COLLEGE PREDICTOR

Project thesis submitted in partial fulfillment of major project for VIII semester
B. Tech in Computer Science and Engineering

BY

K. VEERA VENKATA SATYA SAI

17131A05A2

K. PADMAVATHI

18135A0519

K. SRAVANI

18135A0520

K. LAKSHMI PARVATHI

18135A0523

Under the Esteemed Guidance of

Mr. N.S.S.S. Girish Kumar

Assistant Professor

Department of Computer Science and Engineering

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING (Autonomous)

Approved by AICTE, New Delhi and Affiliated to JNTU-Kakinada

Re-accredited by NAAC with "A" Grade with a CGPA of 3.47/4.00

Madhurawada, Visakapathanam - 530 048

COLLEGE PREDICTOR

Project thesis submitted in partial fulfillment of Industry Oriented Mini Project

for

VIII semester, B. Tech in Computer Science and Engineering

By

K. VEERA VENKATA SATYA SAI	17131A05A2
K. PADMAVATHI	18135A0519
K. SRAVANI	18135A0520
K. LAKSHMI PARVATHI	18135A0523

Under the Esteemed Guidance of

Mr. N.S.S.S. Girish Kumar

Assistant Professor

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING (Autonomous)

Approved by AICTE, New Delhi and Affiliated to JNTU-Kakinada

Re-accredited by NAAC with "A" Grade with a CGPA of 3.47/4.00

Madhurawada, Visakapathanam-530 048

Year of submission:2020

Certificate

This is to certify that the project thesis entitled COLLEGE PREDICTOR being submitted by

K. VEERA VENKATA SATYA SAI	17131A05A2
K. PADMAVATHI	18135A0519
K. SRAVANI	18135A0520
K. LAKSHMI PARVATHI	18135A0523

In partial fulfillment for the mini project in Computer Science and Engineering to the Jawaharlal Nehru Technological University Kakinada, Kakinada is a record of bonafied work carried out under my guidance and supervision.

The results embodied in this project thesis have not been submitted to any other University or Institute for the award of any Degree or Diploma.

(Project Guide)
Mr. N.S.S.S. Girish Kumar.
Assistant Professor
GVPCOE(A)

Head of the Department
Dr. P. Krishna Subba Rao
Professor & Head of Department
Department Of CSE
GVPCOE(A)

ACKNOWLEDGEMENT

We thank **Prof. A. B. Koteswara Rao**, principal, Gayatri Vidya Parishad College

of Engineering (Autonomous) for extending his utmost support and cooperation in providing all the provisions for the successful completion of the project.

We consider it our privilege to express our deepest gratitude to **Dr. P. Krishna Subba Rao**, Professor, Head of Department, Computer Science and Engineering for his valuable suggestions and constant motivation that greatly helped the project work to get successfully completed.

We would like to thank our internal guide **Prof. Mr. N.S.S.S. Girish Kumar**, Assistant Professor, Training & Placements Officer, *Department of Training & Placements* for helping us throughout the development of the project.

We are thankful for their support, guidance and valuable suggestions. We also thank all the members of the staff in Computer Science Engineering for their sustained help in our pursuits. We thank all those who contributed directly or indirectly in successfully carrying out this work.

Last but not least, I would like to thank all my teammates for their able involvement in effective execution of may project and my family members for their everlasting encouragement.

By,

K. VEERA VENKATA SATYA SAI (17131A05A2)

K. PADMAVATHI (18135A0519)

K. SRAVANI (18135A0520)

K. LAKSHMI PARVATHI (18135A0523)

ABSTRACT

You have probably heard it over and over again: choosing a college is one of the most important decisions you will make in your life. And it's true. Where you attend college will have a lasting impact on your personal and professional life.

College Predictor helps students make decisions for choosing a right college. Students face a lot of difficulties to secure an admission in the college of their choice. The current scenario of an engineering admission process is little complicated and not so easy in terms of selecting an appropriate college according to the scores and field of interest. There are many colleges offering multiple engineering courses. So it becomes troublesome for students to organize and list-out the proper colleges of their choice for courses according to their performance score. The college predictor uses past years colleges cut-off data for predicting the most probable colleges including the students personal preferences. Based on that, it predicts the likelihood of a student to enter into a university or college. The smart list generator would enable the student to prepare the list of colleges, which could be needed to be filled in during the admission process.

Some people felt like the entire process was mysterious and intimidating. College predictor equipped them with a direct interface to efficiently select which colleges would best suit their interests and intended major.

TABLE OF CONTENTS

1. INTRODUCTION

There are many engineering colleges in India, for which the admission are carried out through the Centralized Admission Process(CAP). During this process, the student's supposed to give their preference list of colleges. Then based on their score, marks ,category, and other attributes college is allotted to them.

Most of the students make mistakes in their preference list due to the lack of knowledge, improper and incorrect analysis of colleges and insecure predictions. Hence students regret about their college after allotment.

So our aim is to resolve the difficulty faced among most of the students through our project by predicting the list of colleges based on their rank and interests.

College predictor is used to predict the likelihood of the students getting admission into colleges based on their rank, caste, gender and preferences. And also it provides a match percentile for every college based on their preferences.

2. LITERATURE SURVEY

From the past several years, getting the admission into various engineering colleges in India are mainly based on the engineering entrance exam. There are multiple engineering entrance exams in India at national and state level. The acceptability of The entrance test score varies from college to college and state to state.

This web service collects the user preferences in various fields such as rank, career opportunities, medical care, hostel facility, etc. With the help of data from the database and the Django framework we will display the list of selected colleges as per user preference.

The Django Framework provides various services including user authentication and stores the user data using sessions. It also provides automated mail service based on the information stored in the sessions for authorised users.

For accurate results the datasets are collected manually with utmost care. We have collected data from almost all the engineering colleges in AP that accepts admission through AP Eamcet.

3. SOFTWARE REQUIREMENT ANALYSIS

3.1 Functional Requirements

Functional requirements define a function of a system or its component. A function described as a set of inputs, the behaviour and the outputs.

3.1.1 Software Requirements

- Operating System : Windows
- Programming Language : Python
- Python Version 3.5 or higher (64-bit only)
- Django Framework version 3.0.8
- Django Pandas, Django Numpy
- MySql Database - mysqlclient

3.1.2 Hardware Requirements

- System Architecture 64-bit

I DJANGO

Django is an open-source python web framework used for rapid development, pragmatic, maintainable, clean design, and secure websites. A web application framework is a toolkit of all components needed for application development. Its main goals are simplicity, flexibility, reliability, and scalability.

Django has its own naming system for all functions and components (e.g., HTTP responses are called “views”). It also has an admin panel, which is deemed easier to work and other technical features, including:

1. Simple syntax;
2. Its own web server;
3. MVC (Model-View-Controller) core architecture;
4. An ORM (Object Relational Mapper);
5. HTTP libraries;
6. Middleware support; and
7. A Python unit test framework.

Commands used in Django

Creating a Django Project

Move to a target folder and execute the following command in your command prompt. This will create a project folder with initial setup.

django-admin.py startproject PROJECTNAME

- Making changes in “settings.py”

  Connecting database

  Go to your mysql server, Create a user account and create a database with the name you like. Add this following dictionary to your “settings.py” file.

```
DATABASES = {
        'default': {
    'ENGINE': 'django.db.backends.mysql',
    'NAME': 'database name',
    'USER': 'username',
    'PASSWORD': 'your password',
    'HOST': 'host name',
    'PORT': 'port number',
    'OPTIONS': {
    'init_command': "SET sql_mode='STRICT_TRANS_TABLES'",
  },
  }
}
```

Adding Email Connections

Before adding email settings, make sure your email allows less secure apps to access the API (Use this link LESS SECURE APPS). Now add the following code to your “settings.py” file.

```
EMAIL_BACKEND = 'django.core.mail.backends.smtp.EmailBackend'
```

```
EMAIL_HOST = 'smtp.gmail.com'

EMAIL_USE_TLS = True

EMAIL_USE_SSL = False

EMAIL_PORT = 587

EMAIL_HOST_USER = 'your mail id'

EMAIL_HOST_PASSWORD = 'your password'
```

- Creating an app

  Move to the newly created folder and execute the following command in your command prompt. This will create an application folder with given name and initial files.

  python manage.py startapp APPNAME

  Now add the APPNAME to the list named “INSTALLED_APPS” in “settings.py” file.

- Creating “urls.py” for the newly installed app and including it in the project urls

  Goto the APPNAME folder, and create a file named “urls.py”. This is where you will store urls for the Application. Now goto “urls.py” in the project application folder and include the urls from your application to your root project.

  Note: Refer Django Documentation for syntaxes and guidance.

- Creating a template folder to store html files

  Move to the app folder and create a new folder named “templates”. Move to the templates folder and create a new folder named “APPNAME”. This is where you will keep all your html files.

- Creating a static folder to store images and css files

  Move to the app folder and create a new folder named “static”. Move to the static folder and create a new folder named “APPNAME”. This is where you will keep all your image files and css files.

- Creating models, connecting to database server and importing data

  In the app folder, create a new file named “models.py”. This file is used to generate tables and maintain the database. After creating your models, execute the following two commands.

python manage.py makemigrations

python manage.py migrate

This will re-initialize your database with the models you created and also with the predefined models provided by Django like AUTH, SESSIONS, etc.

Update the data into your tables, the datasheets for this project i.e, cutoff ranks and college details are available in the reference section.

- Creating custom forms

  In the app folder, create a new file named “forms.py”. This file is used to create custom forms that are used in html files using template language.

- Installing dependency packages, mysqlclient, Django Pandas, Django Numpy

  Execute the following commands in your command prompt

  pip install mysqlclient

  pip install django-pandas

II HTML and TEMPLATE LANGUAGE

HTML is used to create electronic documents (called pages) that are displayed on the World Wide Web. Each page contains a series of connections to other pages called hyperlinks. Every web page you see on the Internet is written using one version of HTML code or another.

The Template Language is a kind of MarkUp language used to create html pages dynamically. The syntax of template language is {% YOUR CODE %}. The syntax for every structure in template language is almost similar to that of Python language except every open tag is enclosed with an end tag. It can be easily read over the Internet.

III CSS

CSS is the language for describing the presentation of Web pages, including colors, layout, and fonts. It allows one to adapt the presentation to different types of devices, such as large screens, small screens, or printers. CSS is independent of HTML and can be used with any XML-based markup language.

IV JAVASCRIPT

JavaScript is a text-based programming language used both on the client-side and server-side that allows you to make web pages interactive. Where HTML and CSS are languages that give structure and style to web pages, JavaScript gives web pages interactive elements that engage a user.

3.1.3 Files and File Systems

For all the file names, look at the following file system image.

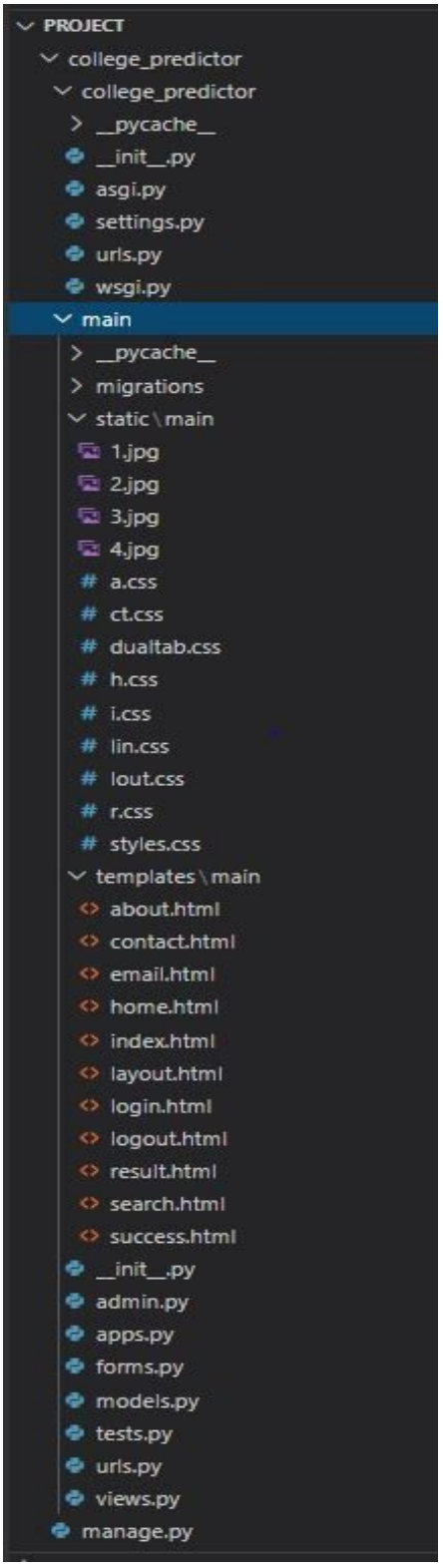

Fig - 3.1

4. SOFTWARE DESIGN

4.1 DATA FLOW DIAGRAM

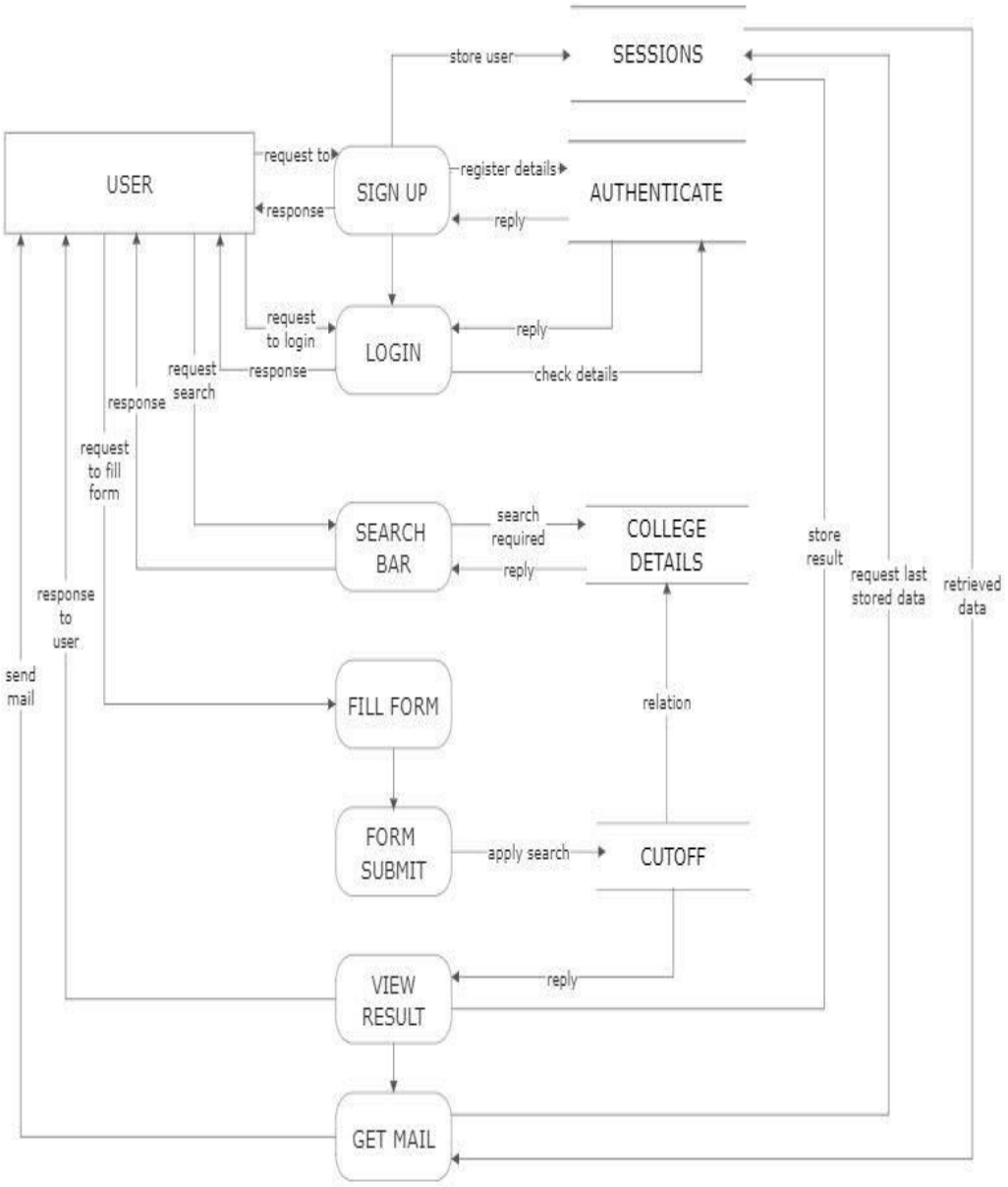

Fig - 4.1

4.2 UML DIAGRAMS

4.2.1 CLASS DIAGRAM

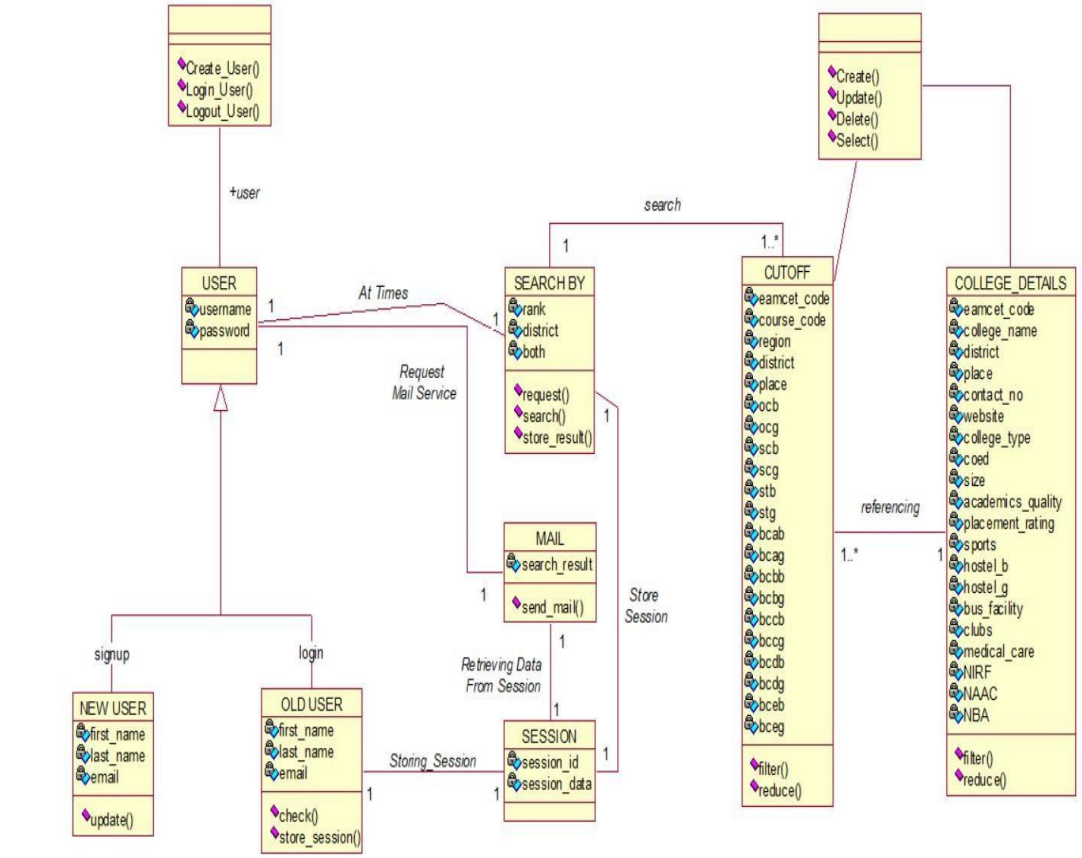

Fig - 4.2

4.2.2 INTERACTION DIAGRAMS

4.2.2.1 COLLABORATION DIAGRAM

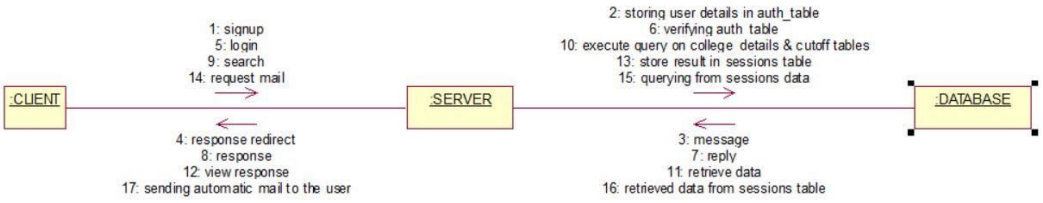

Fig - 4.3

4.2.2.2 SEQUENCE DIAGRAM

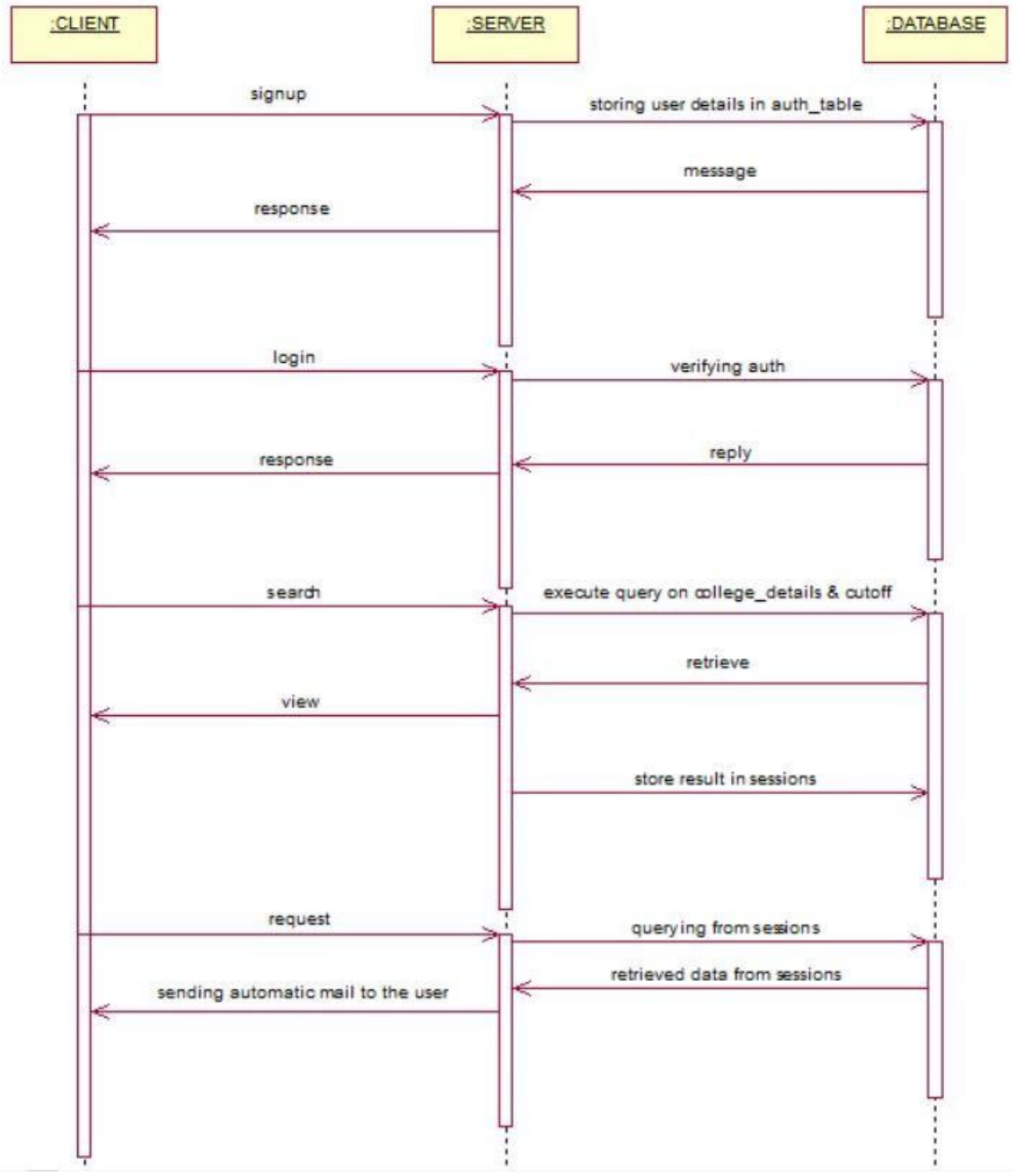

Fig - 4.4

4.2.3 USE CASE DIAGRAM

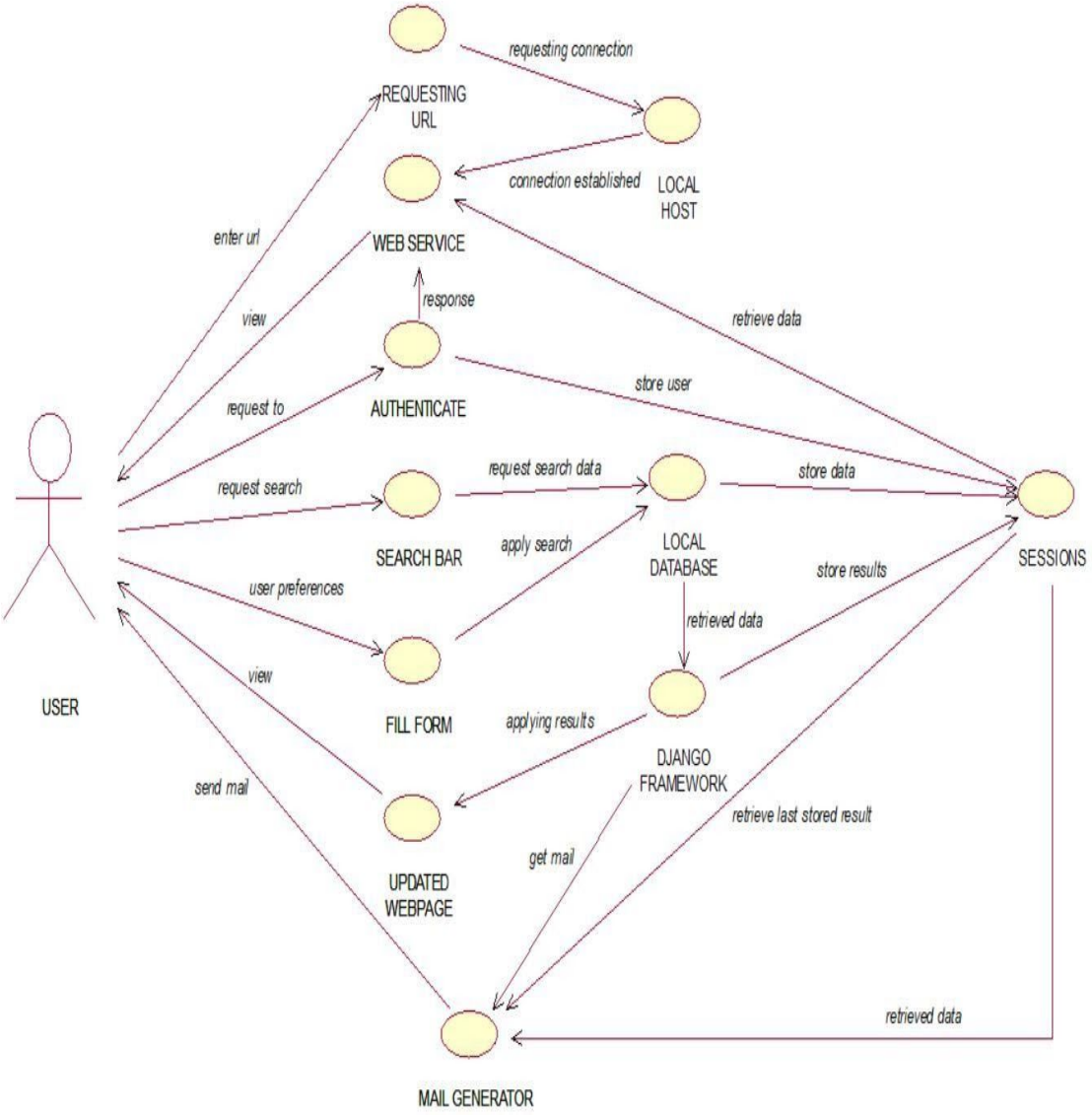

Fig - 4.5

4.3 CONTROL FLOW DIAGRAM

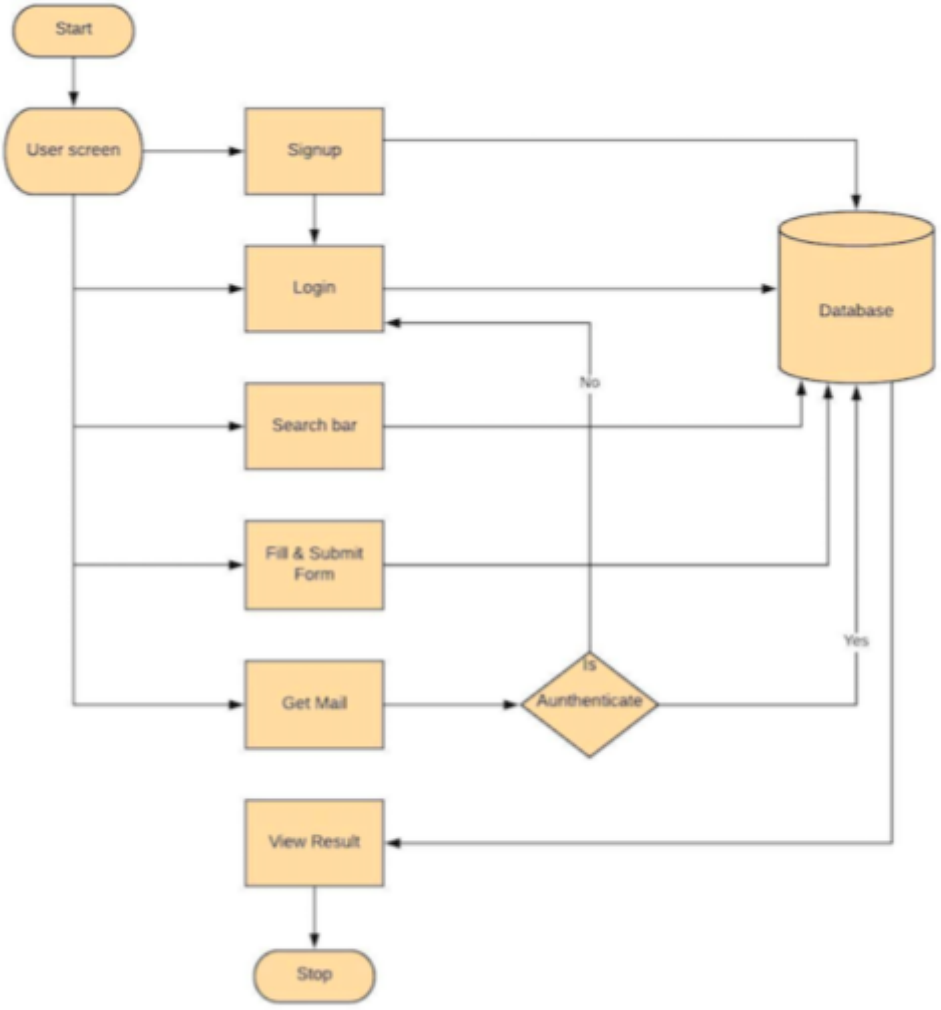

Fig - 4.6

4.4 ENTITY-RELATIONSHIP DIAGRAM

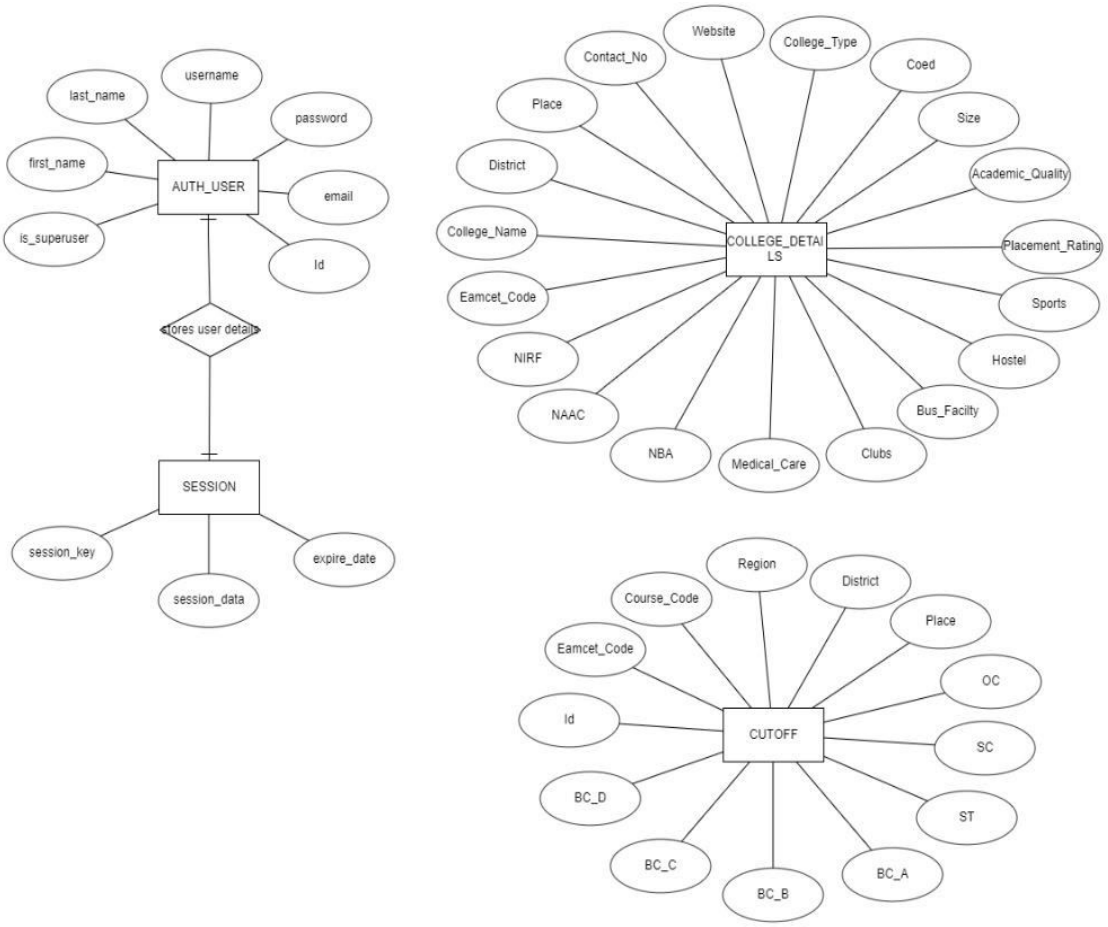

Fig - 4.7

5. CODING TEMPLATE

5.1 Methods and Functions of "views.py" file

- The methods "index", "home", "aboutUs", "contactUs" simply redirect the respective html templates.
- The method pair "login", "logout" form a dual pair function that authorises the user and allows him to access his customized pages and also to close his session whenever he may like.
- The method "signup" is used to register an user account for himself in the website.
- The method "mail" is used to send automated email based on the data stored in the sessions.
- The methods "query1", "query2", "query3" are used to process the data from three different forms in the Homepage and generate the result and render it using a html template.
- The method "cleandata" is used to clean the data frame obtained after retrieving data from the database.
- The method "calculatepercentage" is used to calculate the percentage for every college in the result based on the user preferences.

5.2 Functions of JavaScript

- In Indexpage, the scripting method "showSlides" is used to display the sliding animation with four images.
- In Homepage, the scripting method "showForm" is used for displaying the interactive view for the three different forms used in the application. The other method "showPreferences" is used to expand any one form that is active among the three, whenever the user wishes to give his preferences for colleges.
- In Loginpage, the scripting method pair "right", "left" is used to exchange the CSS properties upon each click on tabs "LOGIN" and "SIGNUP". The other method "pass_on" is used for redirection to Homepage.
- In the Logout Page and Success page, the script contains a set of three functions: "redirect", "updateSecs", "countdownTimer" together work to display a countdown of 5 secs and later redirect to Indexpage and Homepage respectively.

6.TESTING

Testing is the process of detecting errors. Testing performs a very critical role for quality assurance and for ensuring the reliability of software. The results of testing are used later on during maintenance also.

6.1 Purpose of Testing

The aim of testing is often to demonstrate that a program works by showing that it has no errors. The basic purpose of the testing phase is to detect the errors that may be present in the program. Hence one should not start testing with the intent of showing that a program works, but the intent should be to show that a program doesn't work. Testing is the process of executing a program with the intent of finding errors.

6.1.1 Testing Objectives

The main objective of testing is to uncover a host of errors, systematically and with minimum effort and time. Stating formally, we can say,

- Testing is a process of executing a program with the intent of finding an error.
- A successful test is one that uncovers an as yet undiscovered error.
- A good test case is one that has a high probability of finding error, if it exists.
- The software more or less confirms to the quality and reliable standards.

6.2 Levels of Testing

In order to uncover the errors present in different phases we have the concept of levels of testing. The basic levels of testing are as shown below.

6.2.1 System Testing

The philosophy behind testing is to find errors. Test cases are devised with this in mind. A strategy employed for system testing is code testing.

6.2.2 Code Testing

This strategy examines the logic of the program. To follow this method we developed some test data that resulted in executing every instruction in the program and module i.e. every path is tested. Systems are not designed as entire nor are they tested as single systems. To ensure that the coding is perfect two types of testing is performed or for that matter is performed or that matter is performed or for that matter is performed on all systems.

6.2.3 White Box Testing

This is a unit testing method where a unit will be taken at a time and tested thoroughly at a statement level to find the maximum possible errors. I tested step wise every piece of code, taking care that every statement in the code is executed at least once. The white box testing is also called Glass Box Testing. I have generated a list of test cases, sample data. which is used to check all possible combinations of execution paths through the code at every module level.

6.2.4 Black Box Testing

This testing method considers a module as a single unit and checks the unit at interface and communication with other modules rather than getting into details at statement level. Here the module will be treated as a block box that will take some input and generate output. Output for a given set of input combinations are forwarded to other modules.

7. OUTPUT SCREENS

- **INDEX PAGE**

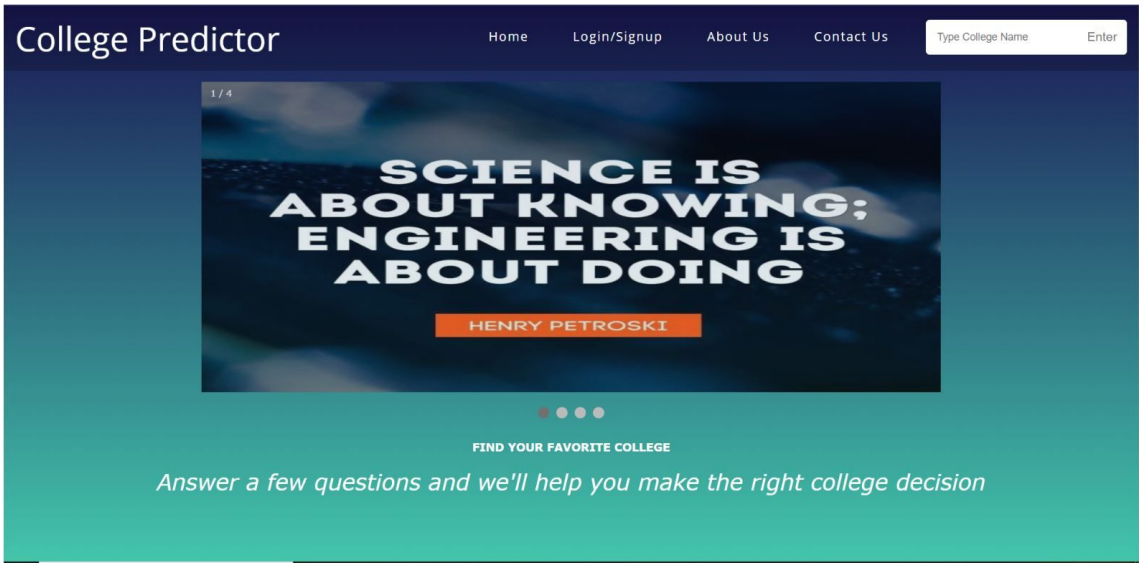

Fig - 7.1

- **HOME PAGE - DISTRICT ONLY**

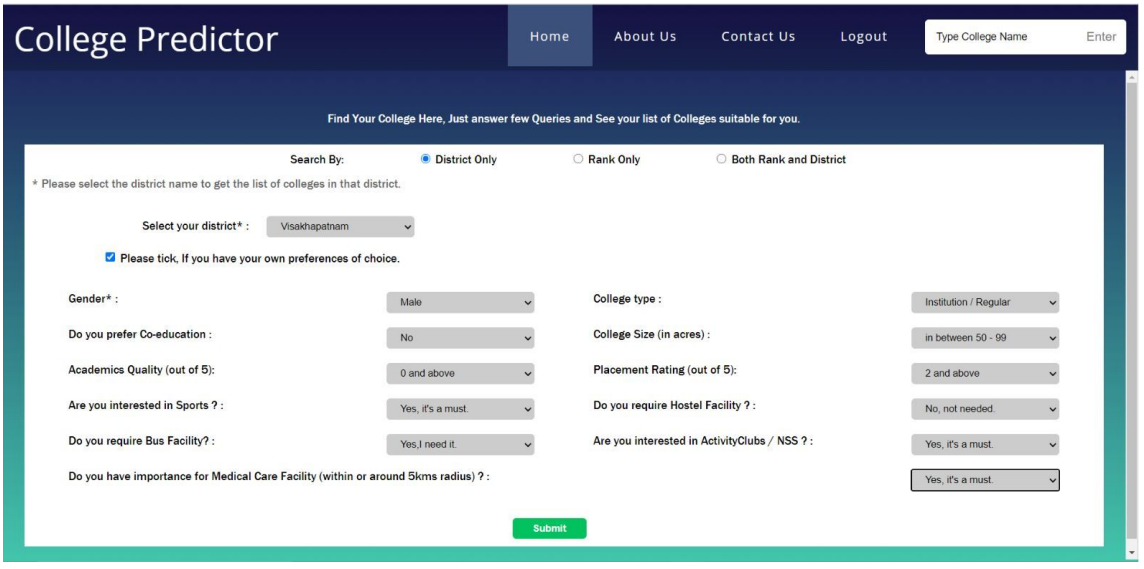

Fig - 7.2

- **HOME PAGE - RANK ONLY**

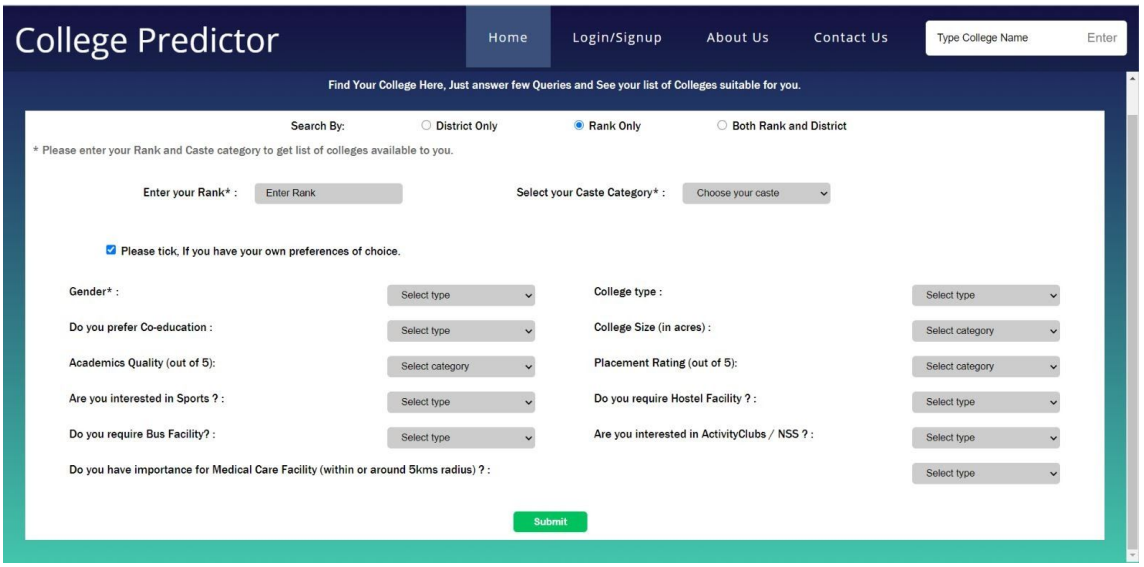

Fig - 7.3

- **HOME PAGE - BOTH RANK AND DISTRICT**

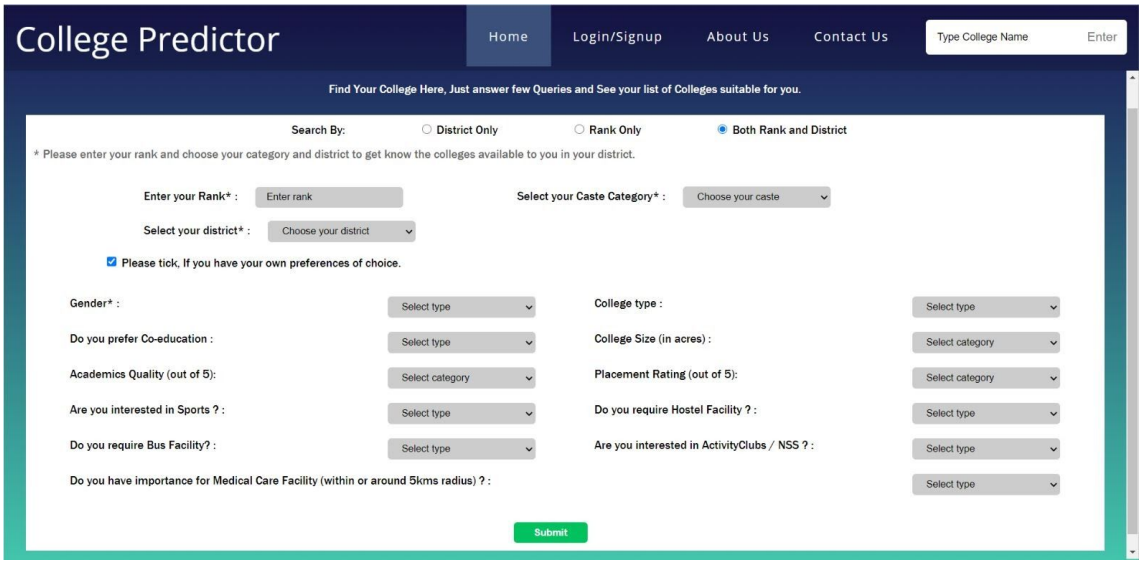

Fig - 7.4

- **RESULT PAGE**

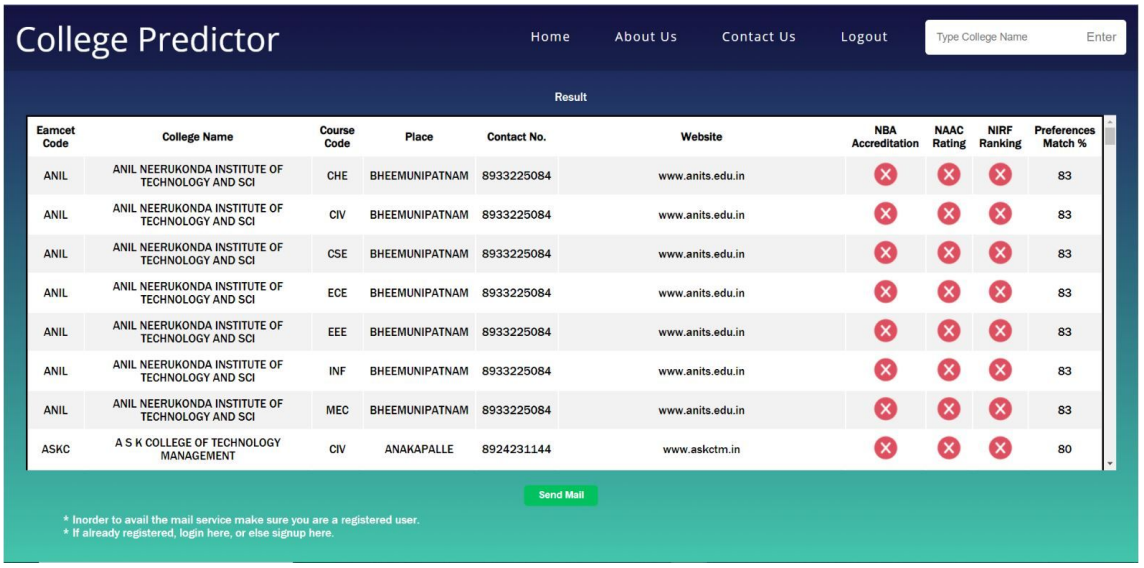

Fig - 7.5

- **SEND MAIL**

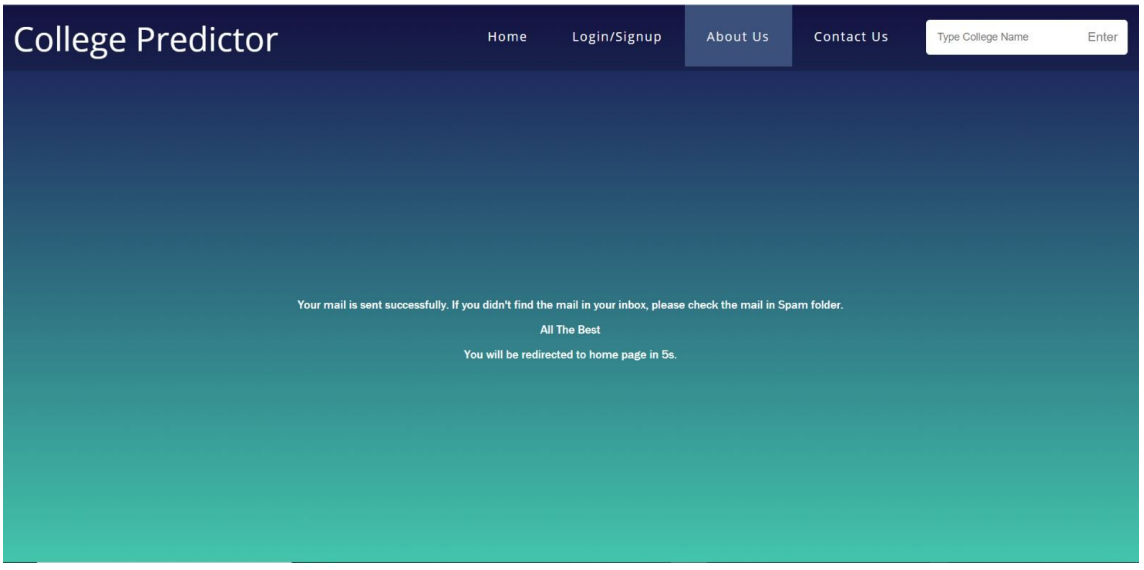

Fig - 7.6

- **LOGIN PAGE**

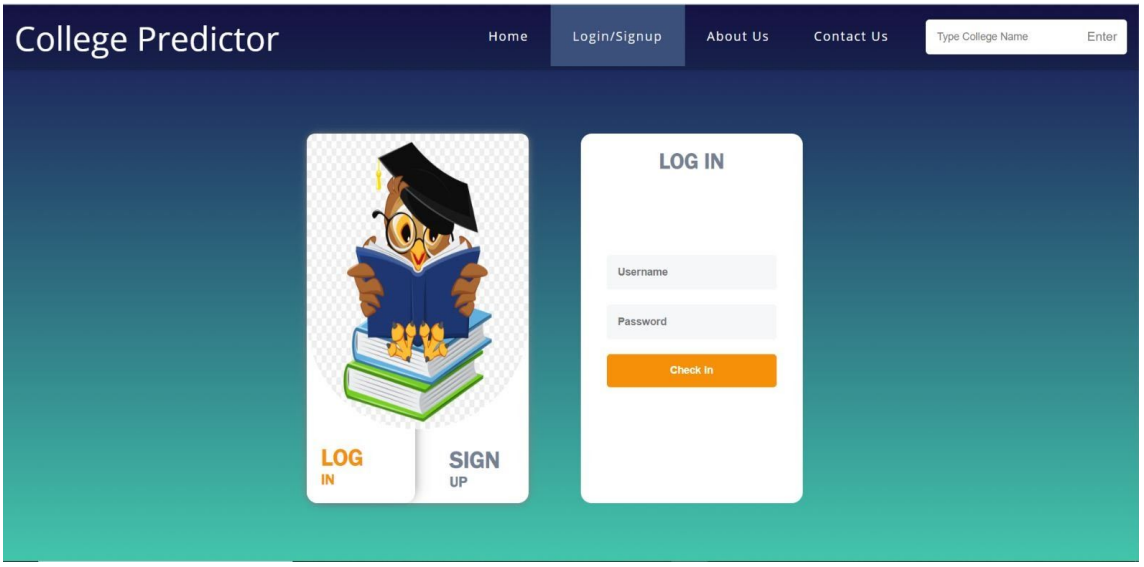

Fig - 7.7

- **SIGNUP PAGE**

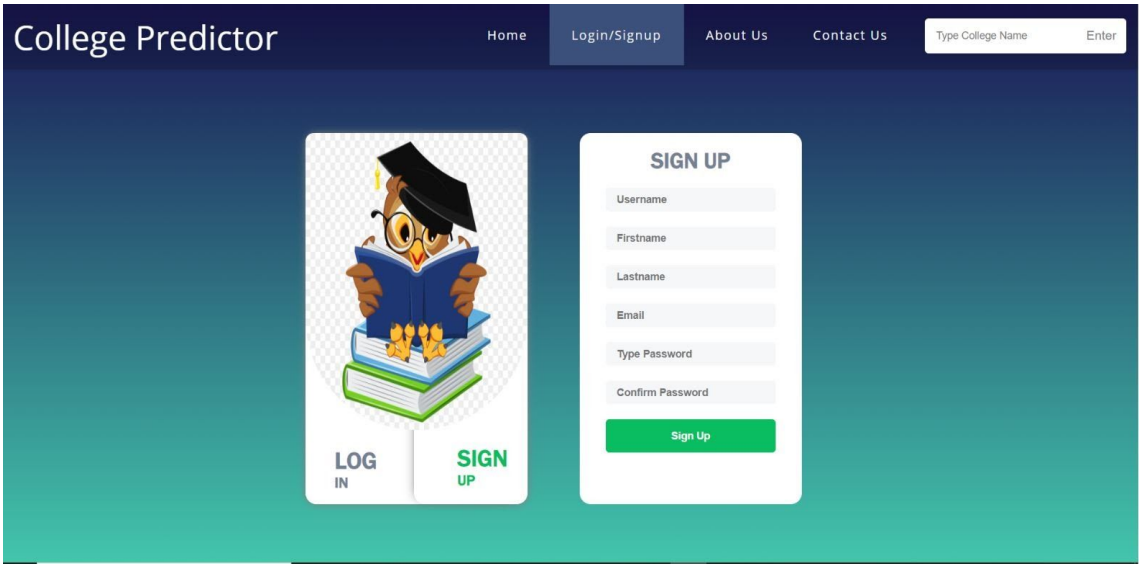

Fig - 7.8

8. CONCLUSION

Our College Predictor works entirely on Django Framework and relayed on the stored information in the database. Because of which the project model is highly robust and portable and there by enhancing the scale of deployment. Very little maintenance is required to maintain the website.

With the help of the MVC model in Django, debugging is made easier. Just a careful observation and dedication towards collecting data is required to provide precise results. With the help of College Predictor, the students might get an opportunity to look over their preferred list of colleges before their Eamcet Counselling. It is likely that the students can get the overview of the colleges available freely to them.

9. FURTHER ENHANCEMENTS AND REFERENCES

Further Enhancement

It helps student for making decision for choosing a right college.Every time progress was made and features were added, ideas for additional features or methods to improve the usability of the system made themselves apparent.Furthermore, adding one feature meant that another required feature was now possible, and balancing completing these required features with the ideas for improvement as well as remembering everything that had to be done was a project in itself. Language used must be simple and easy to understand and compatibility is paramount. If this system were not designed as an entirely web based application, it would not have been possible to recreate its current state of portability .Here the chance of occurrence of error is less when compared with the existing system. It is fast, efficient and reliable.

References

- Survey conducted to collect details of colleges through the google form.

  Google Form Survey

- Cut-off ranks and College details of various colleges.

  2015-18 Cutoff Lists, Average Cutoff List

  College Details List

- Helper Websites

  andhracolleges.com

  collegedunia.com

- Django Help

  Django Documentation

  stackoverflow questions for Django