">Add Record</button>

</form>

<br>

<br>

</div>

<div class="col-md-4"></div>

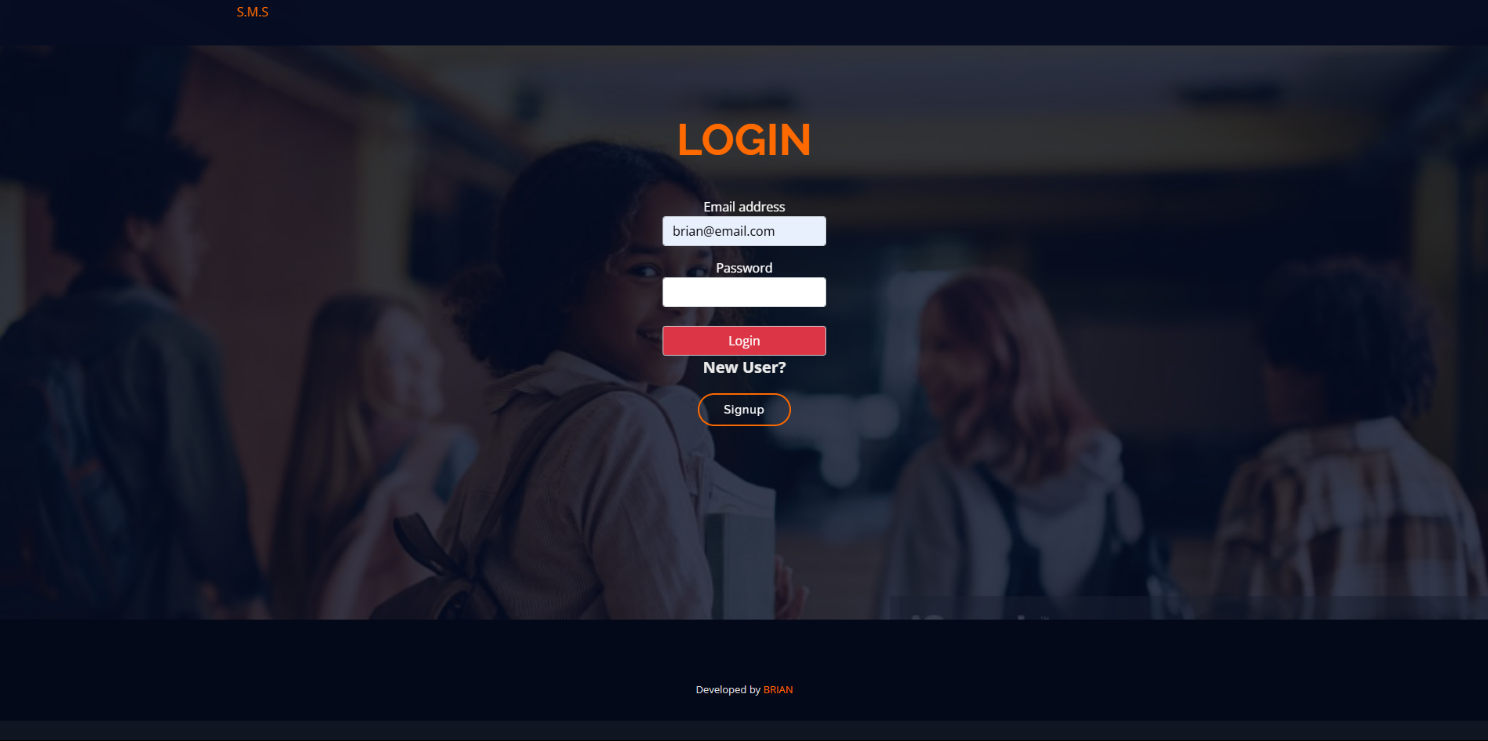
</div></div>

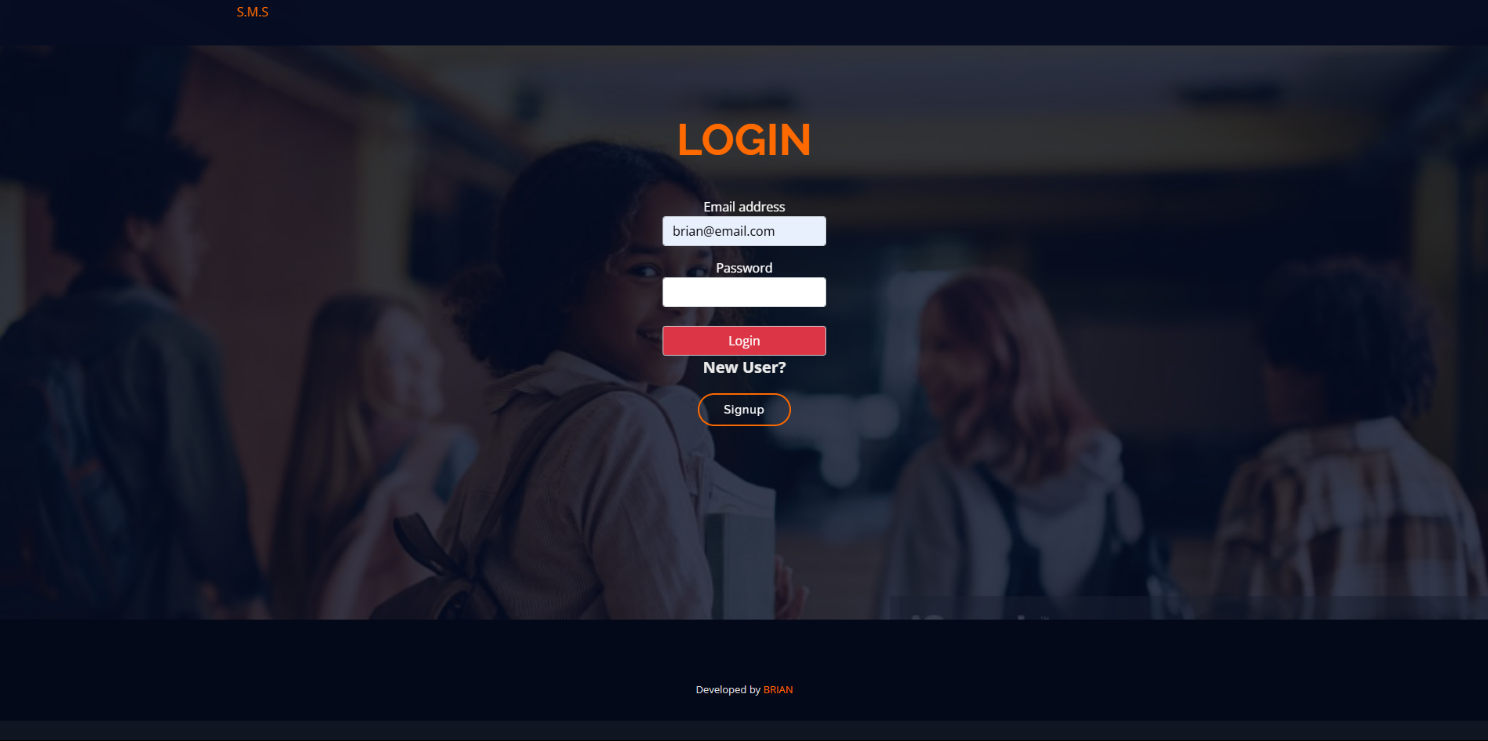
{% endblock body %}

**USER INTERFACE**

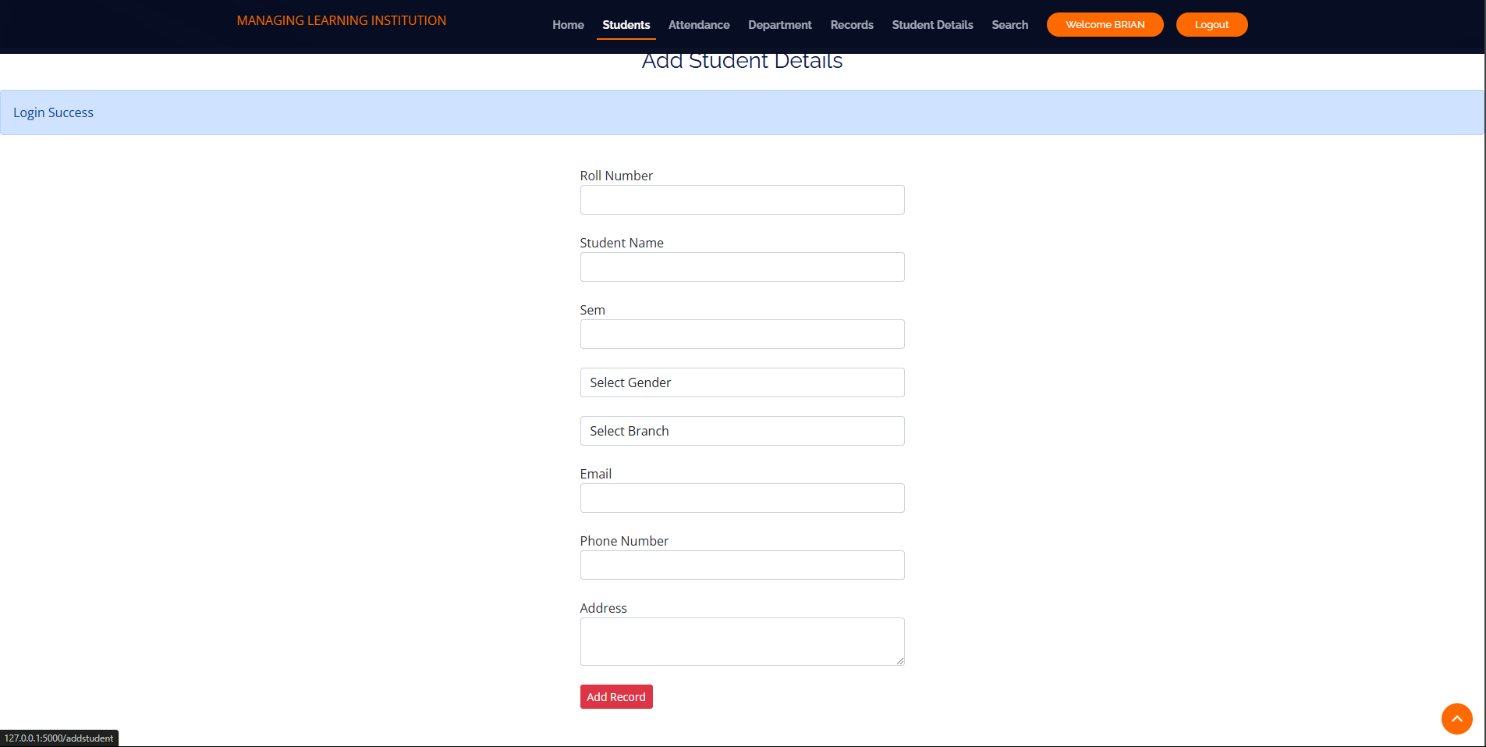
**5.4 SCREEN SHOTS**

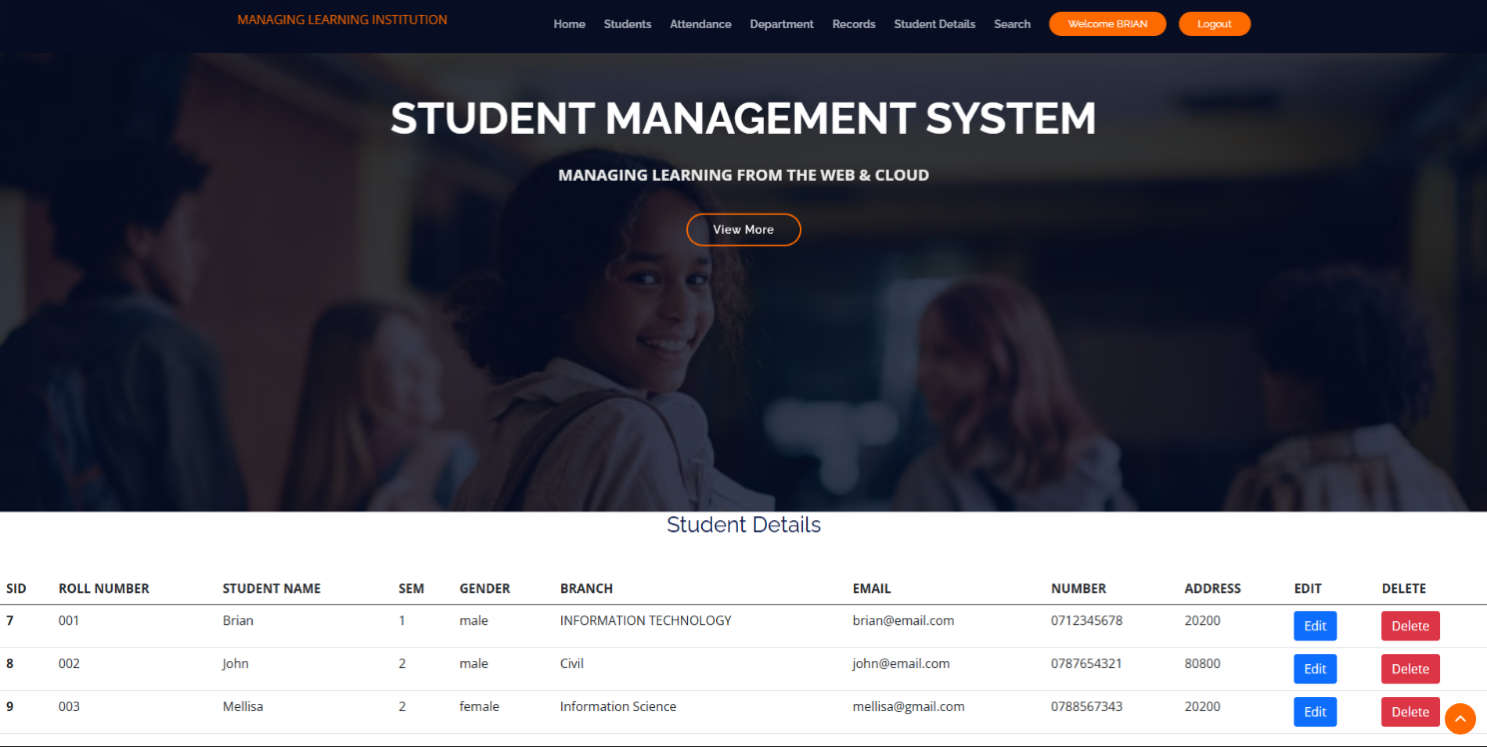
**LOGIN PAGE:**

****

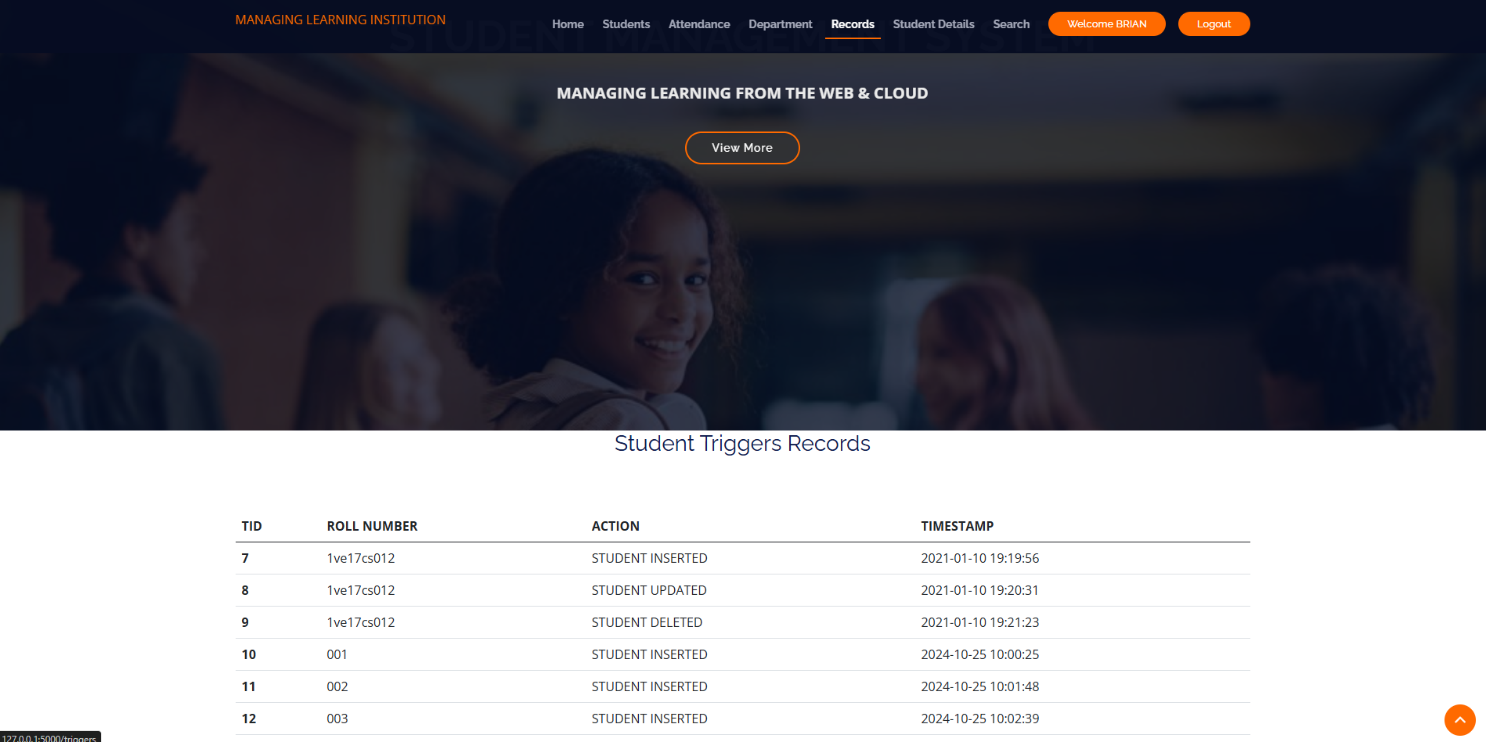


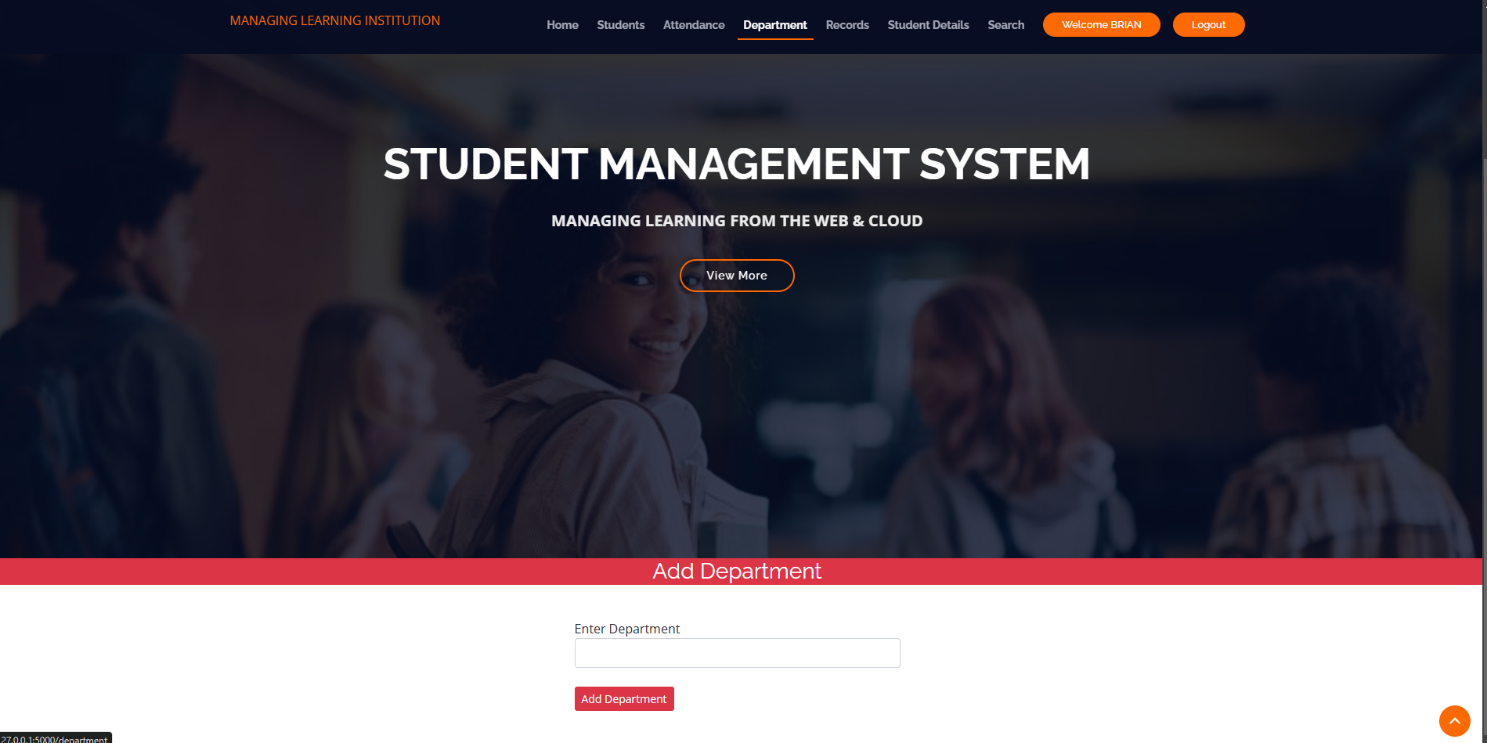
## ADD STUDENTS INFO

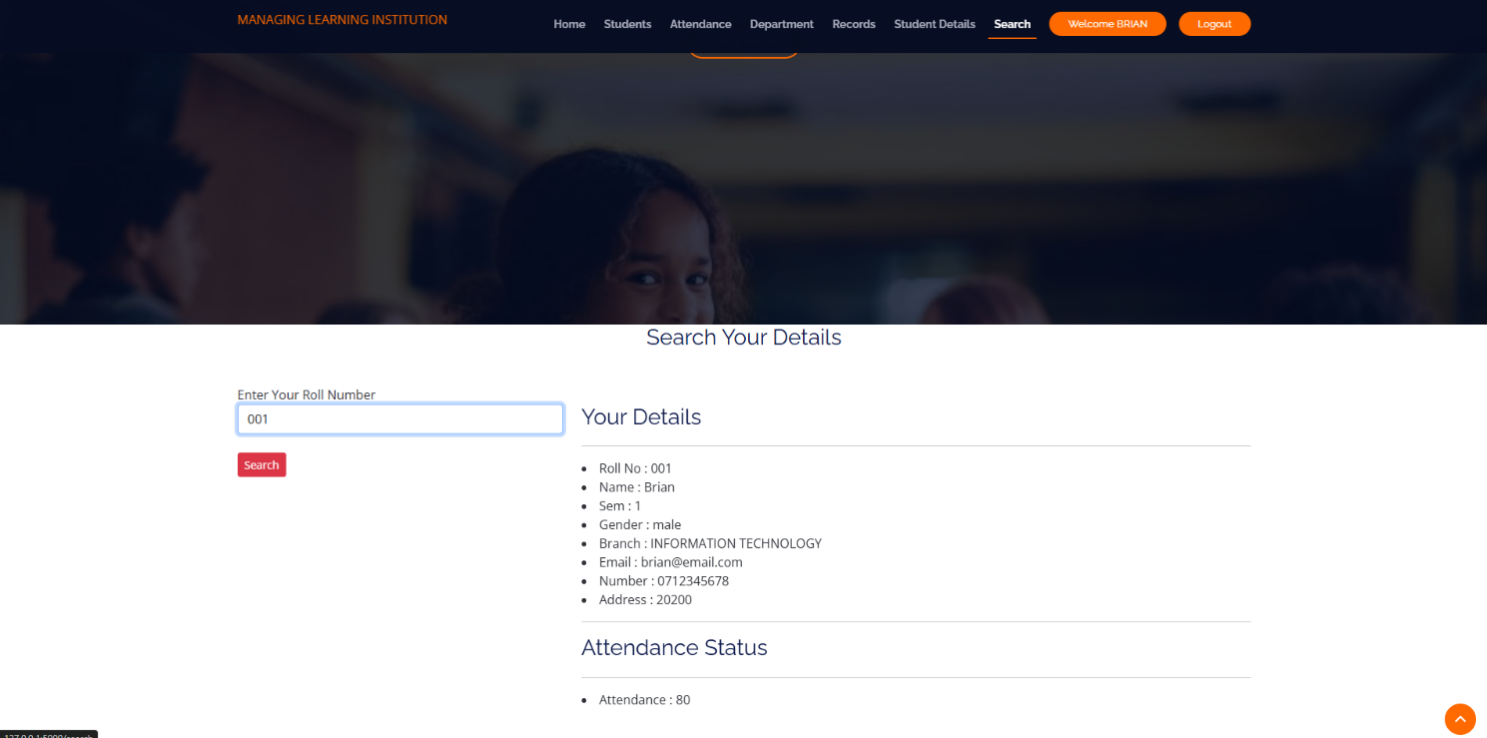
****



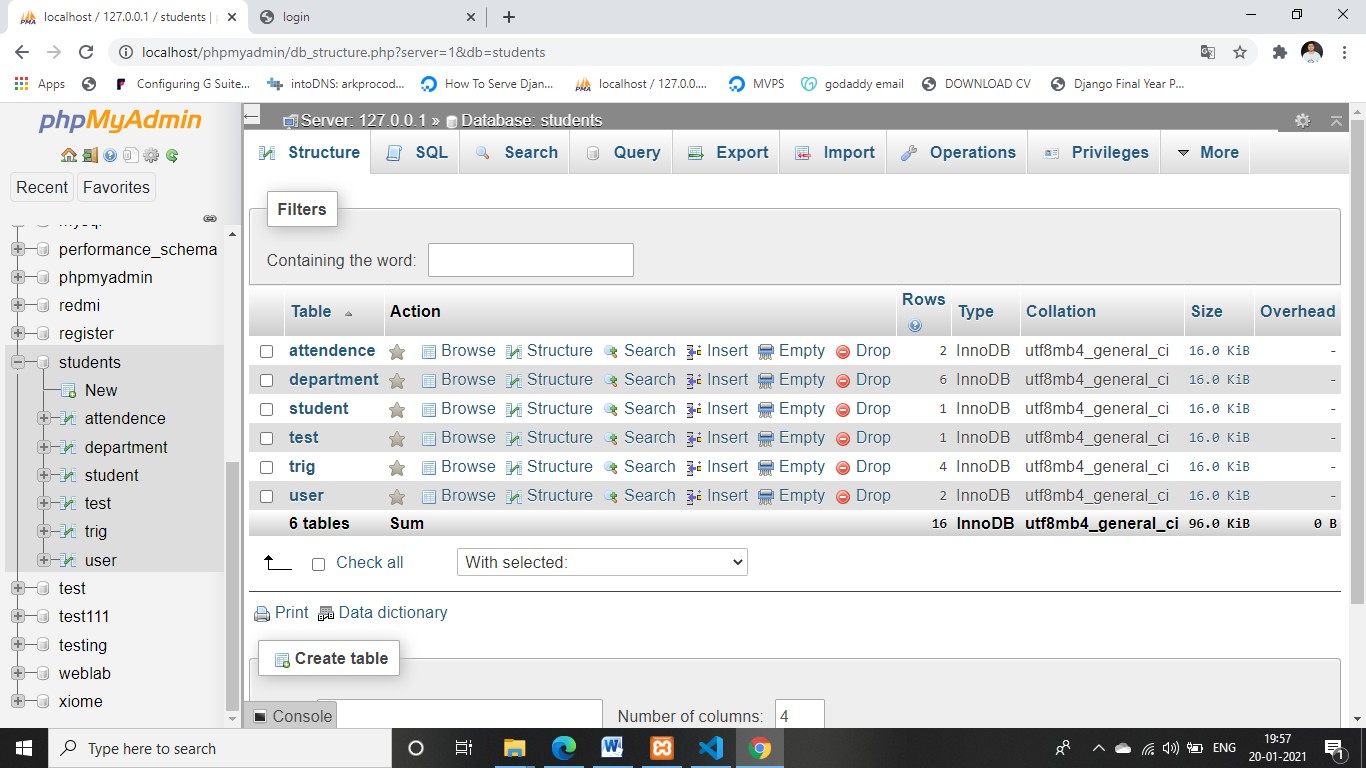
**TRIGGERS RECORDS**

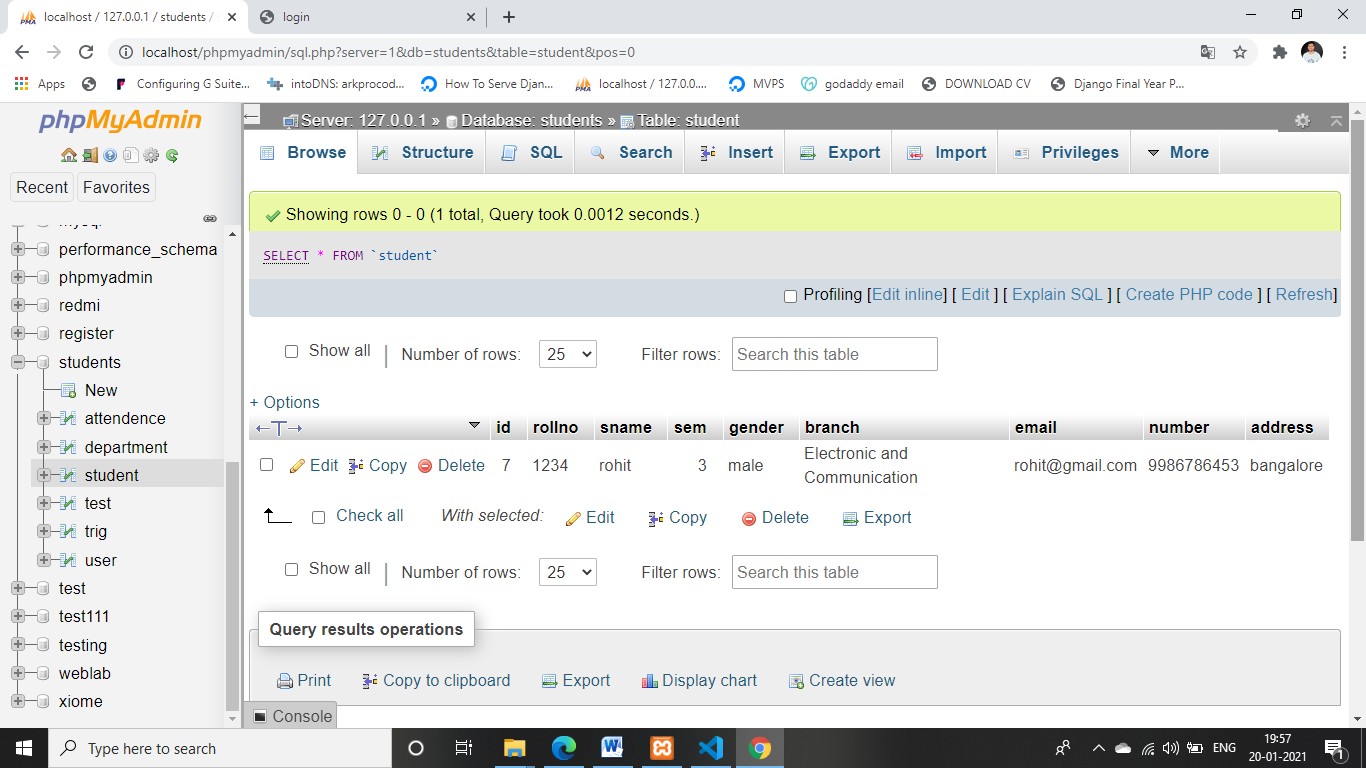
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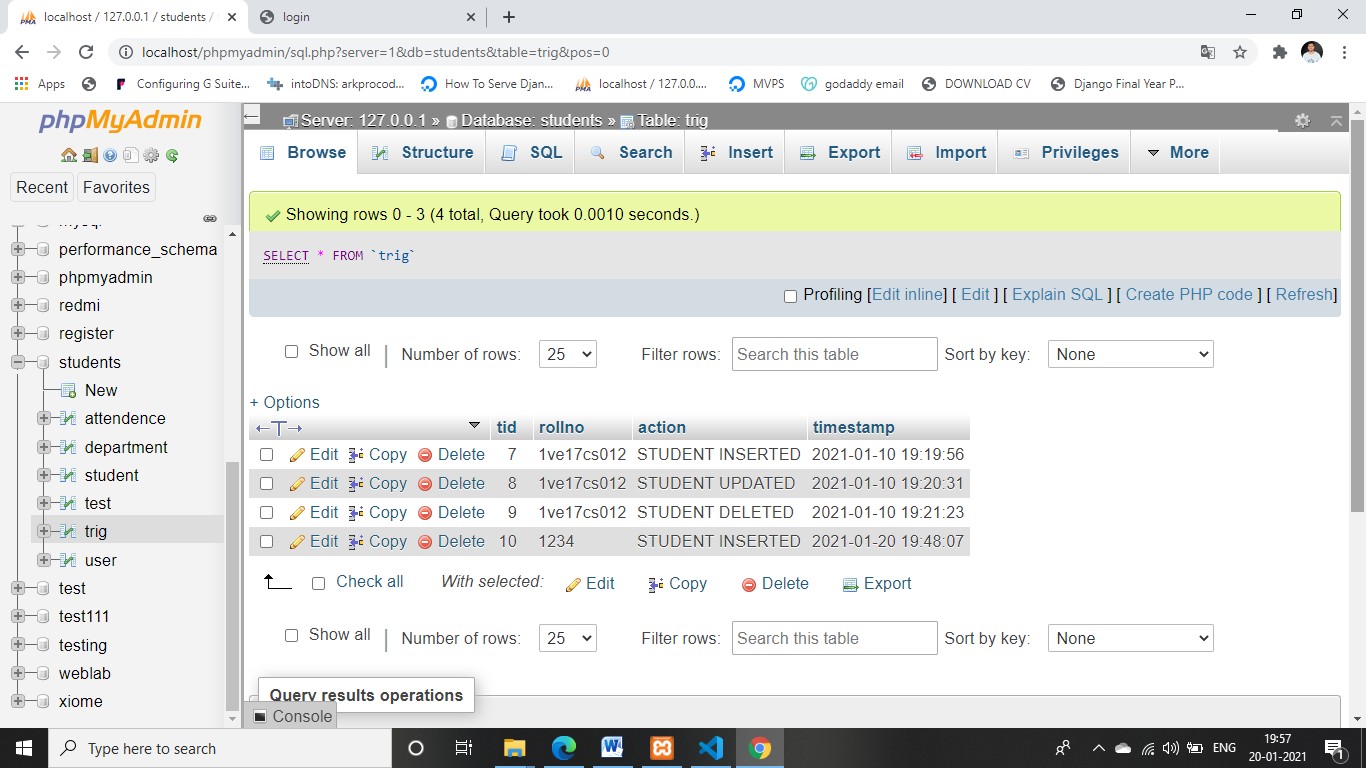
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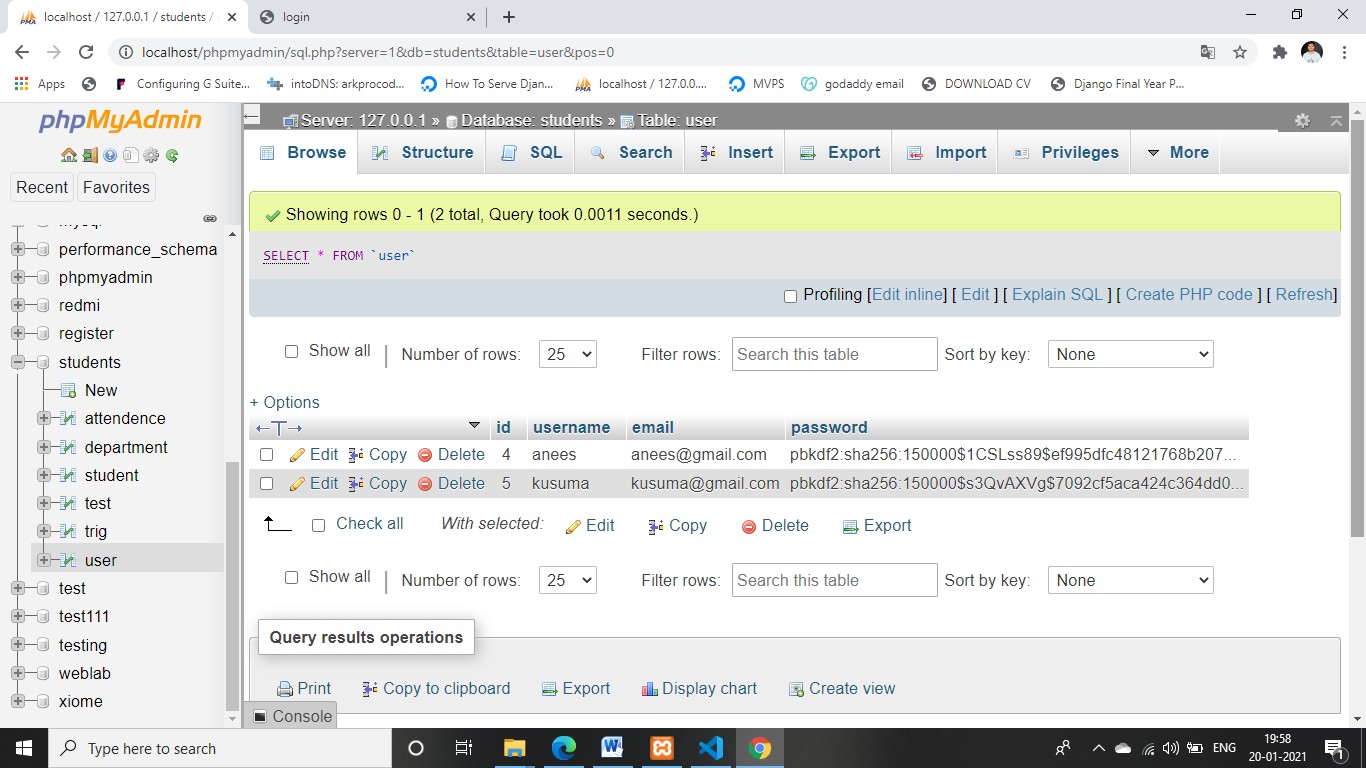
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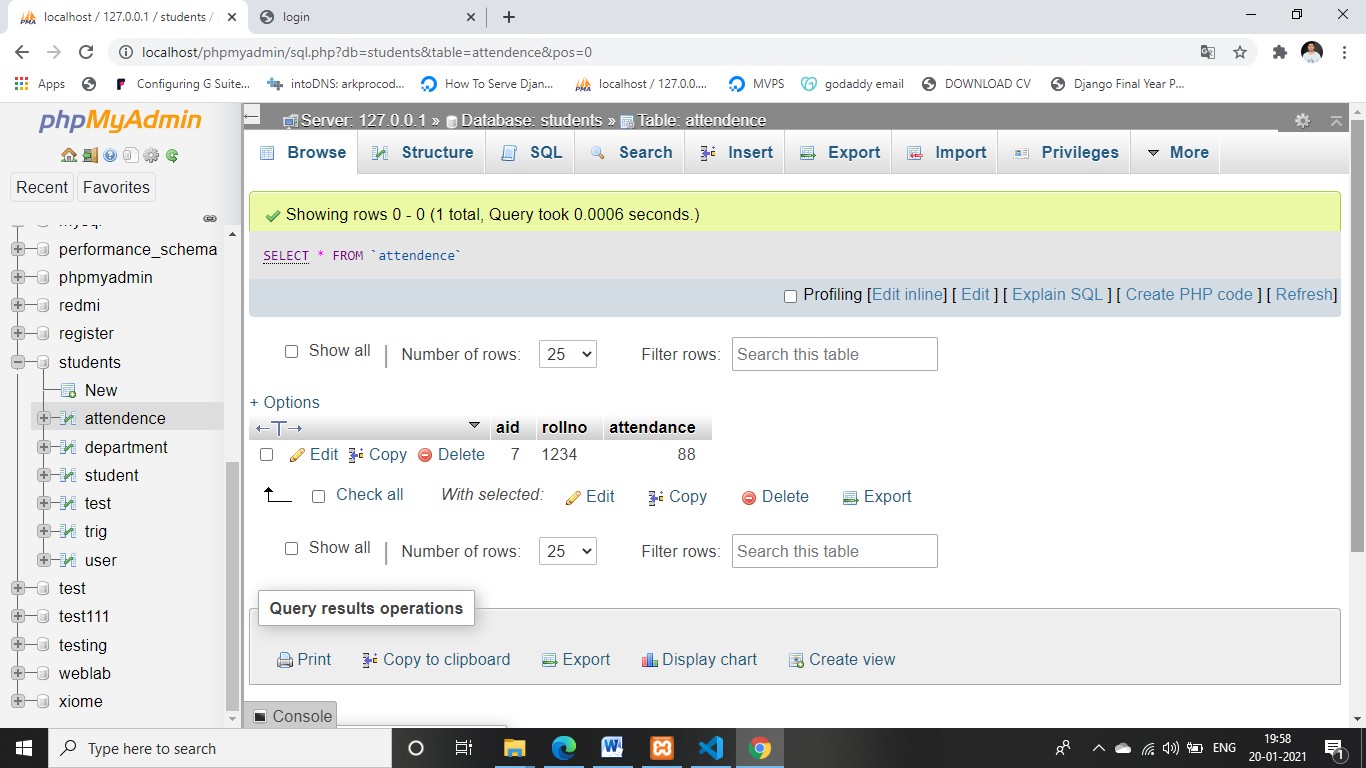
**5.3 DATABASE LOCALHOST**











# 5.4 CONCLUSION

STUDENT MANAGEMENT SYSTEM successfully implemented based on online data filling which helps us in administrating the data user for managing the tasks performed in students. The project successfully used various functionalities of Xampp and python flask and also create the fully functional database management system for online portals.

Using MySQL as the database is highly beneficial as it is free to download, popular and can be easily customized. The data stored in the MySQL database can easily be retrieved and manipulated according to the requirements with basic knowledge of SQL.

With the theoretical inclination of our syllabus it becomes very essential to take the atmost advantage of any opportunity of gaining practical experience that comes along. The building blocks of this Major Project “Students Management System” was one of these opportunities. It gave us the requisite practical knowledge to supplement the already taught theoretical concepts thus making us more competent as a computer engineer. The project from a personal point of view also helped us in understanding the following aspects of project development:

* The planning that goes into implementing a project.

* The importance of proper planning and an organized methodology.

* The key element of team spirit and co-ordination in a successful project.

# FUTURE ENHANCEMENT

* Enhanced database storage facility

* Enhanced user friendly GUI

* more advanced results systems

* online feedbacks forms

# REFERENCES

* https://www.google.com

* <http://www.getbootstrap.com>