```
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():
    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
    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")
    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','#DAAFB1','#86B7C8']
    fig, ax = plt.subplots()
    legend_properties = {'weight':'heavy'}
    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')
            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],linewidth=3)
            leg=plt.legend(fontsize=10,loc="upper right", facecolor="Black",edgecolor="Black",prop=legend_properties)
            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
            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.count('B'),'C':grade_lst.count('C'),'D':grade_lst.count('D'),'E':grade_lst.count

    labels = list(grade_no_lst.keys())
    sizes = list(grade_no_lst.values())
    color_lst=['#C70039','#9BB1F2','#FFC300','#FF5733','#DAAFB1','#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': 6

    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_properties)
```

```
        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]
            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:
                        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','#DAAFB1','#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')
```

```
        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'])
            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):
        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 writ
            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.split())}.txt",'w') as f:

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