STUDENT EXAMINATION PORTAL

Submitted by

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Stream: ECE
Subject: Programming for Problem Solving with Python
Subject Code: IVC101
Department: Basic Science and Humanities

Under the supervision of
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Academic Year: 2022-26

PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE FIRST SEMESTER

**DEPARTMENT OF BASIC SCIENCE AND HUMANITITES
INSTITUTE OF ENGINEERING AND MANAGEMENT, KOLKATA**

CERTIFICATE OF RECOMMENDATION

We hereby recommend that the project prepared under our supervision by **Vikash kumar jha,** entitled Student Examination Portal be accepted in partial fulfillment of the requirements for the degree of partial fulfillment of the first semester.

_____   _____

Head of the Department   Project Supervisor
Basic Sciences and Humanities
IEM, Kolkata

1   Introduction

A CSV file is a type of plain text file which uses specific structure to arrange tabular data and sql stands for Structural Query Language which let you access and manipulate databases. We are making Students' Examination portal using python programming through sql and csv implement.

- ## Objective

The objective of this project is to make better understanding of csv file in python programming as well as to manage the details of all information like students' batch, courses, profiles etc. The purpose of the project is to build an application program to reduce the manual work for managing the required information which tracks all the details of any student.

- ## Organization of the Project

This project consists of three sections

i) Taking data from the user: When we run the programme a few terminal prompts instruct us to give the correct input.

ii)Storing the data into different databases: After taking the inputs

Database Descriptions

There are four databases:

1)STUDENT: Stores details of a student

2)COURSE: Stores details of all courses

3)BATCH: Stores details of all courses

4)DEPARTMENT: Stores details of all courses

- ## Database Sample

	student ID	Name	Class Roll	Batch ID
0	CSE2200	Rohan Das	1	CSE22
1	CSE2201	Souma Dut	2	CSE22
2	CSE2202	Subhadeep	3	CSE22
3	ECE2200	Avi Pal	1	ECE22
4	ECE2201	Sourav Kur	2	ECE22
5	ECE2202	Biplab Jana	3	ECE22

	Course ID	Course Na	Marks Obtained
0	C001	Physics	CSE2200:92-CSE2201:35-CSE2202:84-ECE2200:99-ECE2201:67-ECE2202:88
1	C002	Chemistry	CSE2200:79-CSE2201:52-CSE2202:86-ECE2200:87-ECE2201:62-ECE2202:79
2	C003	Python Pro	CSE2200:83-CSE2201:72-CSE2202:43-ECE2200:22-ECE2201:59-ECE2202:84
3	C004	Maths	CSE2200:98-CSE2201:18-CSE2202:64-ECE2200:34-ECE2201:72-ECE2202:96

	Batch ID	Batch Nam	Departmei	List of Cou	List of Students
0	CSE22	CSE2022-2	CSE	C001:C002	CSE2200:CSE2201:CSE2202
1	ECE22	ECE2022-2	ECE	C001:C002	ECE2200,ECE2201,ECE2202

	Departmei	Departmei	List of Batches
0	CSE	Computer	CSE22
1	ECE	Electronics	ECE22

• <u>Data Flow and E-R Diagrams</u>

Demonstrate the dependency of all the python modules written using data flow diagrams
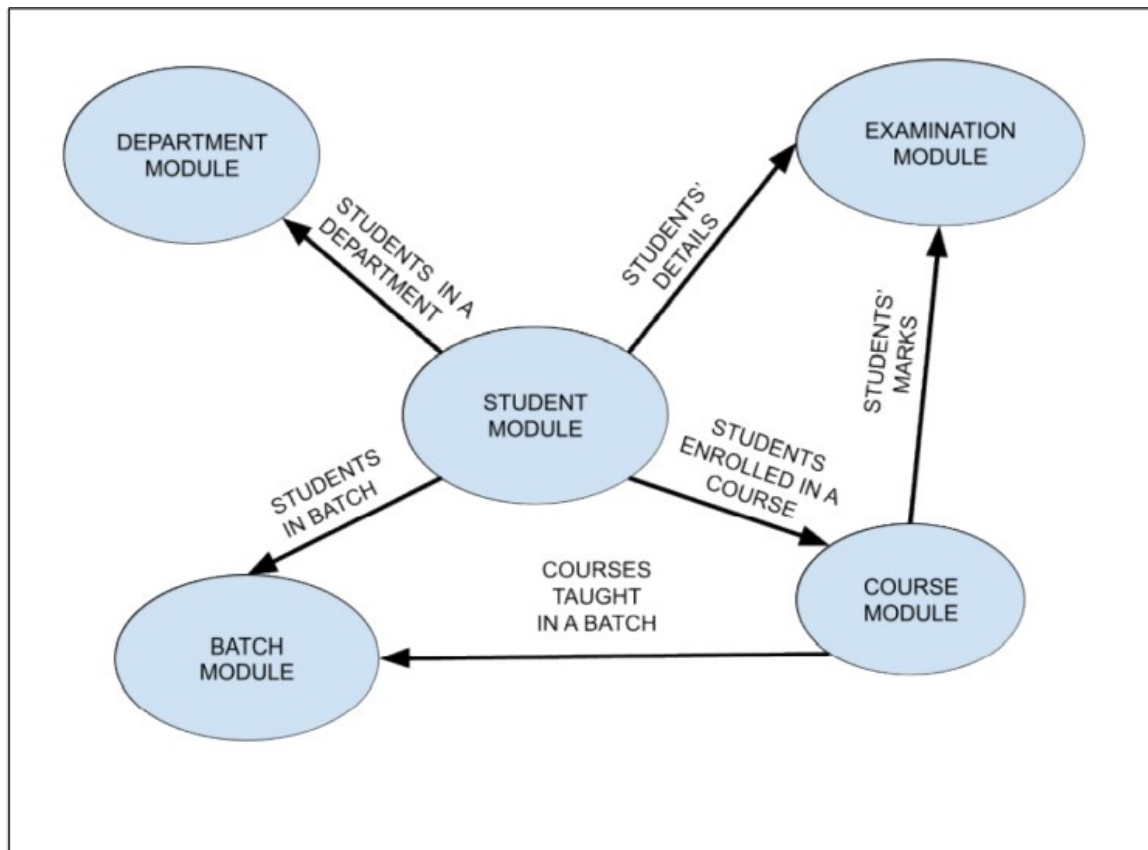
• **Programs**

```python
import os
import csv
import subprocess
import time
import sys
try:
    import matplotlib.pyplot as plt
except:
    subprocess.run(['pip', 'install', 'matplotlib'])
    import matplotlib.pyplot as plt

path='C:/PythonProgrammingProject_main-folder'
print('-'*50)


#All the Functions used Throughout the code
def loading_screen():
```

```python
    for i in range(10):
        sys.stdout.write("\rLoading" + "." * i)
        sys.stdout.flush()
        time.sleep(0.5)
    sys.stdout.write("\rLoading complete!")

def createfile(name,lst):
    with open(f'{path}/{name}','a',newline='')as f:
        script= csv.writer(f)
        script.writerow(lst)
        print(f"{name} file has been UPDATED")

def percent(num):
    if stream.lower()=='cse' or stream.lower()=='cseai'
or stream.lower()=='cseaiml' or
stream.lower()=='cseiotcsbs':
        num=(num*100)//600
    elif stream.lower()=='it' or stream.lower()=='ece'
or stream.lower()=='me':
        num=(num*100)//500
    return num


def grade(num):
    if num>=90:
        return("Outstanding Performance... You have
passed the exam with grade A.")
    elif num<90 and num>=80:
        return("Excellent Performance... You have
passed the exam with grade B.")
    elif num<80 and num>=70:
        return("Good Performance... You have passed the
exam with grade C.")
    elif num<70 and num>=60:
        return("Your performance is average... Work
hard... You have passed the exam with grade D.")
    elif num<60 and num>=50:
        return("Your performance is below average...
There is massive scope of improvement... You have
barely passed the exam with grade E.")
```

```python
    else:
        return("Extremely poor performance... You have
Failed the Exam and got F.")

def count(lst):
    num=0
    for i in lst:
        if str(type(i))=="<class 'int'>":
            num+=1
        else:
            pass
    return num


def add(lst):
    plus=0
    for i in lst:
        try:
            plus+=i
        except:
            pass
    return plus

def duplicate(file,attr,pos=0):
    with open(f'{path}/{file}','r') as f:
        reader = csv.reader(f)
        dup_lst=[]
        for i in reader:
            dup_lst+=[i[pos]]
    if attr in dup_lst:
        return True
    else:
        return False

def choice(stream):
    if stream.lower()=='cse' or stream.lower()=='cseai'
or stream.lower()=='cseaiml' or
stream.lower()=='cseiotcsbs':
        return ("C001:C002:C003:C004:C005:C006")
```

```python
        elif stream.lower()=='it' or stream.lower()=='ece'
or stream.lower()=='me':
            return ("C002:C003:C004:C005:C006")

def get_batch():
    with open(f'C:/PythonProgrammingProject_main-
folder/Batch.csv','r') as f:
        reader=csv.reader(f)
        rows=[row for row in reader]
        column=[]
        for i in range(len(rows)):
            if i==0:
                pass
            else:
                column+=[rows[i][0]]
    return column

def remove(string):
    with open(f'C:/PythonProgrammingProject_main-
folder/Student.csv','r+',newline='') as f:
        script=csv.reader(f)
        rows=[row for row in script]
        for i in rows:
            if i[0]==string:
                rows[rows.index(i)]=['','','','']
            else:
                pass
        f.seek(0)
        f.truncate()
        writer=csv.writer(f)
        writer.writerows(rows)


def course_graph():

color_lst=['#C70039','#9BB1F2','#FFC300','#FF5733','#DA
AFB1','#86B7C8']
    fig, ax = plt.subplots()
    legend_properties = {'weight':'heavy'}
```

```python
    ax.set_facecolor("Black")
    ax.tick_params(axis="both", colors="white")
    fig.set_facecolor("Black")
    ax.set_xlabel('Grades-------->', color="white")
    ax.set_ylabel('No. of Students-------->',
color="white")
    ax.spines["bottom"].set_color("white")
    ax.spines["left"].set_color("white")
    ax.xaxis.label.set_weight("heavy")
    ax.yaxis.label.set_weight("heavy")
    count=0
    with open(f'{path}/Course.csv','r')as f:
        script= csv.reader(f)
        rows=[row for row in script]
        req=[]
        for i in range(len(rows)):
            if i==0:
                pass
            else:
                req+=[rows[i][2]]
        lst=[['Python',(req[0].split('-'))[0:-1]],
            ['Math',(req[1].split('-'))[0:-1]],
            ['Physics',(req[2].split('-'))[0:-1]],
            ['Chemistry',(req[3].split('-'))[0:-1]],
            ['Biology',(req[4].split('-'))[0:-1]],
            ['English',(req[5].split('-'))[0:-1]]]

        for i in range(len(lst)):
            for j in range(len(lst[i][1])):
                try:

lst[i][1][j]=grade(int((lst[i][1][j].split(':'))[-
1]))[-2]
                except:
                    lst[i][1][j]=''

        for k in range(6):
            a=lst[k][1].count('A')
            b=lst[k][1].count('B')
            c=lst[k][1].count('C')
```

```python
            d=lst[k][1].count('D')
            e=lst[k][1].count('E')
            f=lst[k][1].count('F')

lst[k][1]={'A':a,'B':b,'C':c,'D':d,'E':e,'F':f}

        for j in lst:
            x=list(j[1].keys())
            y=list(j[1].values())
            ax.plot(x,
y,marker=",",color=color_lst[count],label=j[0],linewidt
h=3)
            leg=plt.legend(fontsize=10,loc="upper
right",
facecolor="Black",edgecolor="Black",prop=legend_propert
ies)
            count+=1

        for text in leg.get_texts():
            text.set_color('White')

        plt.show()

def batch_graph(arg):
    with open(f'{path}/Batch.csv','r') as f:
        reader=csv.reader(f)
        req=''
        rows=[row for row in reader]
        for i in range(len(rows)):
            if arg==rows[i][0]:
                req=rows[i][4]
                break
    req_lst=req.split(':')
    with open(f'{path}/Course.csv','r') as f:
        reader=csv.reader(f)
        rows=[row for row in reader]
        column=[]
        for i in range(len(rows)):
            if i==0:
                pass
```

```python
        else:
            column+=[rows[i][2]]
    new_column=[]
    for j in range(len(column)):
        new_column+=(column[j].split('-'))[0:-1]
new_req_lst=[]
temp=[]
for i in req_lst:
    for j in range(len(new_column)):
        if i in new_column[j]:
            temp+=[(new_column[j].split(':'))[-1]]
    new_req_lst+=[[[i]]+[temp]]
    temp=[]
lst=[]
temp=0
grade_lst=[]
for i in range(len(new_req_lst)):
    for j in range(6):
        try:
            temp+=int(new_req_lst[i][1][j])
        except:
            pass
    lst+=[new_req_lst[i][0]+[temp]]
    temp=0
for i in range(len(lst)):
    if lst[i][0][:3]=='CSE':
        grade_lst+=[grade((lst[i][1]*100)//600)[-
2]]
        lst[i][1]=grade((lst[i][1]*100)//600)[-2]
    else:
        grade_lst+=[grade((lst[i][1]*100)//500)[-
2]]
        lst[i][1]=grade((lst[i][1]*100)//500)[-2]

grade_no_lst={'A':grade_lst.count('A'),'B':grade_lst.co
unt('B'),'C':grade_lst.count('C'),'D':grade_lst.count('
D'),'E':grade_lst.count('E'),'F':grade_lst.count('F')}

    labels = list(grade_no_lst.keys())
    sizes = list(grade_no_lst.values())
```

```python
color_lst=['#C70039','#9BB1F2','#FFC300','#FF5733','#DA
AFB1','#86B7C8']
    explode = (0.01,0.1,0.02,0.05,0.03,0.1)
    new_labels=[]
    for i in range(len(labels)):
        new_labels+=[f'{labels[i]} : {str(sizes[i])}']

    fig,ax = plt.subplots()
    ax.set_facecolor("Black")
    fig.set_facecolor("Black")
    plt.rcParams['font.weight'] = 'heavy'
    #plt.rcParams['font.size'] = '1'

    patches, texts=ax.pie(sizes, labels=new_labels,
colors=color_lst,explode=explode,shadow=True,startangle
= -90,textprops={'fontsize': 0})

    centre_circle = plt.Circle((0,0),0.60,fc='black')
    fig = plt.gcf()
    fig.gca().add_artist(centre_circle)

    legend_properties = {'weight':'heavy'}

    leg=plt.legend(fontsize=10,loc="center",
facecolor="Black",edgecolor="Black",prop=legend_propert
ies)
    for text in leg.get_texts():
        text.set_color('white')

    plt.title('Overall Grades vs No. of
Students',color='White',weight='heavy')
    plt.axis('equal')
    plt.show()

def department_graph():
    need={}
    with open(f'{path}/Batch.csv','r') as f:
        reader=csv.reader(f)
        batch=[batch[0] for batch in reader]
```

```python
        batch=batch[1:]
    for arg in batch:
        avg=0
        with open(f'{path}/Batch.csv','r') as f:
            reader=csv.reader(f)
            req=''
            rows=[row for row in reader]
            for i in range(len(rows)):
                if arg==rows[i][0]:
                    req=rows[i][4]
                    break
        req_lst=req.split(':')
        with open(f'{path}/Course.csv','r') as f:
            reader=csv.reader(f)
            rows=[row for row in reader]
            column=[]
            for i in range(len(rows)):
                if i==0:
                    pass
                else:
                    column+=[rows[i][2]]
            new_column=[]
            for j in range(len(column)):
                new_column+=(column[j].split('-'))[0:-
1]
        new_req_lst=[]
        temp=[]
        for i in req_lst:
            for j in range(len(new_column)):
                if i in new_column[j]:
                    temp+=[(new_column[j].split(':'))[-
1]]
            new_req_lst+=[[[i]]+[temp]]
            temp=[]
        lst=[]
        temp=0
        grade_lst=[]
        for i in range(len(new_req_lst)):
            for j in range(6):
                try:
```

```python
                    temp+=int(new_req_lst[i][1][j])
                except:
                    pass
            lst+=[new_req_lst[i][0]+[temp]]
            temp=0
        for i in range(len(lst)):
            if lst[i][0][:3]=='CSE':
                lst[i][1]=(lst[i][1]*100)/600
            else:
                lst[i][1]=(lst[i][1]*100)/500
        for i in range(len(lst)):
            avg+=lst[i][1]
        avg=int(avg//len(lst))
        need[arg]=avg

    xdata = list(need.keys())
    ydata = list(need.values())

color_lst=['#C70039','#9BB1F2','#FFC300','#FF5733','#DA
AFB1','#86B7C8']
    fig,ax = plt.subplots()
    ax.set_facecolor("Black")
    fig.set_facecolor("Black")
    ax.set_xlabel("X axis", color="white")
    ax.set_ylabel("Y axis", color="white")
    ax.spines["bottom"].set_color("white")
    ax.spines["left"].set_color("white")
    ax.spines['bottom'].set_linewidth(2)
    ax.spines['left'].set_linewidth(2)
    ax.xaxis.label.set_weight("heavy")
    ax.yaxis.label.set_weight("heavy")
    ax.tick_params(axis='x', labelcolor='white',
labelsize=10,color='white',width=2)
    ax.tick_params(axis='y', labelcolor='white',
labelsize=10,color='white',width=2)


plt.barh(xdata,ydata,color=color_lst,height=0.3,align='
center')
```

```python
    plt.title('Histogram of Average of Students vs
Batch',color='white',pad=17,fontweight='bold')
    plt.xlabel('Average---------------->')
    plt.ylabel('Batch--------------->', labelpad=15)
    plt.show()




#Creation of Folder and all the Modules recquired...
try:
    os.makedirs(f'{path}/ReportCards')
    message=True
except:
    message=False

while message:
    createfile('Batch.csv',['Batch ID','Batch
Name','Department Name','List of Courses','List of
Students'])
    createfile('Course.csv',['Course ID','Course
Name','Marks Obtained'])
    with open(f'{path}/Course.csv','a',newline='')as f:
        script= csv.writer(f)
        script.writerow(['C001','Python Programming'])
        script.writerow(['C002','Math'])
        script.writerow(['C003','Physics'])
        script.writerow(['C004','Chemistry'])
        script.writerow(['C005','Biology'])
        script.writerow(['C006','English'])
    createfile('Department.csv',['Department
ID','Department Name','List of Batches'])
    with
open(f'{path}/Department.csv','a',newline='')as f:
        script= csv.writer(f)
        script.writerow(['CSE','Computer Sience and
Engineering'])
        script.writerow(['CSEAI','Computer Sience and
Engineering and Artificial Intelligence'])
```

```python
        script.writerow(['CSEAIML','Computer Sience and
Engineering and Artificial Intelligence and Machine
Learning'])
        script.writerow(['CSEIOTCSBS','Computer Sience
and Engineering and Internet of Things and Business
Studies'])
        script.writerow(['IT','Information
Technology'])
        script.writerow(['ECE','Electrical and
Communications Engineering'])
        script.writerow(['ME','Mechanical
Engineering'])
    createfile('Student.csv',['Student
ID','Name','Class Roll Number','Batch ID'])
    createfile('Examination.csv',['Course
Name','Student ID','Marks'])
    break

print('\n','Computer Sience and Engineering :
CSE','\n',
      'Computer Sience and Engineering and Artificial
Intelligence : CSEAI','\n',
      'Computer Sience and Engineering and Artificial
Intelligence and Machine Learning : CSEAIML','\n',
      'Computer Sience and Engineering and Internet of
Things and Business Studies : CSEIOTCSBS','\n',
      'Information Technology : IT','\n',
      'Electrical and Communications Engineering :
ECE','\n',
      'Mechanical Engineering : ME','\n')
print("Please write all the stream name in short form
as mentioned above and in capital letters only!!!")
print()


student_no=int(input("Enter the no. of students whose
data you want to input : "))
print()
print('-'*50)
for i in range(student_no):
```

```python
    name=input("Enter Student's Name : ")
    batch=input("Which batch they are in (e.g. 2022-26)
: ")
    stream=input("Which Stream are you in (e.g. CSE) :
")
    roll=input("What is your Class Roll Number : ")

    batch_id=stream+batch[2:4]
    student_id=batch_id+roll
    batch_name=stream+batch

    if duplicate('Student.csv',student_id,0):
        print("the student is already present in the
directory")
        print(f"You can find your report card here :
{path}/ReportCards/{student_id}_{name}.txt")
    else:
        print()
        print("The subjects are
[Python,Math,Physics,Chemistry,Biology,English]")
        print('please enter the subjects marks in the
above mentioned order in a list type and if you dont
have a particular subject write there "null" (e.g.
[100,100,"null",75,69,85])')
        print('Each Subject is ot of 100 marks')
        print()
        marks_lst=eval(input("Enter the Marks list :
"))
        total_marks=add(marks_lst)
        print()

        with
open(f"{path}/ReportCards/{student_id}_{''.join(name.sp
lit())}.txt",'w') as f:

            f.writelines([f'Name of the student :
{name} \n',
                          f'Class Roll of the student :
{roll} \n',
```

```python
                                f'Stream of the student :
{stream} \n',
                                f'Your Student ID is :
{student_id}\n',
                                '\n',
                                f'Marks obtained in Math is :
{marks_lst[1]} \n',
                                f'Marks obtained in Python is
: {marks_lst[0]} \n',
                                f'Marks obtained in Physics
is : {marks_lst[2]} \n',
                                f'Marks obtained in Chemistry
is : {marks_lst[3]} \n',
                                f'Marks obtained in Biology
is : {marks_lst[4]} \n',
                                f'Marks obtained in English
is : {marks_lst[5]} \n'])

            f.write('\n')
            f.write(f'You have got {total_marks} in
total with {percent(total_marks)}%\n')

f.write(grade(total_marks/count(marks_lst)))

createfile('Student.csv',[student_id,name,roll,batch_id
])
        print(f"You can find your report card here :
{path}/ReportCards/{student_id}_{''.join(name.split())}
.txt")

openpath=f"{path}/ReportCards/{student_id}_{''.join(nam
e.split())}.txt"
        subprocess.run(['start',openpath], shell=True)

        ask=input("Do you want to remove this name from
database now is the time (Y/N) : ")

        if ask.lower()=='n':
            if duplicate('Batch.csv',batch_id,0):
```

```python
                with
open(f'{path}/Batch.csv','r+',newline='') as f:
                    script=csv.reader(f)
                    rows=[row for row in script]
                    for i in rows:
                        if batch_id==i[0]:

rows[rows.index(i)][4]+=f':{student_id}'
                    f.seek(0)
                    f.truncate()
                    writer=csv.writer(f)
                    writer.writerows(rows)

                print("Batch.csv has been updated")
            else:

createfile('Batch.csv',[batch_id,batch_name,stream,choi
ce(stream),student_id])

                with
open(f'{path}/Course.csv','r+',newline='') as f:
                    script=csv.reader(f)
                    rows=[row for row in script]
                    for i in range(len(rows)):
                        if i==0:
                            pass
                        else:
                            try:

rows[i][2]+=f'{student_id}:{marks_lst[i-1]}-'
                                except:

rows[i].append(f'{student_id}:{marks_lst[i-1]}-')
                    f.seek(0)
                    f.truncate()
                    writer=csv.writer(f)
                    writer.writerows(rows)
        else:
            remove(student_id)
```

```python
                subprocess.call("TASKKILL /F /IM
notepad.exe", shell=True)
                os.remove(openpath)
                print('Your details have been successfully
removed from the directory')
        print('-'*50)
        print()


try:
    with open(f'{path}/Department.csv','r+',newline='')
as f:
        script=csv.reader(f)
        rows=[row for row in script]
        lst=get_batch()
        for i in lst:
            for j in rows:
                if i[0:-2]==j[0]:
                    try:
                        if i in j[2]:
                            pass
                        else:

rows[rows.index(j)][2]+=f'{i}:'
                    except:

rows[rows.index(j)].append(f'{i}:')
                    break
        f.seek(0)
        f.truncate()
        writer=csv.writer(f)
        writer.writerows(rows)

except:
    print("Nothing to add in Department.csv")



#Creation of the Graphs...
print()
```

```python
print("Give the details Below to see the Batchwise
percent Graph")
batch=input("Which batch they are in (e.g. 2022-26) :
")
stream=input("Which Stream are they in (e.g. CSE) : ")
print('Please Close the Figure window after viewing to
continue')
batch_id=stream+batch[2:4]

with open(f'{path}/Batch.csv','r') as f:
    reader=csv.reader(f)
    batch=[batch[0] for batch in reader]
    batch=batch[1:]

while True:
    if batch_id in batch:
        batch_graph(batch_id)
        break
    else:
        print(f'details with {batch_id} this Batch ID
is not in the directory')
        ask=input("Do you want to continue (y/n) : ")
        if ask.lower()=='y':
            batch=input("Which batch they are in (e.g.
2022-26) : ")
            stream=input("Which Stream are they in
(e.g. CSE) : ")
            batch_id=stream+batch[2:4]
            continue
        else:
            print('OK')
            break
print()
print('The overall Course graph will come now')
print('Please Close the Figure window after viewing to
continue')
loading_screen()
course_graph()
print()
print()
```
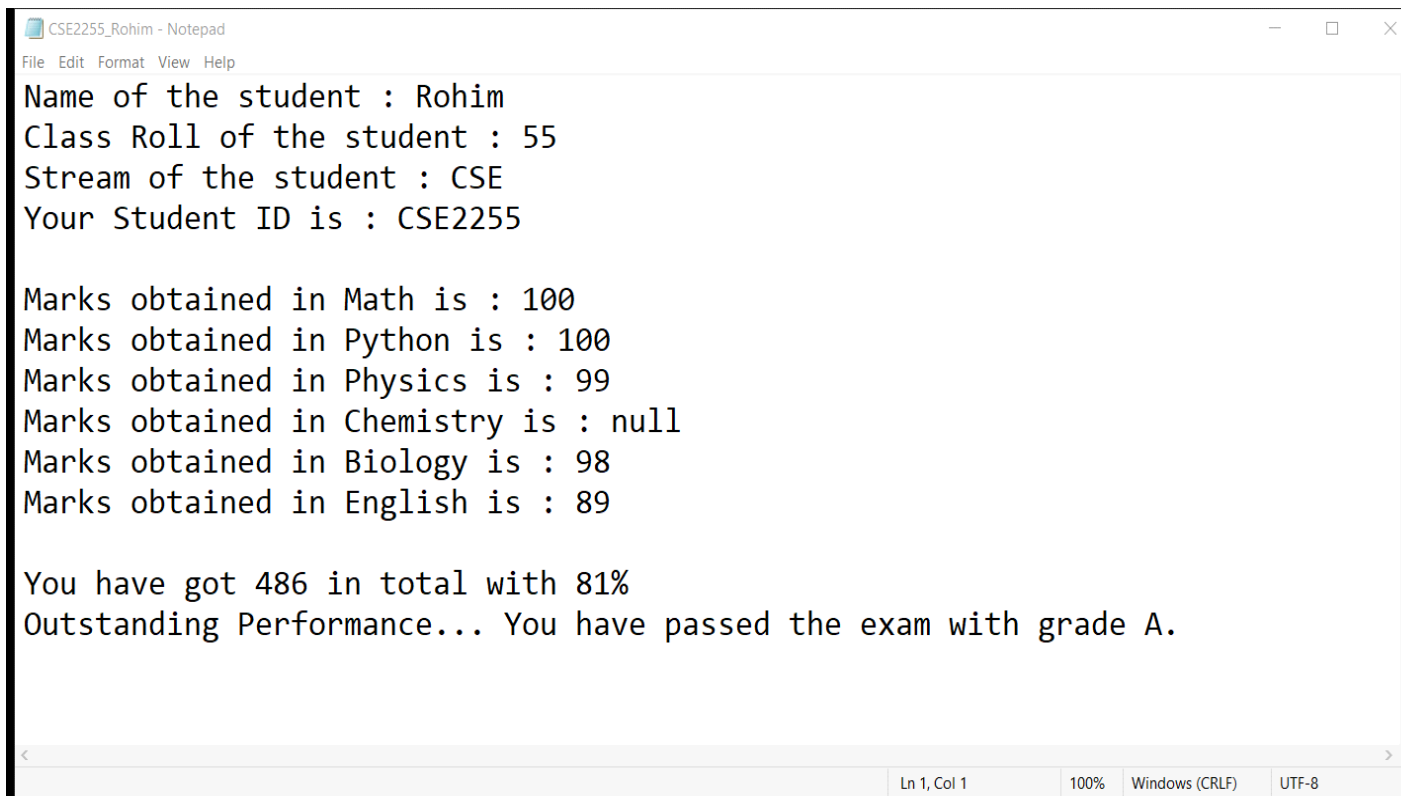
```
print("The overall Department wise average graph will
come now")
print('Please Close the Figure window after viewing to
continue')
loading_screen()
department_graph()
print()
print()

last=input("Press Enter to exit")
subprocess.call("TASKKILL /F /IM notepad.exe",
shell=True)
```

- ## <u>Outputs</u>

CSE2255_Rohim - Notepad

File Edit Format View Help

```
Name of the student : Rohim
Class Roll of the student : 55
Stream of the student : CSE
Your Student ID is : CSE2255

Marks obtained in Math is : 100
Marks obtained in Python is : 100
Marks obtained in Physics is : 99
Marks obtained in Chemistry is : null
Marks obtained in Biology is : 98
Marks obtained in English is : 89

You have got 486 in total with 81%
Outstanding Performance... You have passed the exam with grade A.
```

Ln 1, Col 1   100%   Windows (CRLF)   UTF-8

PythonProject.py - C:\Users\Pritam Aich\Downloads\PythonProject.py (3.11.0)

CSE2255_Rohim - Notepad

File Edit Format View Help

Name of the student : Rohim
Class Roll of the student : 55
Stream of the student : CSE
Your Student ID is : CSE2255

Marks obtained in Math is : 100
Marks obtained in Python is : 100
Marks obtained in Physics is : 99
Marks obtained in Chemistry is : null
Marks obtained in Biology is : 98
Marks obtained in English is : 89

You have got 486 in total with 81%
Outstanding Performance... You have passed the exam with grade A.

Ln 1, Col 1   100%   Windows (CRLF)   UTF-8

```
def grade(num):
    if num>=90:
        return("Outstan
    elif num<90 and num
        return("Excelle
    elif num<80 and num
        return("Good Pe
    elif num<70 and num
        return("Your pe
    elif num<60 and num
```

The subjects are [Python,Math,Physics,Chemistry,Biology,English]
please enter the subjects marks in the above mentioned order in a list type and
if you dont have a particular subject write there "null" (e.g. [100,100,"null",7
5,69,85])
Each Subject is ot of 100 marks

Enter the Marks list : [100,100,99,"null",98,89]

Student.csv file has been UPDATED
You can find your report card here : C:/PythonProgrammingProject_main-folder/Rep
ortCards/CSE2255_Rohim.txt
Do you want to remove this name from database now is the time (Y/N) :

Ln 1 Col 0

Type here to search

23:33
30-12-2022