



Programming For Scientific Computing (2CS404)

Project Name:

Student Result Management System

Submitted by:

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**Submitted to,
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• **Project Description:**

This python project is made to organize and manage student result data. This project is made using **GUI (Graphical User Interface)** in python, to create more visual and attractive student data management tool.

In this python program, Students and Faculties of Nirma University can register themselves and after that they can login using their id and password. If Student/Faculty forgets own password, then he/she can reset it.

After login, students can see their result and download result as a .png and .pdf file according to their choice.

Faculties can login into system and add, update, delete and search any student's result. Faculty can also search any student on the basis of their marks in particular subject.

Use of Python Programming Paradigms:

This python project includes use of concepts like File Management, Graphical User Interface, Error Handling, Functions, Multiprocessing, Use of various modules of python like os, time, threading, fpdf, pyautogui etc.

• Pre-requisites:

Your laptop/pc should have installed latest version of python. Install it from python.org/downloads website (Recommended) or you can install anaconda software from docs.anaconda.com/anaconda/install. Set variable-path for python to run program in command prompt.

To download the packages, first open the script folder from python in command prompt then run the following commands. For anaconda, run it in anaconda prompt.

Command: `pip install packagename`

Packagename are tkinter, pyautogui, fpdf, os, threading, time and random. You can install them one by one as following example. If packages are pre-installed, then skip installing part.

Ex. To install pyautogui in system, open scripts folder of python in command prompt and run '`pip install pyautogui`'.

```
(base) C:\Users\ADMIN\anaconda3\Scripts>pip install pyautogui
```

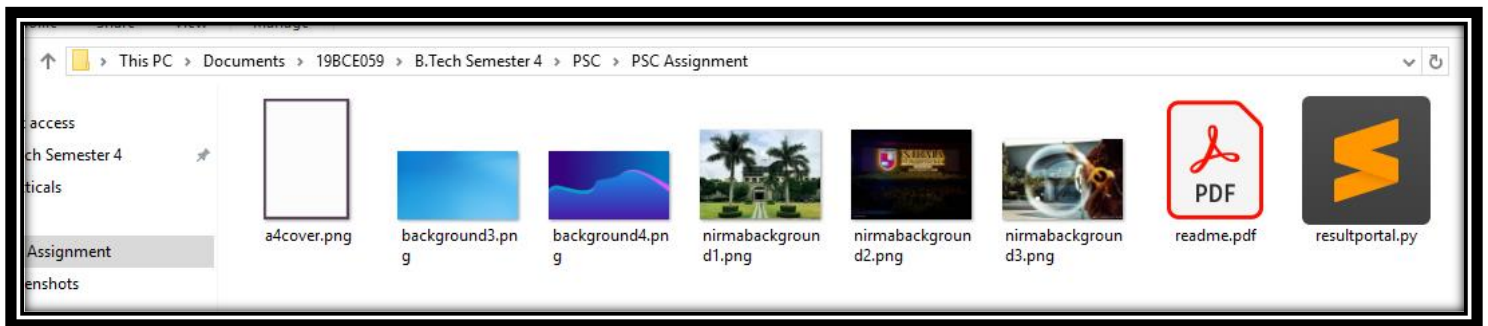
In anaconda, open anaconda prompt and run '`pip install pyautogui`'. Then we can run program in Jupyter Notebook. This program is not validated for jupyter notebook execution, so some errors might occur during execution due to python environment change.

Download images given in this zip file for program to run properly.

• Dataset Files Creation:

To execute this program in cmd (command prompt), open folder containing resultportal.py in cmd and run command `python resultportal.py`.

If `data.txt` and `result.txt` file don't exist in same folder, then program will create both files. Then according to your choice, it will either generate data randomly or you have to enter data manually.



As you can see in above picture, `data.txt` and `result.txt` are not present. So when we run program in cmd, program will ask if you want to generate data randomly. If we say yes, then It will ask no. of students and faculties and according to that random data in `data.txt` will be generated.

```
Command Prompt

C:\Users\acer\Documents\19BCE059\B.Tech Semester 4\PSC\PSC Assignment>python resultportal.py
Do you want to generate Student and Faculty data with default values (1 for yes/0 for no) : 0

Enter data manually in data.txt or program won't work!!

Do you want to generate Student marks randomly (1 for yes/0 for no) : 0

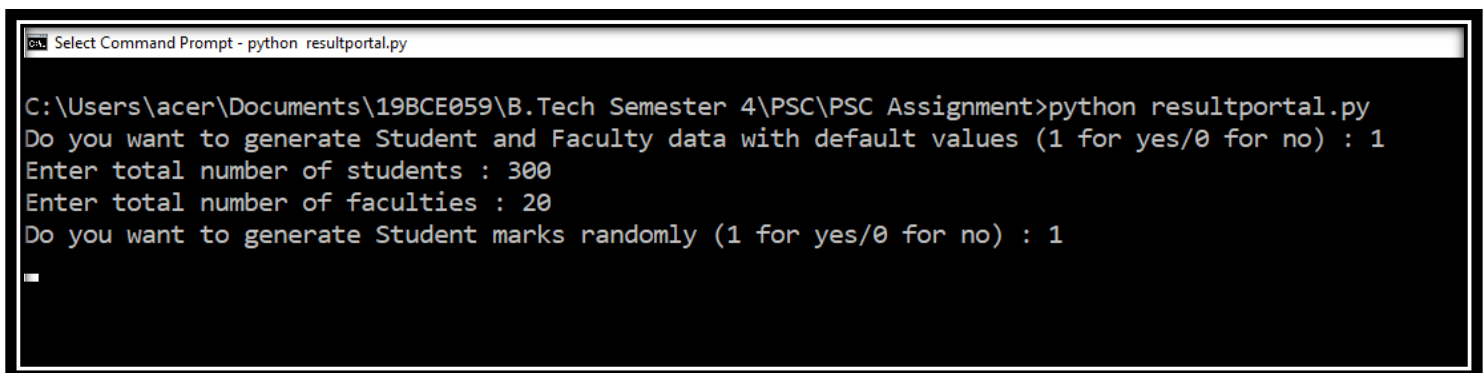
Please Enter data manually in result.txt keeping data.txt in mind!!
```

If user selects no, then [data.txt](#) will contain no random data and user has to enter data manually!

Same for [result.txt](#), program will ask user if you want to generate marks of students randomly or not. If user chooses yes, then random marks of student will be generated according to number of students in [data.txt](#) file.

If user says no, then [result.txt](#) will contain no random data and user has to enter marks of student manually!

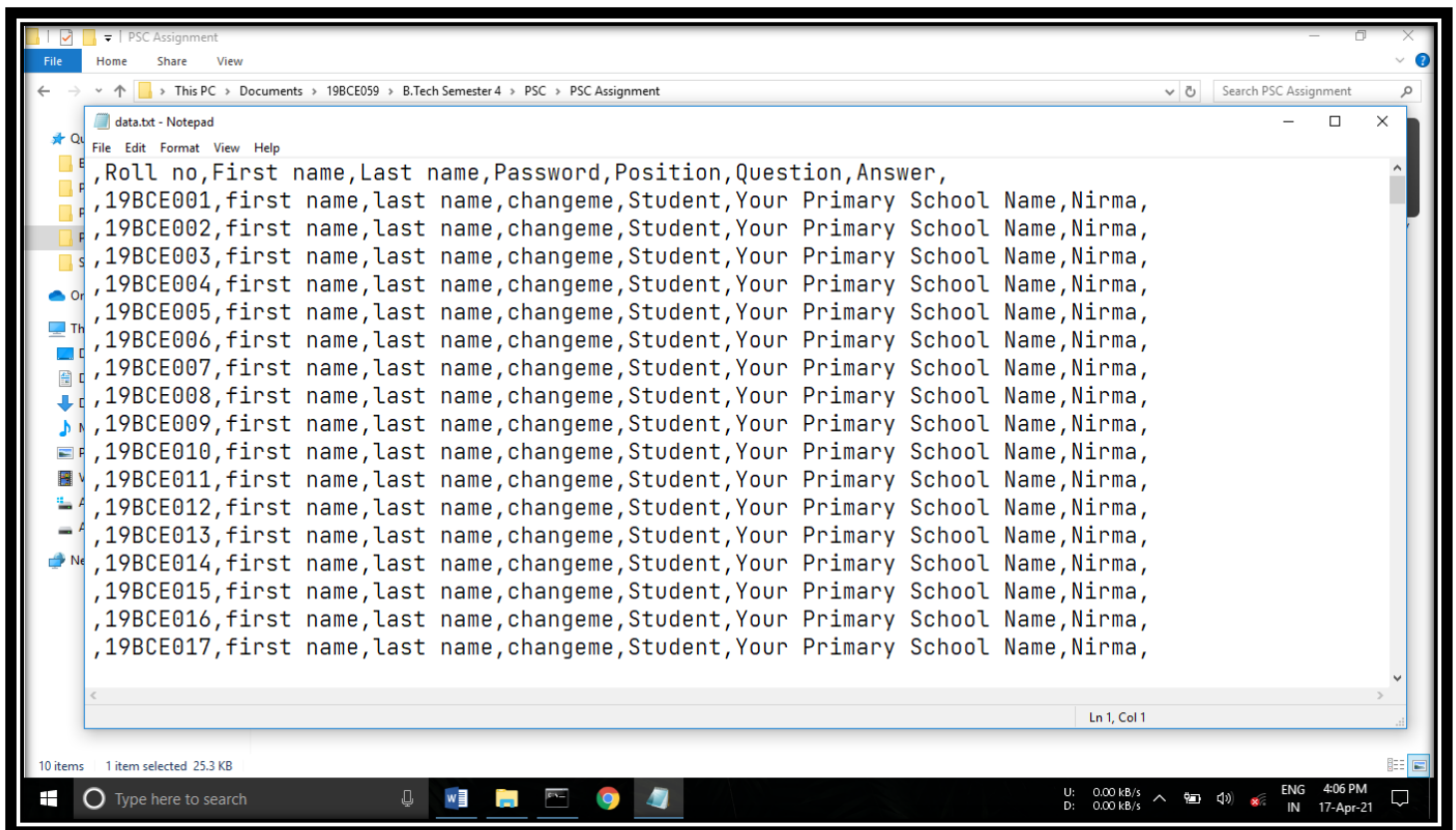
To save our time from entering data of 300 students and 20 faculties, we will generate random data in both [data.txt](#) and [result.txt](#) file.



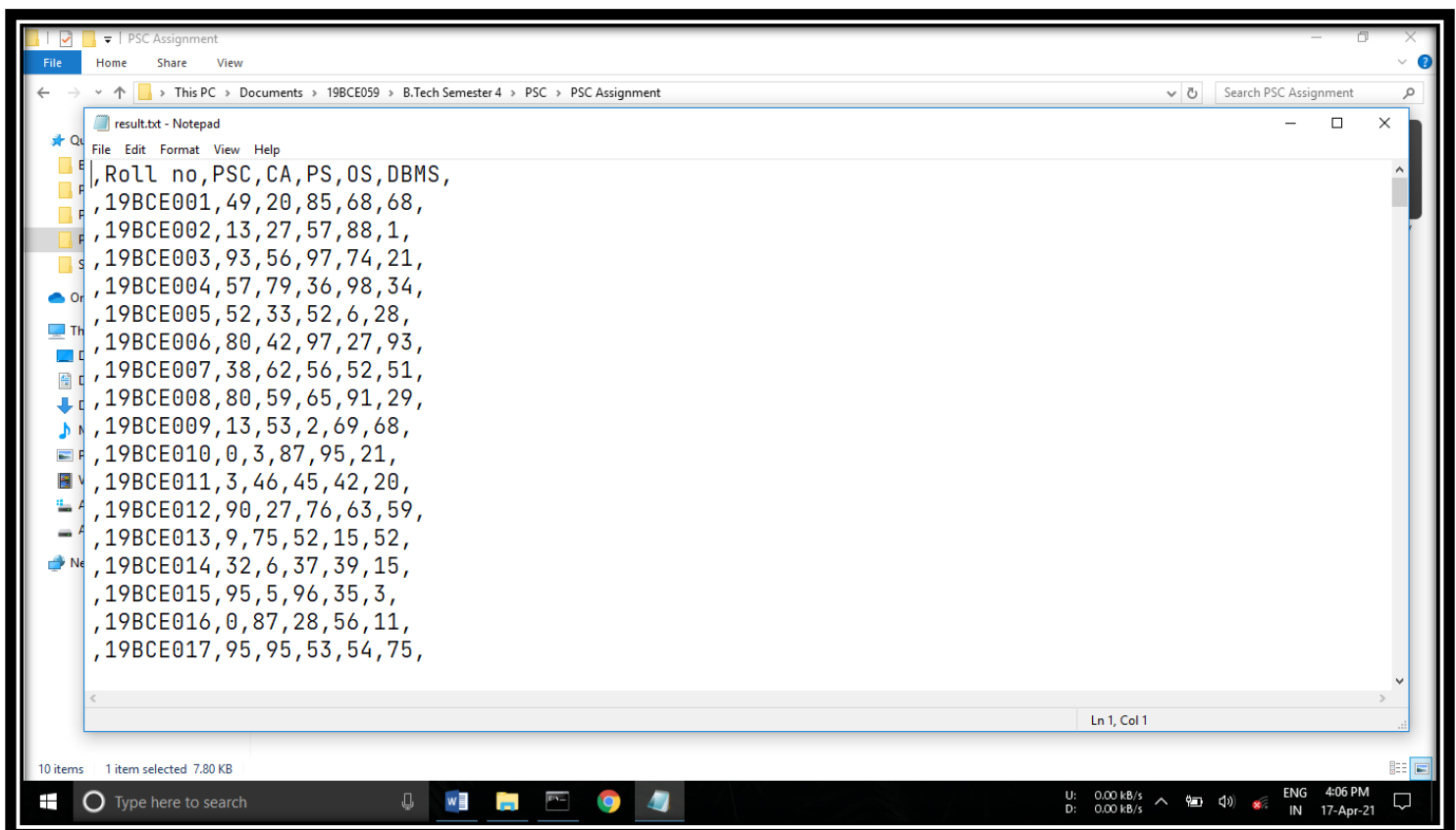
```
Select Command Prompt - python resultportal.py

C:\Users\acer\Documents\19BCE059\B.Tech Semester 4\PSC\PSC Assignment>python resultportal.py
Do you want to generate Student and Faculty data with default values (1 for yes/0 for no) : 1
Enter total number of students : 300
Enter total number of faculties : 20
Do you want to generate Student marks randomly (1 for yes/0 for no) : 1
_
```

* Data generated in data.txt and result.txt:



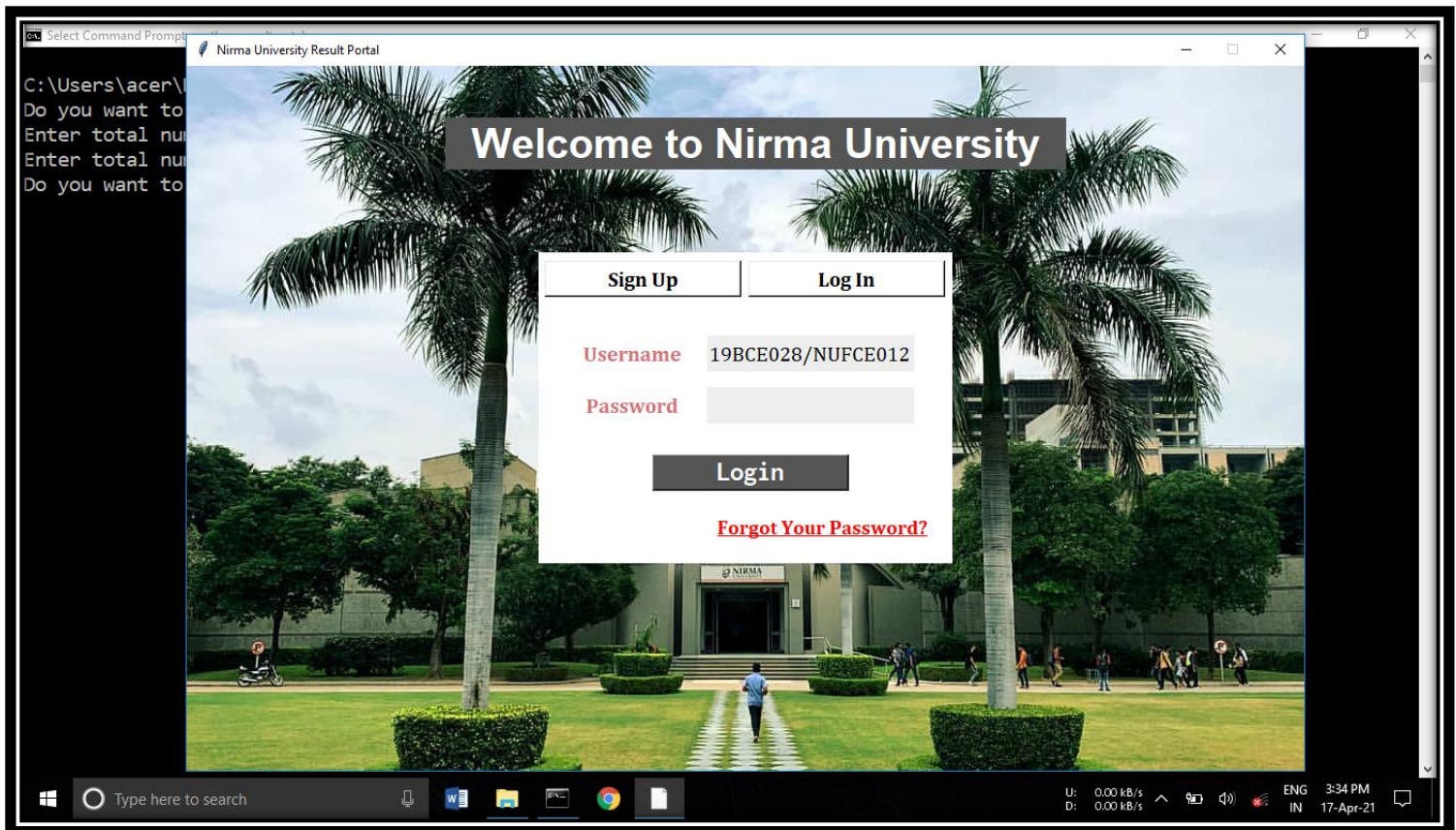
```
data.txt - Notepad
File Edit Format View Help
, Roll no, First name, Last name, Password, Position, Question, Answer,
, 19BCE001, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE002, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE003, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE004, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE005, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE006, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE007, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE008, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE009, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE010, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE011, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE012, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE013, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE014, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE015, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE016, first name, last name, changeme, Student, Your Primary School Name, Nirma,
, 19BCE017, first name, last name, changeme, Student, Your Primary School Name, Nirma,
```



```
result.txt - Notepad
File Edit Format View Help
, Roll no, PSC, CA, PS, OS, DBMS,
, 19BCE001, 49, 20, 85, 68, 68,
, 19BCE002, 13, 27, 57, 88, 1,
, 19BCE003, 93, 56, 97, 74, 21,
, 19BCE004, 57, 79, 36, 98, 34,
, 19BCE005, 52, 33, 52, 6, 28,
, 19BCE006, 80, 42, 97, 27, 93,
, 19BCE007, 38, 62, 56, 52, 51,
, 19BCE008, 80, 59, 65, 91, 29,
, 19BCE009, 13, 53, 2, 69, 68,
, 19BCE010, 0, 3, 87, 95, 21,
, 19BCE011, 3, 46, 45, 42, 20,
, 19BCE012, 90, 27, 76, 63, 59,
, 19BCE013, 9, 75, 52, 15, 52,
, 19BCE014, 32, 6, 37, 39, 15,
, 19BCE015, 95, 5, 96, 35, 3,
, 19BCE016, 0, 87, 28, 56, 11,
, 19BCE017, 95, 95, 53, 54, 75,
```


• Program Execution:

After files are generated, basic graphic window will open on screen as given in below picture. This window is called as default window or Login window.



We have generated data randomly, so every user has default password 'changeme'. When user will try to login using this password, a pop-up window will appear with message that '**Register using Sign Up**'.

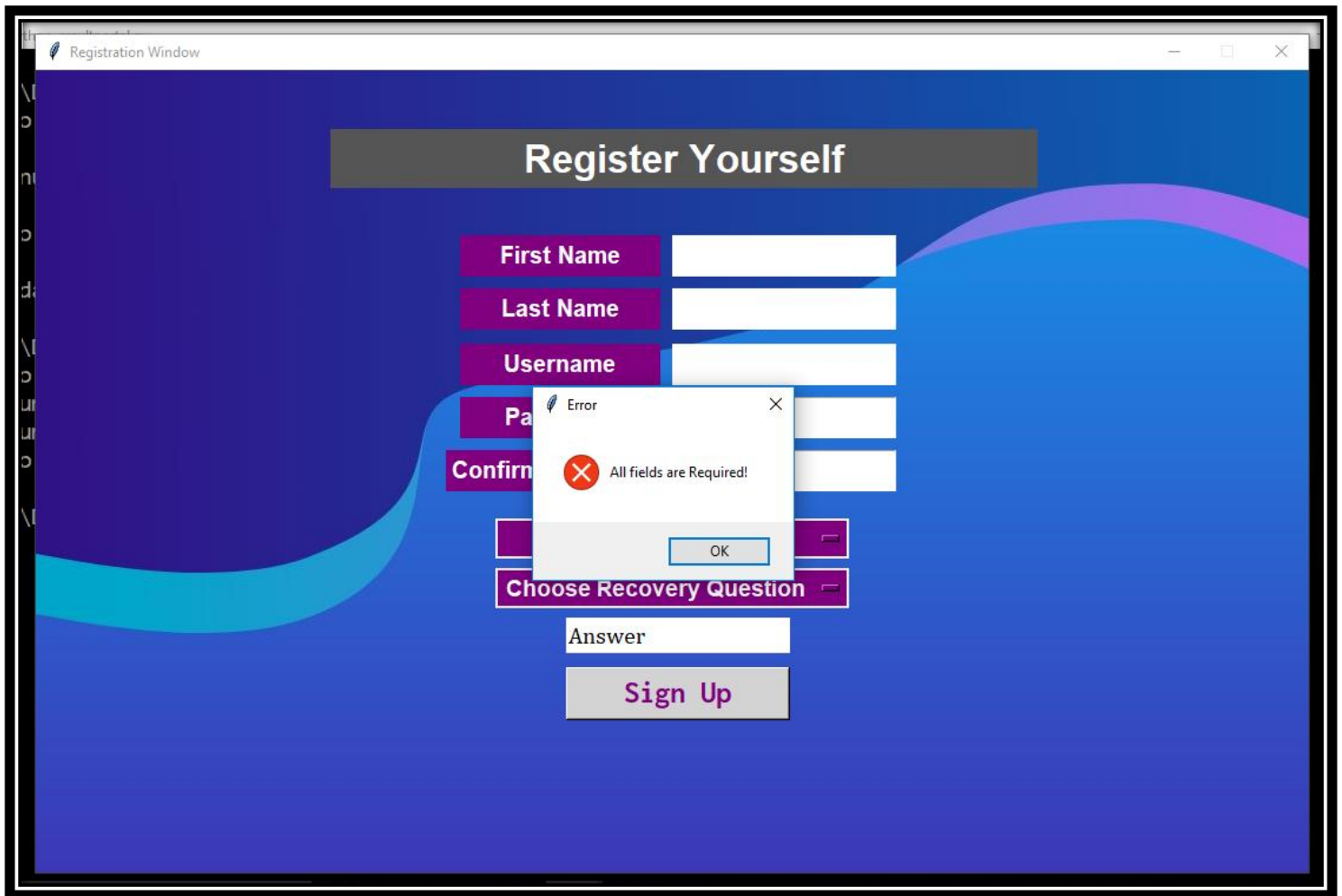
So in order to login, we have to sign up initially. When we click on Sign Up button, sign up window will open.

1) Sign Up window:

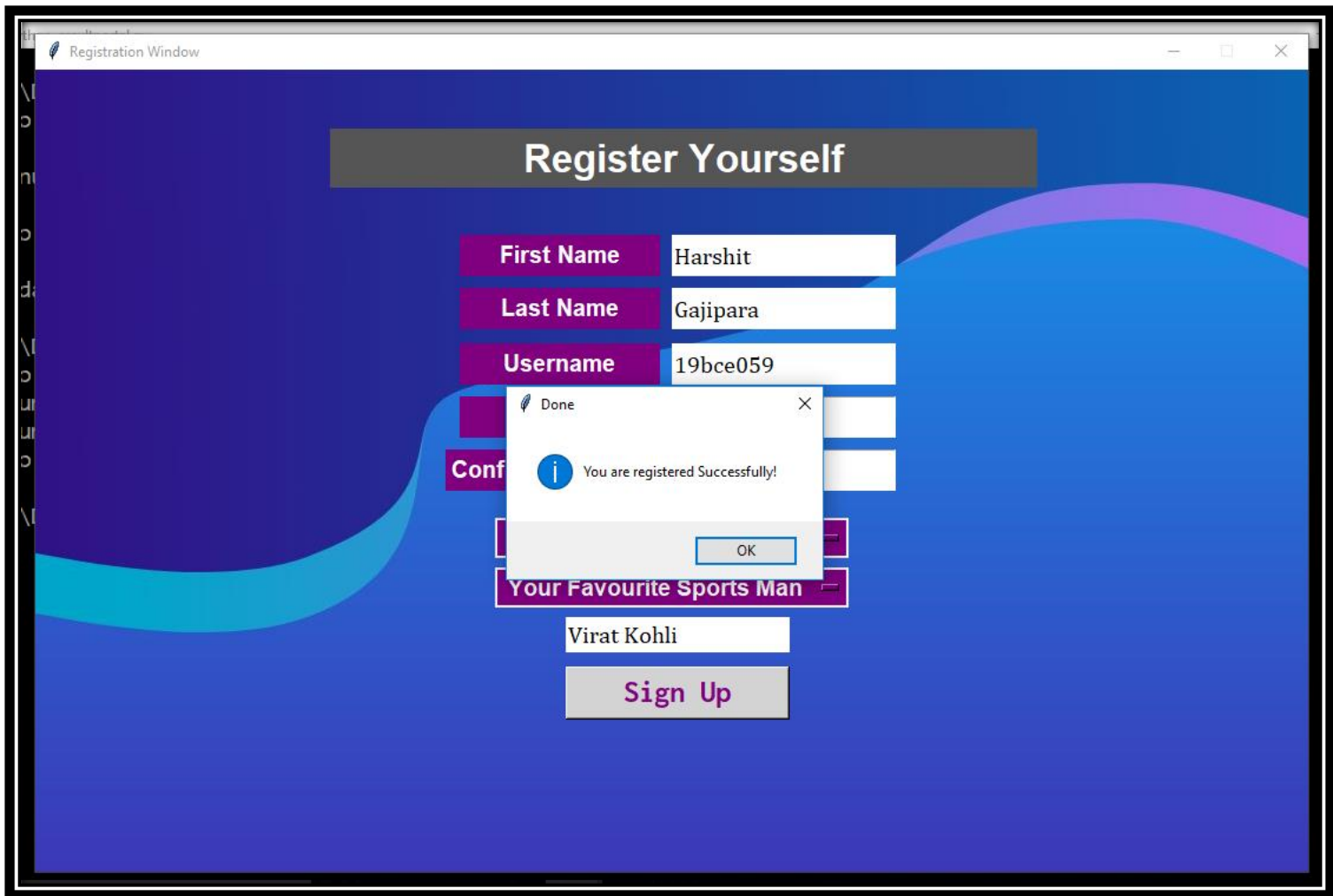
First, Student and Faculty need to register themselves by clicking on Sign Up button. There are some **restrictions** which user needs to follow in order to register like:

1. If user puts any field empty, then a pop-up window will display error that **All fields are Required.**
2. If username length is not equal to 8, then a pop-up window will display error that **Username must contain exactly 8 characters.**
3. If password length is less than 6, then a pop-up window will display error that **Password must contain at least 6 characters.**
4. If password and confirm password are not same, then a pop-up window will display error that **password mismatch.**
5. Each user is uniquely identified by their username. If same username is found in data.txt, then a pop-up window will display error that **user already exists.**
6. Username of Student is roll number and username of Faculty is their id. Faculty Id starts with NUFCE001 (for CE department), so first 3 characters of username must be **"NUF"** for faculty. If it is not, then a pop-up window will display error that **Faculty Username format is not correct.**
7. If student's result marks are not present in result.txt, then a pop-up window will display error that **you are not registered by the institute.**

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then user will be registered and a pop-up window will say that **you are registered successfully**. User data will be updated in [data.txt](#) file from random data to data filled by user.



Student/Faculty can only register once, after registering they can only login and to change password, they can use forgot password. To add any new user apart than total students and faculties, we have to add its data manually in [data.txt](#) file.



You can verify in [data.txt](#) file that userdata is updated or not. Now add data of some students and faculties using sign up to execute program for different multiple users.

2) Forgot Password window:

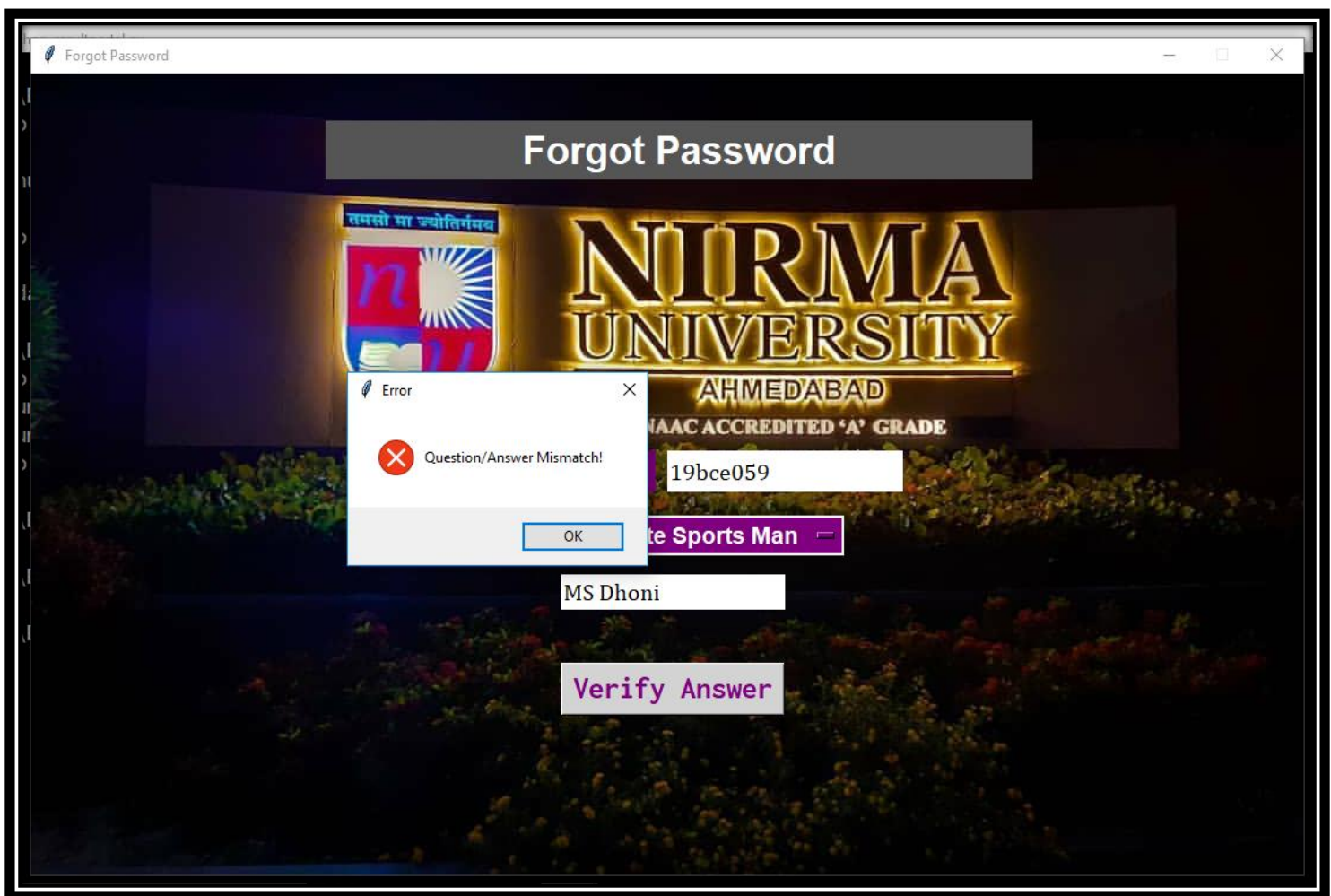
If any student/faculty forgets his/her password, then he/she can reset it by clicking on Forgot Password button. There are some **restrictions** which user needs to follow in order to reset password like:

1. If user puts any field empty, then a pop-up window will display error that **All fields are Required.**
2. If user is not registered, then a pop-up window will display error that **You are not Registered.**
3. If recovery question and answer is not matched with file data, then a pop-up window will display error that **Question/Answer mismatch.**

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **Choose your password carefully.**

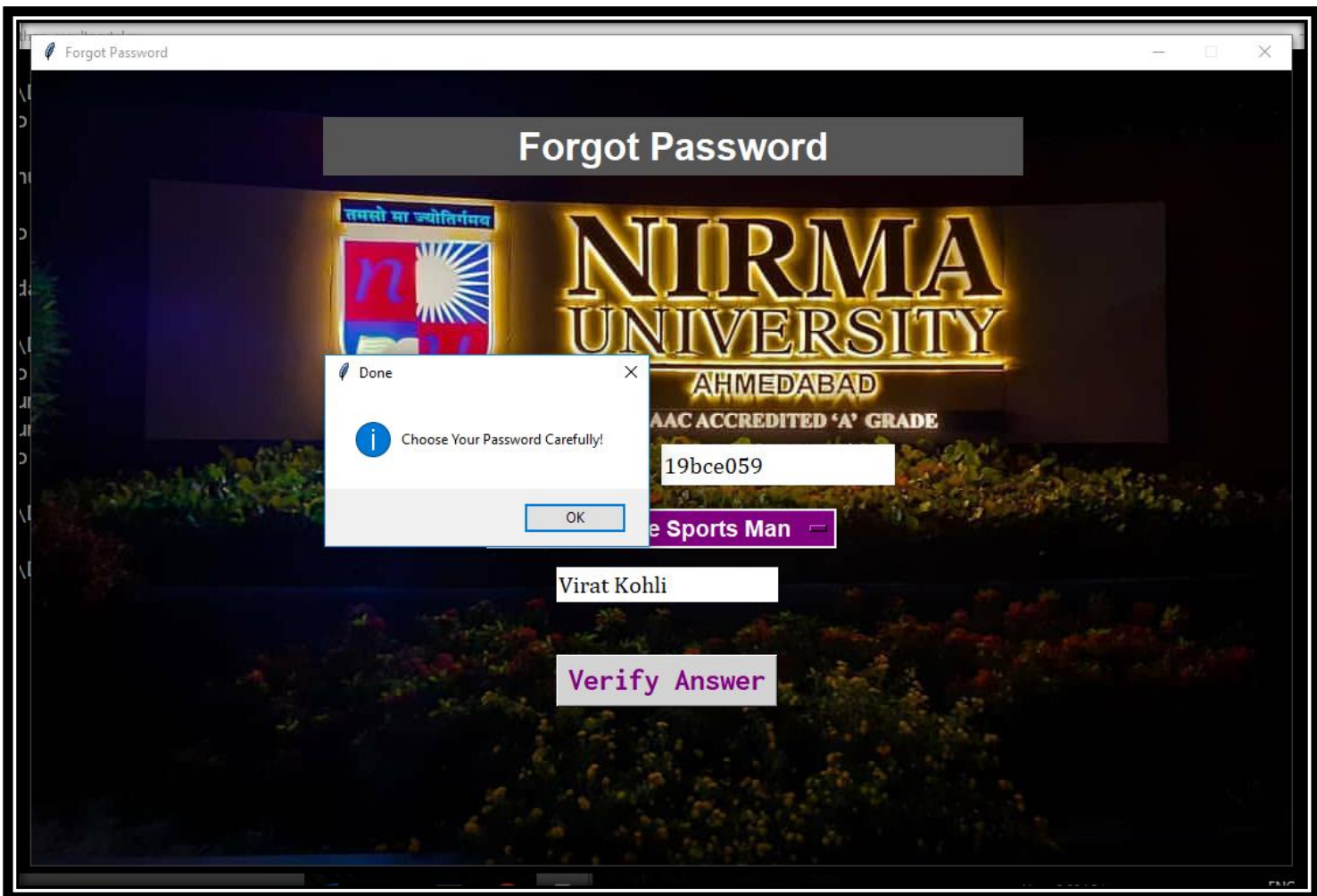
After that change your password window will open. In change your password window, user also has to follow some restrictions.

Ex. Student with username 19bce059 has filled Question/Answer as Your Favourite Sports Man/Virat Kohli in [data.txt](#) while registering. So pop-up window will display error message that **Question/Answer mismatch**.



Screenshot of data.txt:

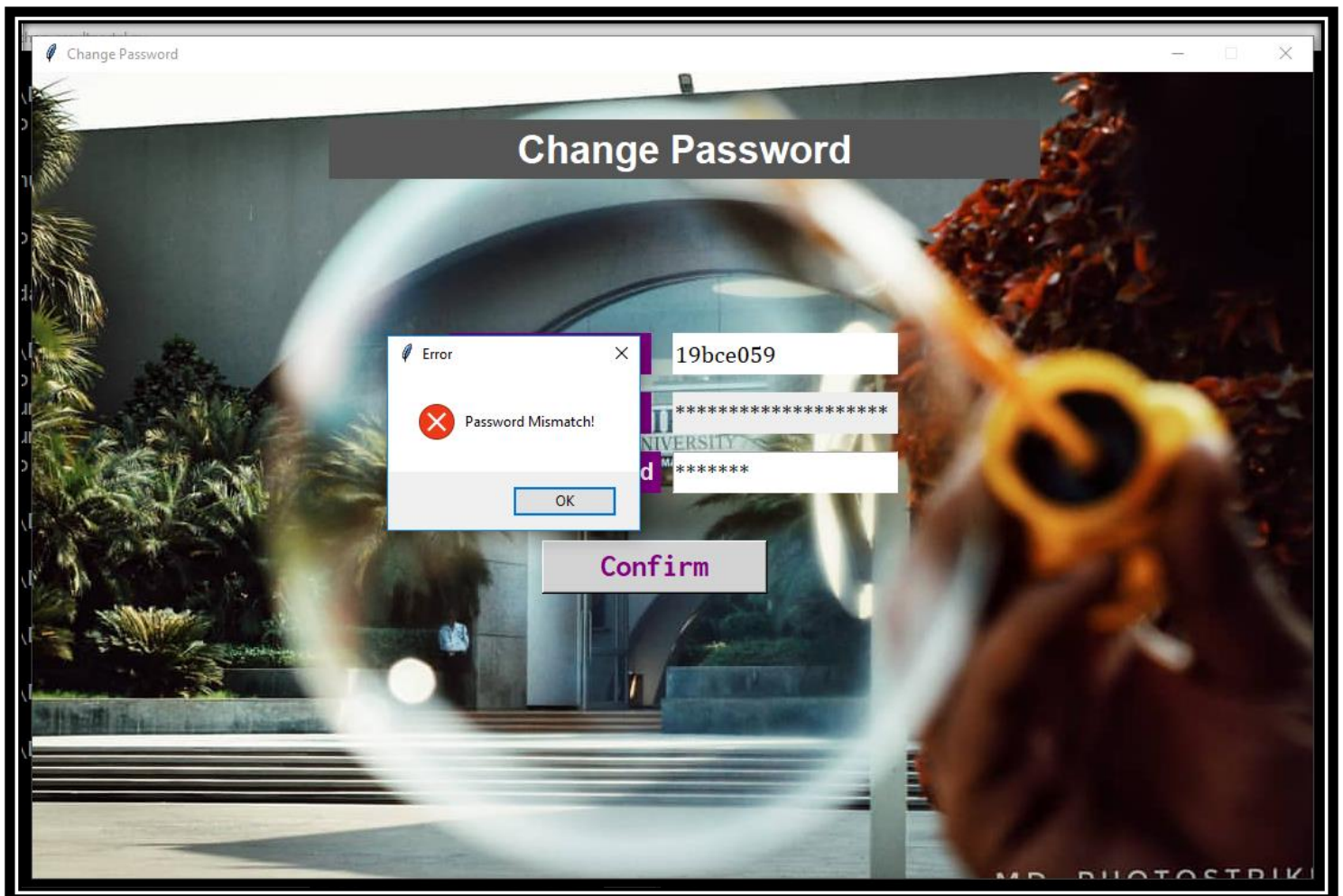
```
,19BCE054,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE055,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE056,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE057,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE058,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE059,Harshit,Gajipara,harshit,Student,Your Favourite Sports Man,Virat Kohli,  
,19BCE060,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE061,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE062,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE063,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE064,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE065,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE066,first name,last name,changeme,Student,Your Primary School Name,Nirma,  
,19BCE067,first name,last name,changeme,Student,Your Primary School Name,Nirma,
```



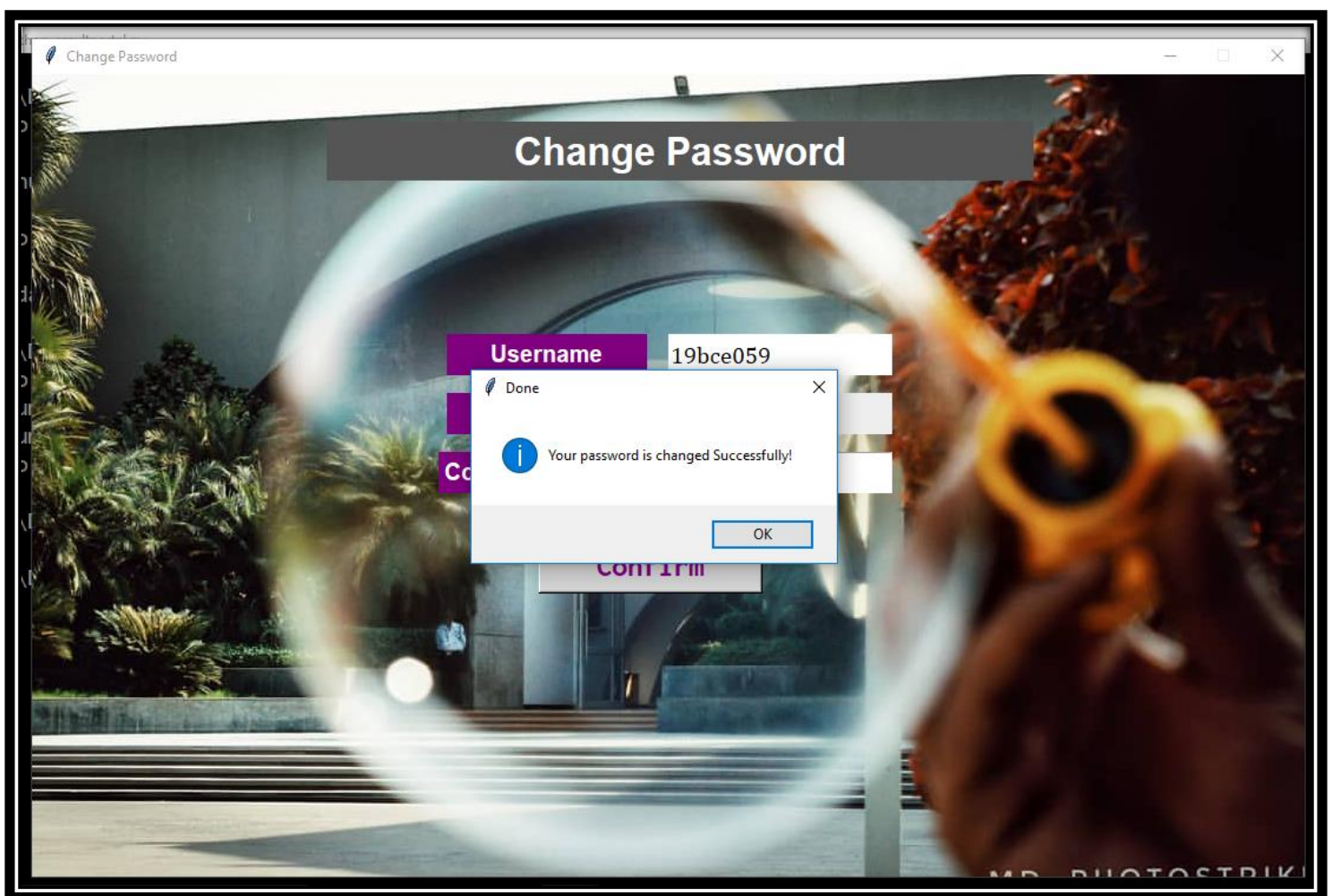
Change Password window:

There are some **restrictions** which user needs to follow in order to reset password like:

1. If user puts any field empty, then a pop-up window will display error that **All fields are Required.**
2. If length of password is less than 6, then a pop-up window will display error that **Password should contain atleast 6 characters.**
3. If password and confirm password doesn't match, then a pop-up window will display error that **Password mismatch.**



If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **Your password is changed Successfully**. Password of user in [data.txt](#) will be updated. User will be redirected to login page.

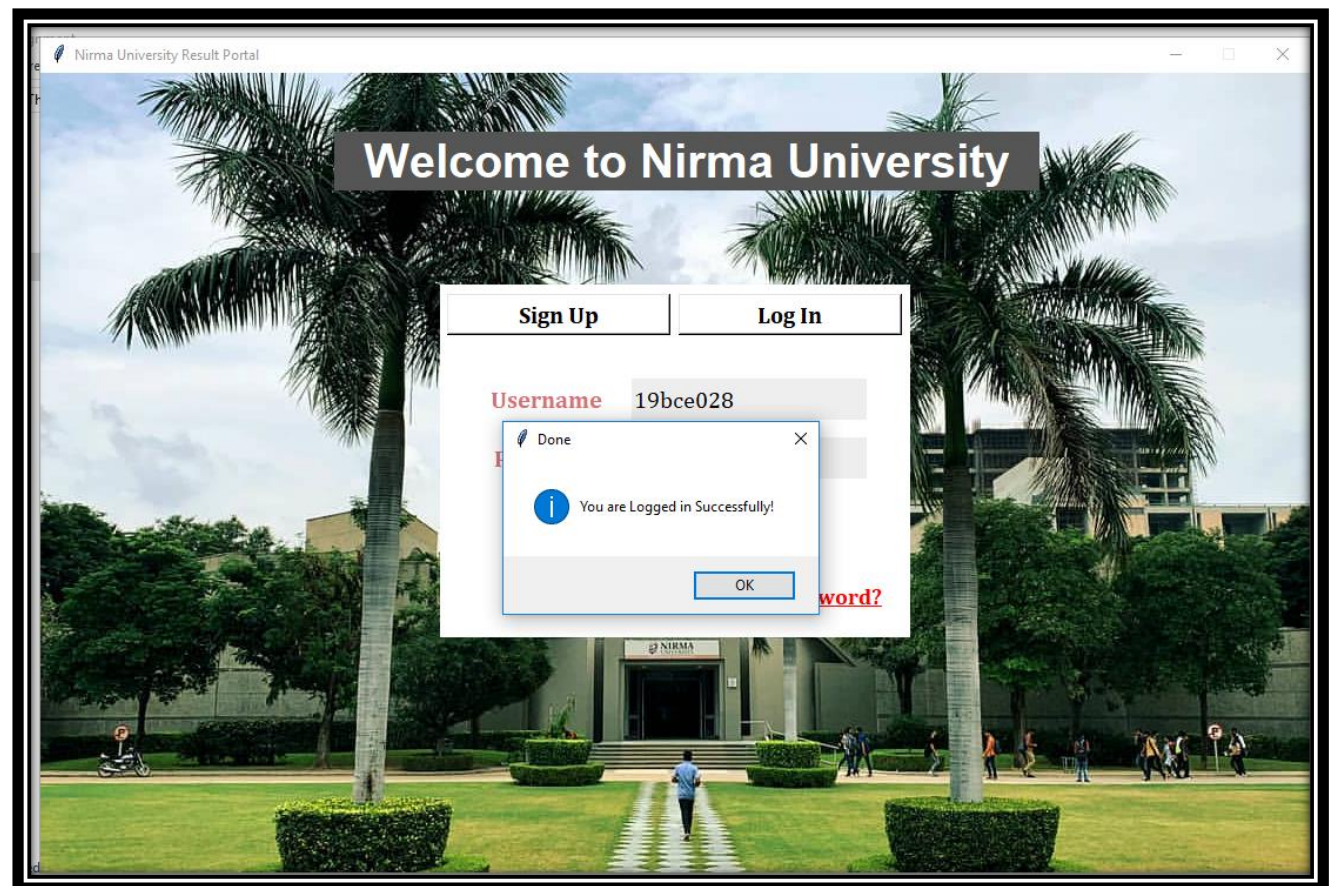


3) Login window:

Any user can login multiple times after registering. To login user has to follow below restrictions.

1. If user puts any field empty, then a pop-up window will display error that **All fields are Required.**
2. If username length is not equal to 8, then a pop-up window will display error that **Username must contain exactly 8 characters.**
3. If password length is less than 6, then a pop-up window will display error that **Password must contain at least 6 characters.**
4. If user is not registered, then a pop-up window will display error that **You are not Registered.**
5. If username is 'first name', 'last name' and password is 'changeme' in data.txt for user, then a pop-up window will display error that **Register using Sign Up.**

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **You are logged in successfully.**



4) Student Result window:

After login, if you are a student, student result window will open. Student can download [result.png](#) and [result.pdf](#) file and after logout student is redirected to login window.

Ex. Harshit is pass in every subject so his SPI is calculated and displayed while Bhavya is fail in 2 subjects so his SPI cannot be calculated and will not be displayed. His remark message is also different than Harshit. After that download options are displayed in screenshot.

Nirma University, Ahmedabad
Program Name : B.Tech in Computer Science and Engineering
Roll No. : 19BCE059
Student Name : Harshit Gajipara

Semester	Course	Name	Marks	Grade
4	2CS404	PSC	81	A
4	2CS401	CA	76	B+
4	2MA402	PS	92	A+
4	2CS403	OS	87	A
4	2CS402	DBMS	98	A+

Your Score : 184 Total Score : 200
Remark : Congratulations, you are Pass in all Subjects
Your SPI : 9.20

[Download](#)[Logout](#)

Nirma University, Ahmedabad
Program Name : B.Tech in Computer Science and Engineering
Roll No. : 19BCE028
Student Name : Bhavya Bhut

Semester	Course	Name	Marks	Grade
4	2CS404	PSC	62	B
4	2CS401	CA	88	A
4	2MA402	PS	18	F
4	2CS403	OS	90	A+
4	2CS402	DBMS	5	F

Your Score : 136 Total Score : 200
Remark : Better luck next time, you are Fail in 2 Subject

[Download](#)

[Logout](#)

Nirma University, Ahmedabad
Program Name : B.Tech in Computer Science and Engineering
Roll No. : 19BCE028
Student Name : Bhavya Bhut

Semester	Course	Name	Marks	Grade
4	2CS404	PSC	62	B
4	2CS401	CA	88	A
4	2MA402	PS	18	F
4	2CS403	OS	90	A+
4	2CS402	DBMS	5	F

Your Score : 136 Total Score : 200
Remark : Better luck next time, you are Fail in 2 Subject

[Download](#)

[Logout](#)

Nirma University, Ahmedabad
Program Name : B.Tech in Computer Science and Engineering
Roll No. : 19BCE028
Student Name : Bhavya Bhut

Semester	Course	Name	Marks	Grade
4	2CS404	PSC	62	B
4				A
4				F
4				A+
4	2CS402	DBMS	5	F

Your Score : 136 Total Score : 200
Remark : Better luck next time, you are Fail in 2 Subject

Download

Logout

Nirma University, Ahmedabad
Program Name : B.Tech in Computer Science and Engineering
Roll No. : 19BCE028
Student Name : Bhavya Bhut

Semester	Course	Name	Marks	Grade
4	2CS404	PSC	62	B
4				A
4				F
4				A+
4	2CS402	DBMS	5	F

Your Score : 136 Total Score : 200
Remark : Better luck next time, you are Fail in 2 Subject

Download

Logout

5) Faculty Result Editing window:

If user is a faculty, after login this window opens. Faculty can add/update/delete/search marks of students. Also Faculty can search students using marks.

The screenshot shows a web application window titled "Create the Result of Student". The interface has a blue background and a dark blue header area. In the top right corner, there is a "Logout" button. The main header area displays "Welcome Dvijesh Bhatt". Below this, there are two main sections: "Add/Delete/Update/Search" and "Search Student using marks".

Add/Delete/Update/Search Section:

- Roll no.
- PSC Marks
- PS Marks
- CA Marks
- OS Marks
- DBMS Marks
- Buttons: Add, Update, Delete, Search

Search Student using marks Section:

- Enter Marks
- Choose Your Option
- Select a Subject
- Search Students
- Total Students
- Roll No.

Add button:

Add button validates following restrictions.

1. If user puts any field empty, then a pop-up window will display error that **All fields are Required.**
2. If username length is not equal to 8, then a pop-up window will display error that **Username must contain exactly 8 characters.**
3. If marks are greater than 100, then a pop-up window will display error that **Student can have maximum 100 marks.**
4. If marks are less than 0, then a pop-up window will display error that **Student cannot have negative marks.**
5. If marks are not integer, then a pop-up window will display error that **Marks must be an integer.**
6. If same username is found in result.txt, then a pop-up window will display error that **Marks of user already exists, use Update.**

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **Marks added successfully.**

In this example, when roll number 19bce028's marks are already existing in [result.txt](#), program will give error message that you can't add marks of this user. Because this user's marks already exists, so use update. After deleting marks of 19bce028, when we run again, message is **mark added successfully**.

The screenshot shows a web application interface for managing student results. The title bar reads "Create the Result of Student". The main header area is blue with a dark grey bar containing the text "Welcome Dvijesh Bhatt" and a "Logout" button. Below the header, there are two main sections: "Add/Delete/Update/Search" and "Search Student using marks".

In the "Add/Delete/Update/Search" section, there is a form with the following fields and values:

Field	Value
Roll no.	19bce028
PSC Marks	59
PS Marks	92
CA Marks	52
OS Marks	63
DBMS Marks	70

Below the form are four buttons: "Add", "Update", "Delete", and "Search".

In the "Search Student using marks" section, there is a form with the following fields and values:

Field	Value
Enter Marks	
Choose Your Option	
Select a Subject	
Search Students	
Total Students	
Roll No.	

An error message dialog box is displayed in the center of the screen. It has a red "X" icon and the text: "Error: Marks of 19BCE028 already Exists,use Update!". The dialog box has an "OK" button.

Create the Result of Student

Logout

Welcome Dvijesh Bhatt

Add/Delete/Update/Search

Search Student using marks

Roll no. 19bce028

PSC Marks 70

PS Marks 80

CA Marks 50

OS Marks 82

DBMS Marks 92

Add Update

Delete Search

Enter Marks

Choose Your Option

Select a Subject

Search Students

Total Students

Roll No.

Done

Marks added Successfully!

OK

Result.txt after adding marks:

```
,19BCE293,30,100,79,79,85,
,19BCE294,41,57,84,87,84,
,19BCE295,60,53,28,100,67,
,19BCE296,90,84,34,63,76,
,19BCE297,80,20,66,92,37,
,19BCE298,24,91,33,66,90,
,19BCE299,53,13,79,21,86,
,19BCE300,26,18,42,43,99,
,19BCE028,70,80,50,82,92,
```

Update button:

Update button validates following restrictions.

1. If user puts any field empty, then a pop-up window will display error that **All fields are Required.**
2. If username length is not equal to 8, then a pop-up window will display error that **Username must contain exactly 8 characters.**
3. If marks are greater than 100, then a pop-up window will display error that **Student can have maximum 100 marks.**
4. If marks are less than 0, then a pop-up window will display error that **Student cannot have negative marks.**
5. If marks are not integer, then a pop-up window will display error that **Marks must be an integer.**
6. If same username is not found in result.txt, then a pop-up window will display error that **You can't update marks of user.**

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **Marks updated successfully.**

Create the Result of Student

Logout

Welcome Dvijesh Bhatt

Add/Delete/Update/Search

Roll no.	19bce028
PSC Marks	59
PS Marks	92
CA Marks	52
OS Marks	63
DBMS Marks	70

Add

Delete

Update

Search

Search Student using marks

Enter Marks

Choose Your Option

Select a Subject

Search Students

Total Students

Roll No.

Done

i Marks updated Successfully!

OK

Result.txt after updating marks:

```

, 19BCE291, 20, 10, 40, 32, 7,
, 19BCE292, 9, 4, 81, 42, 33,
, 19BCE293, 30, 100, 79, 79, 85,
, 19BCE294, 41, 57, 84, 87, 84,
, 19BCE295, 60, 53, 28, 100, 67,
, 19BCE296, 90, 84, 34, 63, 76,
, 19BCE297, 80, 20, 66, 92, 37,
, 19BCE298, 24, 91, 33, 66, 90,
, 19BCE299, 53, 13, 79, 21, 86,
, 19BCE300, 26, 18, 42, 43, 99,
, 19BCE028, 59, 92, 52, 63, 70,

```

Delete button:

Delete button validates following restrictions.

1. If user puts roll number empty, then a pop-up window will display error that **Enter student roll number**.
2. If username length is not equal to 8, then a pop-up window will display error that **Roll number must contain exactly 8 characters**.
3. If same username is not found in result.txt, then a pop-up window will display error that **You can't delete marks of user**.

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **Marks deleted successfully**.

Create the Result of Student

Welcome Dvijesh Bhatt

Logout

Add/Delete/Update/Search

Search Student using marks

Roll no. 19bce028

PSC Marks 59

PS Marks 92

CA Marks 52

OS Marks 63

DBMS Marks 70

Add Update

Delete Search

Enter Marks

Choose Your Option

Select a Subject

Search Students

Total Students

Roll No.

Done

Marks deleted Successfully!

OK

Search button:

Search button validates following restrictions.

1. If user puts roll number empty, then a pop-up window will display error that **Enter student roll number.**
2. If username length is not equal to 8, then a pop-up window will display error that **Roll number must contain exactly 8 characters.**
3. If same username is not found in result.txt, then a pop-up window will display error that **Data of not found.**

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **User is found in database.**

After deleting marks of 19bce028, when user searches for this username, message is given that **data of user not found**. After adding again marks of user, when we search message is given that **user found in database.**

Create the Result of Student

Logout

Welcome Dvijesh Bhatt

Add/Delete/Update/Search

Roll no.

PSC Marks

PS Marks

CA Marks

OS Marks

DBMS Marks

Add Update

Delete Search

Search Student using marks

Enter Marks

Choose Your Option

Select a Subject

Search Students

Total Students

Roll No.

Error

Data of 19BCE028 not Found!

OK

Create the Result of Student

Logout

Welcome Dvijesh Bhatt

Add/Delete/Update/Search

Roll no.

PSC Marks

PS Marks

CA Marks

OS Marks

DBMS Marks

Add Update

Delete Search

Search Student using marks

Enter Marks

Choose Your Option

Select a Subject

Search Students

Total Students

Roll No.

Done

19BCE028 is found in Database!

OK

Search Using Marks button:

Search button validates following restrictions.

1. If user puts any field empty, then a pop-up window will display error that **All Fields are Required.**
2. If marks are greater than 100, then a pop-up window will display error that **Student can have maximum 100 marks.**
3. If marks are less than 0, then a pop-up window will display error that **Student cannot have negative marks.**
4. If marks are not integer, then a pop-up window will display error that **Marks must be an integer.**

If user violates any restriction, message corresponding to that restriction will pop-up. If user doesn't violate any restrictions from above cases, then a pop-up window will appear with message that **Search Completed.**

Create the Result of Student

Logout

Welcome Dvijesh Bhatt

Add/Delete/Update/Search

Search Student using marks

Roll no.

PSC Marks

PS Marks

CA Marks

OS Marks

DBMS Marks

Add

Update

Delete

Search

Enter Marks

25

Less than Marks

CA

Search Students

Total Students

Roll No.

Done

Search Completed!

OK

Create the Result of Student

Logout

Welcome Dvijesh Bhatt

Add/Delete/Update/Search

Search Student using marks

Roll no.

PSC Marks

PS Marks

CA Marks

OS Marks

DBMS Marks

Add

Update

Delete

Search

Enter Marks

25

Less than Marks

CA

Search Students

Total Students

67

Roll No.

Roll Number-Marks

19BCE009-2

19BCE018-24

19BCE026-9

19BCE029-12

Create the Result of Student

— □ ×

Logout

Welcome Dvijesh Bhatt

Add/Delete/Update/Search

Roll no.

PSC Marks

PS Marks

CA Marks

OS Marks

DBMS Marks

Add

Update

Delete

Search

Search Student using marks

Enter Marks

0

Less than Marks

CA

Search Students

Total Students

0

Roll No.

• Student Result PDF:

This is a sample screenshot of downloaded result pdf.

