DAV MODEL SCHOOL, DURGAPUR (W.B)

ACADEMIC YEAR: 2024-25

PROJECT REPORT ON

STUDENT REPORT CARD GENERATION SYSTEM USING PYTHON AND MYSQL

ROLL NO :

NAME : DIPAYAN MONDAL

CLASS : XII – A1

SUBJECT : COMPUTER SCIENCE

SUB CODE : 083

PROJECT GUIDE: Mr SATYANARAYAN MAHAPATRA

PGT (CS)

DAV MODEL SCHOOL, DURGAPUR (W.B)

CERTIFICATE

This is to certify that Master **Dipayan Mondal** Roll No: _____ has successfully completed the project Work entitled Student Report Card Generation System Using Python and MySQL in the subject Computer Science (083) laid down in the regulations of CBSE for the purpose of SSC Practical Examination in Grade XII.

(Satyanarayan Mahapatra)
PGT Comp Science

Signature of External Examiner:

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ACKNOWLEDGEMENT

Apart from the efforts of me, the success of any project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project.

I express my heartfelt gratitude to my parents for constant encouragement while carrying out this project.

I express my deep sense of gratitude to **Ms. Papiya Mukherjee**, **Principal cum RO, DAV Institutions, West Bengal Zone**, who has been continuously motivating and extending her helping hand to us.

My sincere thanks to our guide and Mentor **Mr. Satyanarayan Mahapatra**, who reviewed my project and helped in solving each and every problem, occurred during implementation of the project

The guidance and support received from all the members who contributed and who are contributing to this project, was vital for the success of the project. I am grateful for their constant support and help.

……

(Signature of Student)

Name: DIPAYAN MONDAL

Roll No.: _____

Student Report Card Generation System Using Python and MySQL

INTRODUCTION

The *Student Report Card Generation System Using Python and MySQL* is designed to streamline the process of report card creation by integrating GUI elements, database management, and PDF generation. The project fetches student data from a MySQL database, processes the data for grading and remarks, and generates a formatted PDF report card. This project demonstrates practical applications of Python programming, GUI design with Tkinter, and data management with MySQL.

OBJECTIVES OF THE PROJECT

The objective of this project is to let the students apply the programming knowledge into a real- world situation/problem and exposed the students how programming skills helps in developing a good software.

- Write programs utilizing modern software tools.
- Apply object oriented programming principles effectively when developing small to medium sized projects.
- Write effective procedural code to solve small to medium sized problems.
- Students will demonstrate a breadth of knowledge in computer science, as exemplified in the areas of systems, theory and software development.
- Students will demonstrate ability to conduct a research or applied Computer Science project, requiring writing and presentation skills which exemplify scholarly style in computer science.

SYSTEM DEVELOPMENT LIFE CYCLE (SDLC)

The SDLC phases for this project include:

1. **Planning**: Identifying project scope and requirements for report card generation.
2. **Design**: Creating a blueprint of the GUI, database schema, and PDF layout.
3. **Development**: Coding the Tkinter interface, MySQL integration, and PDF generation logic.
4. **Testing**: Verifying data accuracy, PDF layout, and usability of the GUI.
5. **Implementation**: Deploying the application on a local system.
6. **Maintenance**: Updating and refining the code for enhanced features or data changes.

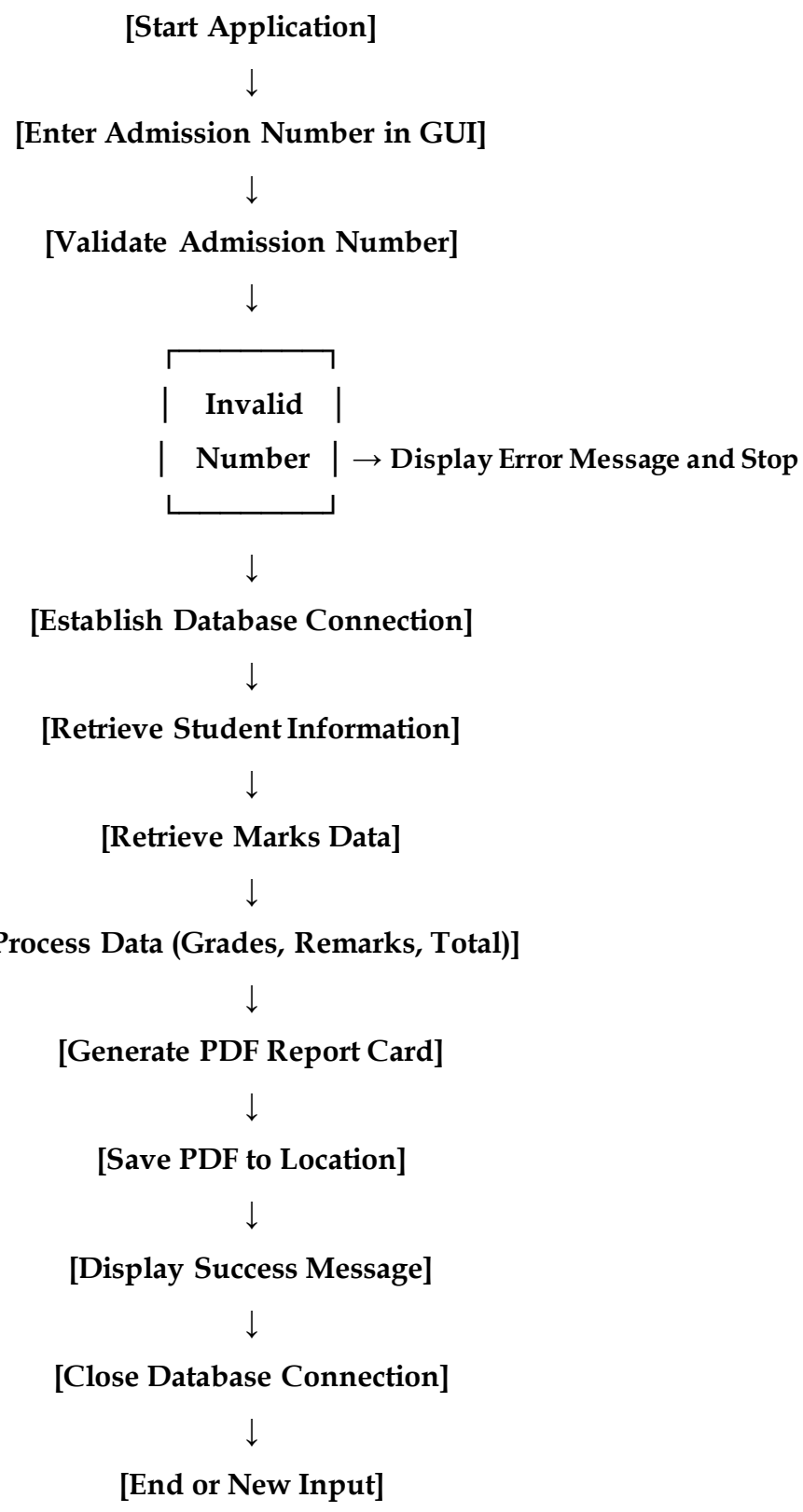
HARDWARE AND SOFTWARE REQUIREMENTS

I.OPERATING SYSTEM	:	WINDOWS 7 AND ABOVE
II. PROCESSOR	:	PENTIUM (ANY) OR AMD ATHALON (3800+- 4200+ DUAL CORE)
III. MOTHERBOARD	:	1.845 OR 915,995 FOR PENTIUM 0R MSI K9MM-V VIA K8M800+8237R PLUS CHIPSET FOR AMD ATHALON
IV. RAM	:	512MB+
V. HARD DISK	:	SATA 40 GB OR ABOVE
VIII. MONITOR 14.1 OR 15 -17 INCH		
IX. KEY BOARD AND MOUSE		
X. PRINTER	:	(if print is required – [Hard copy])

SOFTWARE REQUIREMENTS:

- **WINDOWS OS**
- **PYTHON**
- **MYSQL CONNECTOR MODULE**

FLOW CHART


[Start Application]
↓
[Enter Admission Number in GUI]
↓
[Validate Admission Number]
↓
Invalid Number
→ Display Error Message and Stop
↓
[Establish Database Connection]
↓
[Retrieve Student Information]
↓
[Retrieve Marks Data]
↓
[Process Data (Grades, Remarks, Total)]
↓
[Generate PDF Report Card]
↓
[Save PDF to Location]
↓
[Display Success Message]
↓
[Close Database Connection]
↓
[End or New Input]

SOURCE CODE

```
#Importing required modules
from fpdf import FPDF
import mysql.connector as my
import tkinter as tk

# Function to get input text and display it
def show_text():
    # Get the input text from the entry widget
    a = int(entry.get())
    #Database Connection
    root.destroy()
    con=my.connect(host='localhost', user='root', passwd='', database='dipayan')
    cu=con.cursor()

    #Marks List Function Definition
    def marks(a):
        e,p,c,m,cs,pfl=['English'],['Physics'],['Chemistry'],['Maths'],['Computer'],['P.Ed/ FA/
Lib.Sci']
        cu.execute('SELECT * FROM STUDENTS NATURAL JOIN (SELECT * FROM wt1 UNION
ALL SELECT * FROM wt2 UNION ALL SELECT * FROM hy) AS combined_table WHERE
adm={}'.format(a))

        #Adding Marks of various Subjects in their respective lists retrieved from
the database
        for i in cu:
            e.append(i[8])
            p.append(i[9])
            c.append(i[10])
            m.append(i[11])
            cs.append(i[12])
            pfl.append(i[13])

        #Putting all the subject marks list into a single list
        m=[e,p,c,m,cs,pfl]
        return m

    #Student Data retrieving Function Definition
    def stdata(a):
        cu.execute('SELECT * FROM STUDENTS WHERE adm={}'.format(a))
        #Getting the student information according to the Admission Number
entered by user
```

```
    for i in cu:
        a=i
    return a

#Grading Function Definition
def grading_system(mo,tm):
    a=mo/tm*100  #Percentage in the exam

    #Grading system according to percentage obtained
    if a>=91:
        return 'A+'
    elif a>=81 and a<91 :
        return 'A'
    elif a>=71 and a<81 :
        return 'B+'
    elif a>=61 and a<71 :
        return 'B'
    elif a>=51 and a<61 :
        return 'C+'
    elif a>=41 and a<51 :
        return 'C'
    elif a>=31 and a<41 :
        return 'D'
    else:
        return 'F'

#Remark Function Definition
def remarking_system(mo,tm):
    a=mo/tm*100    #Percentage in the exam

    #Remarking system according to percentage obtained
    if a>=91:
        return 'Excellent'
    elif a>=81 and a<91 :
        return 'Very Good'
    elif a>=71 and a<81 :
        return 'Good'
    elif a>=61 and a<71 :
        return 'Satisfactory'
    elif a>=51 and a<61 :
        return 'Average'
    elif a>=41 and a<51 :
        return 'Below Average'
    elif a>=31 and a<41 :
        return 'Needs Improvement'
    else:
```

```
            return 'Fail'

    #Main Function Definition as a Class
    class PDF(FPDF):

        #Heading in the Report Card Function Definition
        def header(self):
            #School Details
            self.set_font("Times", "B", 22)
            self.cell(0, 15, "DAV MODEL SCHOOL, DURGAPUR", align="C")
            self.ln(9)

            self.set_font("Times", "", 16)
            self.cell(0, 15, "J.M. SENGUPTA ROAD, B-ZONE, DURGAPUR", align="C")
            self.ln(9)

            self.set_font("Times", "", 12)
            self.cell(0, 15, "DIST.- PASCHIM BARDHAMAN, WEST BENGAL- 713205",
align="C")
            self.ln(9)

            self.set_font("Times", "", 15)
            self.cell(0, 15, 'E-mail- dav@davmodeldurgapur.com', align="C")

            self.set_line_width(0.6)
            self.line(10, 50, 200, 50)
            self.ln(15)

            self.set_font("Times", "BU", 30)
            self.cell(0, 15, "Student Report Card", align="C")
            self.ln(17)

        #Points of Student Information Function Definition
        def student_details(self, adm_no,stu_name, stu_class,
roll_no,f_name,m_name,dob,att):
            self.set_font("Arial", "B", 14)

            #1st line
            self.cell(5, 10, " ")
            self.cell(100, 10, "Admission No: {}H".format(adm_no), align="L")
            self.cell(0, 10, "Name: {}".format(stu_name), ln=True, align="L")

            #2nd line
            self.cell(5, 10, " ")
            self.cell(100, 10, "Class: {}".format(stu_class), align="L")
            self.cell(0, 10, "Roll Number: {}".format(roll_no), ln=True, align="L")
```

```
        #3rd line
        self.cell(5, 10, " ")
        self.cell(100, 10, "Father's Name: {}".format(f_name), align="L")
        self.cell(0, 10, "Mother's Name: {}".format(m_name), ln=True, align="L")

        #4th line
        self.cell(5, 10, " ")
        self.cell(100, 10, "D.O.B.: {}".format(dob), align="L")
        self.cell(0, 10, "Attendance: {}/200".format(att), ln=True, align="L")
        self.ln(10)

    #Heading of the columns of the marks table Function Definition
    def table_header(self):
        self.set_font("Arial", "B", 14)
        self.set_fill_color(255, 230, 204)
        self.cell(48, 8, "Subject", border=1, align="C",fill=True)
        self.set_fill_color(255, 243, 230)
        self.cell(48, 8, "Weekly Test 1", border=1, align="C",fill=True)
        self.cell(48, 8, "Weekly Test 2", border=1, align="C",fill=True)
        self.cell(48, 8, "Half Yearly", border=1, align="C",fill=True)
        self.ln()

    #Creating the rows for each Subject Function Definition
    def table_row(self, subject_name, wt1, wt2, hy):
        self.set_font("Arial", "B", 14)
        self.set_fill_color(255, 230, 204)
        self.cell(48, 8, subject_name, border=1, align="C",fill=True)
        self.set_font("Arial", "", 12)
        self.cell(48, 8, str(wt1), border=1, align="C")
        self.cell(48, 8, str(wt2), border=1, align="C")
        self.cell(48, 8, str(hy), border=1, align="C")
        self.ln()

    #Percentage displaying row Function Definition
    def percentage_row(self,wt1,wt2,hy):
        self.set_font("Arial", "B", 14)
        self.set_fill_color(255, 230, 204)
        self.cell(48, 8, 'Percentage', border=1, align="C",fill=True)
        self.set_fill_color(255, 243, 230)
        self.cell(48, 8, str(wt1)+'%', border=1, align="C",fill=True)
        self.cell(48, 8, str(wt2)+'%', border=1, align="C",fill=True)
        self.cell(48, 8, str(hy)+'%', border=1, align="C",fill=True)
        self.ln()

    #Grade displaying row Function Definition
    def grading_row(self,wt1t,wt2t,hyt):
```

```
        self.set_font("Arial", "B", 14)
        self.set_fill_color(255, 230, 204)
        self.cell(48, 8, 'Grade', border=1, align="C",fill=True)
        self.set_fill_color(255, 243, 230)
      self.cell(48, 8, grading_system(wt1t,150), border=1, align="C",fill=True)
      self.cell(48, 8, grading_system(wt2t,150), border=1, align="C",fill=True)
      self.cell(48, 8, grading_system(hyt,600), border=1, align="C",fill=True)
        self.ln()

    #Remarks displaying row Function Definition
    def remarking_row(self,wt1t,wt2t,hyt):
        self.set_font("Arial", "B", 14)
        self.set_fill_color(255, 230, 204)
        self.cell(48, 8, 'Remarks', border=1, align="C",fill=True)
        self.set_fill_color(255, 243, 230)
        self.cell(48, 8, remarking_system(wt1t,150), border=1, align="C",fill=True)
        self.cell(48, 8, remarking_system(wt2t,150), border=1, align="C",fill=True)
        self.cell(48, 8, remarking_system(hyt,600), border=1, align="C",fill=True)
        self.ln()

    #Teacher's Remarks
    def teacher_remark(self,n):
        import random
      l=["{} consistently demonstrates enthusiasm for learning and active participation.",
        "{} displays a positive attitude and works well with classmates.",
        "{} shows steady improvement and puts in great effort daily.",
        "{} is a responsible student who completes assignments on time.",
        "{} has a curious mind and enjoys exploring new topics.",
        "{} is dependable and maintains focus during classroom activities.",
        "{} collaborates effectively and brings creative ideas to discussions.",
        "{} is attentive in class and shows good organizational skills.",
        "{} participates regularly and remains engaged throughout lessons.",
        "{} completes work diligently and approaches tasks thoughtfully."]
        r=random.randint(0,len(l)-1)
        self.cell(48, 10, '')
        self.ln(10)

        self.set_fill_color(255, 230, 204)
        self.set_font("Arial", "BU", 14)
        self.cell(192, 10, "Teacher's Remark", border=1, ln=True, align="C",fill=True)
        self.set_font("Arial", "", 12)
        self.cell(192, 10, l[r].format(n.split()[0].title()), border=1, ln=True, align="C")
        self.ln()
        #Watermark
      self.image(r"C:\Users\dipay\OneDrive\Documents\CS-Project\DAV-wm(1).png", 22,
70, 170, 170)

    #Signature Blocks
```

```
        def signature_block(self):
            self.set_font("Arial", "BU", 14)
            self.cell(45, 15, align="C")
            self.cell(51, 15, border=1, align="C")
            self.cell(51, 15, border=1, align="C")
            self.ln()

            self.set_fill_color(255, 230, 204)
            self.cell(45, 8, align="C")
            self.cell(51, 8, "Parent's Signature", border=1, align="C", fill=True)
            self.cell(51, 8, "Pricipal's Signature", border=1, align="C", fill=True)

            #Ending lines
            self.set_line_width(1)
            self.line(10, 280, 200, 280)
            self.line(10, 282, 200, 282)

    #Report Card Creation Function Definition
    def generate_report_card(student_data, marks_data,name, pdf_filename):
        global wt1t
        global wt2t
        global hyt
        wt1t=0
        wt2t=0
        hyt=0
        pdf = PDF()
        pdf.add_page()

       #CBSE and DAV Logos
       pdf.image(r"C:\Users\dipay\OneDrive\Documents\CS-Project\CBSE.png",  x=5, y=10,
w=30, h=35)
       pdf.image(r"C:\Users\dipay\OneDrive\Documents\CS-Project\DAV  Top.jpg", x=175,
y=10, w=32, h=35)

       #Pricipal Mam's Signature
       pdf.image(r"C:\Users\dipay\OneDrive\Documents\CS-Project\P  Sign.jpg", x=110,
y=246, w=40, h=15)

       # Add student details
       adm_no,stu_name, stu_class, roll_no,f_name,m_name,dob,att = student_data
       pdf.student_details(adm_no,stu_name, stu_class,
roll_no,f_name,m_name,dob,att)



       # Add table header
       pdf.table_header()
```

```
        # Add marks data
        for subject_name, wt1, wt2, hy in marks_data:
            pdf.table_row(subject_name, wt1, wt2, hy)
            wt1t+=wt1
            wt2t+=wt2
            hyt+=hy

        #Calling the functions created for the marks evaluation
        pdf.table_row('Total',wt1t,wt2t,hyt)
        pdf.percentage_row(round(wt1t*2/3,2),round(wt2t*2/3,2),round(hyt/6,2))
        pdf.grading_row(wt1t,wt2t,hyt)
        pdf.remarking_row(wt1t,wt2t,hyt)
        pdf.teacher_remark(name)
        pdf.signature_block()

        #Saving the PDF to a file along with error handling
        try:
            pdf.output(pdf_filename)
            print('Report Card ready at {}'.format(pdf_filename))
        except Exception as e:
            print(f"Error generating PDF: {e}")

    #Getting list of Admission numbers
    cu.execute("Select * from students")
    l=[]
    for i in cu:
        l.append(i[0])

    #Creating Report Card using all the above created functions by taking input
from the user
    #a=int(input("Enter Admission Number"))

    #Sending data to respective functions and finally saving the pdf
    if a in l:
        marks_data = marks(a)
        student_data = stdata(a)
        f = student_data[1] + '.pdf'
        pdf_filename=r"C:\Users\dipay\Downloads\{}".format(f)
        generate_report_card(student_data, marks_data,f, pdf_filename)
    else:
        print('Admission number not found')

    cu.close()
    con.close()
# Create the main application  window
root  = tk.Tk()
root.title("Report  Card Generator")
root.geometry("300x200")
```

```
# Create an entry widget for input
entry_label = tk.Label(root, text="Enter Admission Number:")
entry_label.pack(pady=5)

entry = tk.Entry(root, width=30)
entry.pack(pady=5)

# Create a button to trigger the display of input text
submit_button = tk.Button(root, text="Generate", command=show_text)
submit_button.pack(pady=10)

# Create a label to display the output text
output_label = tk.Label(root, text="")
output_label.pack(pady=10)

# Start the GUI event loop
root.mainloop()
```

SQL TABLES USED :-

I) STUDENT DETAILS CONTAINING TABLE:-

```
MariaDB [dipayan]> select * from students;
```

ADM	NAME	CLASS	ROLL.NO	FATHER'S NAME	MOTHER'S NAME	D.O.B.	ATTENDANCE
10235	TIYASHA MISHRA	12	42	HARIMOY MISHRA	SUPRITI MISHRA	2007-11-26	192
10542	SOUGATA BANERJEE	12	39	SUBRATA BANERJEE	SUNANDA BANERJEE	2007-06-13	102
10635	BIDITA DAS	12	13	TARASHANKAR DAS	RUMA DAS	2007-12-06	165
10652	AYUSHI JHA	12	4	SHANTANU JHA	SHEELA JHA	2007-12-24	163
10687	ANISHA BASU	12	8	BIPLAB BASU	DEBJANI BASU	2007-06-07	183
10707	SARTHAK ROY	12	29	SUBRATA ROY	UMA ROY	2007-07-16	186
10709	DIPAYAN MONDAL	12	17	PRADIP MONDAL	TRINAYANI MONDAL	2007-03-23	162
10892	SWASTIKA MUKHERJEE	12	43	ANINDYA MUKHERJEE	REEMA MUKHERJEE	2007-11-22	143
10965	RAHUL DEY	12	23	HARIANANDA DEY	PRANTIKA DEY	2007-06-23	167
10986	ARYA BANERJEE	12	10	SUDIP BANERJEE	TANU BANERJEE	2007-12-23	152

2) MARKS OF EACH EXAMS CONDUCTED IN RESPECTIVE TABLES:-

I) WEEKLY TEST 1-

```
MariaDB [dipayan]> select * from wt1;
```

ADM	ENGLISH	PHYSICS	CHEMISTRY	MATHS	COMPUTER	P.ED /FA /LIB SCI
10235	21	22.5	20.5	23	21	20
10542	20.5	21	19.5	20.5	22	21
10635	18	21.5	15.5	18.5	20	23
10652	12	13	12.5	15.5	10	17
10687	21	19	18	18.5	22	23
10707	12	19.5	18	21.5	22	25
10709	18	22	18.5	23	24	18
10892	21	19	15	20	22	21
10965	21	19.5	18.5	20.5	22	21
10986	22	19	18.5	21	22	23

II) WEEKLY TEST 2-

```
MariaDB [dipayan]> select * from wt2;
```

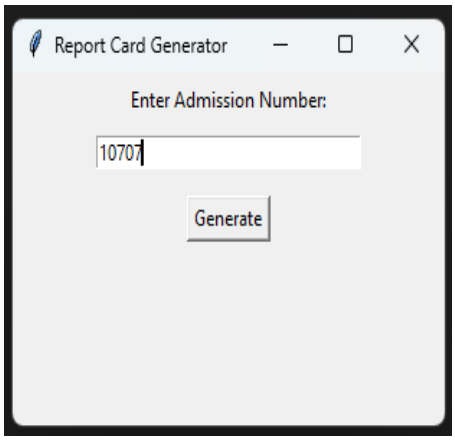
ADM	ENGLISH	PHYSICS	CHEMISTRY	MATHS	COMPUTER	P.ED /FA /LIB SCI
10235	22	19.5	23	21.5	19	22.5
10542	19	21	16.5	20.5	19	20.5
10635	20	16.5	17.5	19	21	21
10652	18	15.5	12	14	14	16
10687	22	19	19.5	21	22.5	20
10707	18	15.5	16	20	16.5	23
10709	21	19	18	20.5	21	22
10892	21.5	20.5	17.5	22	21	23
10965	21	21.5	19.5	20.5	20	21
10986	22	19	20.5	23	24	22

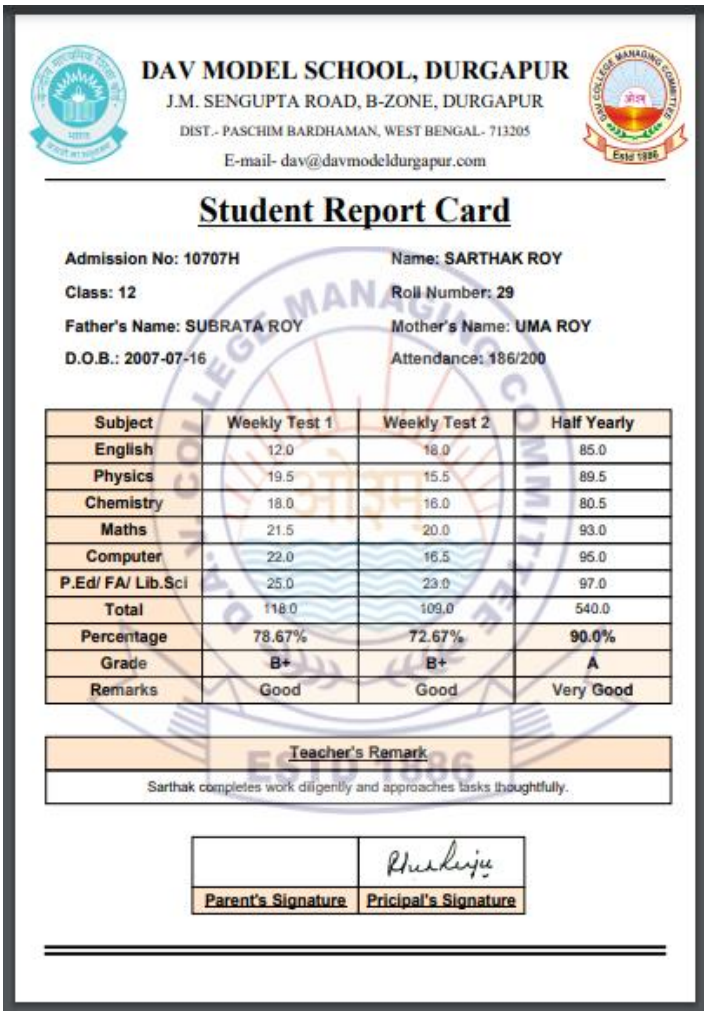
III) HALF YEARLY-

```
MariaDB [dipayan]> select * from hy;
```

ADM	ENGLISH	PHYSICS	CHEMISTRY	MATHS	COMPUTER	P.ED/ FA / LIB.SCI
10235	91.5	82.5	85	87.5	75	80
10542	89.5	90	77.5	92.5	92.5	98
10635	86	80	75	73.5	80.5	86
10652	86	72	70.5	75	80.5	76.5
10687	90	86.5	81.5	85	91.5	95
10707	85	89.5	80.5	93	95	97
10709	91	81	67	92	92	97
10892	89	85	92	86.5	82.5	98
10965	86	89.5	86.5	92.5	90	96
10986	92.5	90.5	86	87	81.5	86

OUTPUTS:





DAV MODEL SCHOOL, DURGAPUR
J.M. SENGUPTA ROAD, B-ZONE, DURGAPUR
DIST.- PASCHIM BARDHAMAN, WEST BENGAL- 713205
E-mail- dav@davmodeldurgapur.com

Student Report Card

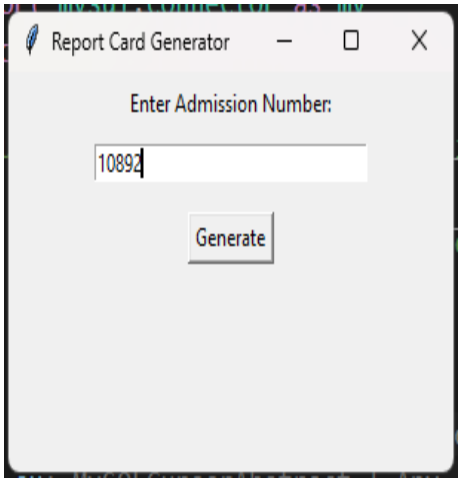
Admission No: 10707H | **Name: SARTHAK ROY**
Class: 12 | **Roll Number: 29**
Father's Name: SUBRATA ROY | **Mother's Name: UMA ROY**
D.O.B.: 2007-07-16 | **Attendance: 186/200**

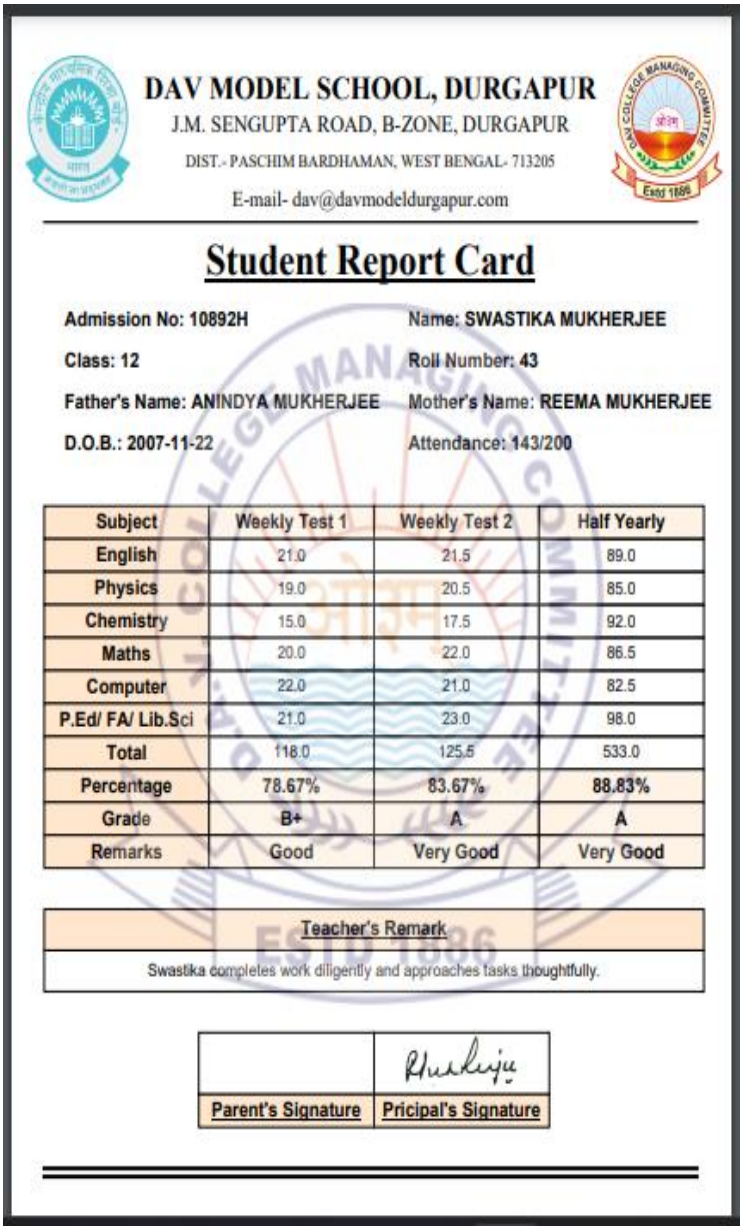
Subject	Weekly Test 1	Weekly Test 2	Half Yearly
English	12.0	18.0	85.0
Physics	19.5	15.5	89.5
Chemistry	18.0	16.0	80.5
Maths	21.5	20.0	93.0
Computer	22.0	16.5	95.0
P.Ed/ FA/ Lib.Sci	25.0	23.0	97.0
Total	118.0	109.0	540.0
Percentage	78.67%	72.67%	90.0%
Grade	B+	B+	A
Remarks	Good	Good	Very Good

Teacher's Remark
Sarthak completes work diligently and approaches tasks thoughtfully.

Parent's Signature	Pricipal's Signature

```
Report Card ready at C:\Users\dipay\Downloads\SARTHAK ROY.pdf
```





DAV MODEL SCHOOL, DURGAPUR

J.M. SENGUPTA ROAD, B-ZONE, DURGAPUR

DIST.- PASCHIM BARDHAMAN, WEST BENGAL- 713205

E-mail- dav@davmodeldurgapur.com

Student Report Card

Admission No: 10892H | **Name: SWASTIKA MUKHERJEE**

Class: 12 | **Roll Number: 43**

Father's Name: ANINDYA MUKHERJEE | **Mother's Name: REEMA MUKHERJEE**

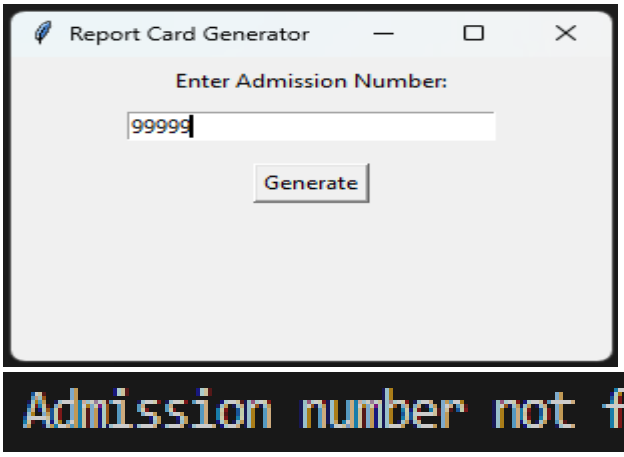
D.O.B.: 2007-11-22 | **Attendance: 143/200**

Subject	Weekly Test 1	Weekly Test 2	Half Yearly
English	21.0	21.5	89.0
Physics	19.0	20.5	85.0
Chemistry	15.0	17.5	92.0
Maths	20.0	22.0	86.5
Computer	22.0	21.0	82.5
P.Ed/ FA/ Lib.Sci	21.0	23.0	98.0
Total	118.0	125.5	533.0
Percentage	78.67%	83.67%	88.83%
Grade	B+	A	A
Remarks	Good	Very Good	Very Good

Teacher's Remark
Swastika completes work diligently and approaches tasks thoughtfully.

Parent's Signature	Pricipal's Signature

```
Report Card ready at C:\Users\dipay\Downloads\SWASTIKA MUKHERJEE.pdf
```



And so on… it GENERATES THE RESPECTIVE REPORT CARDS of the Student of whose the Admission number is entered. It also returns the appropriate message for invalid Input.

BIBLIOGRAPHY

- **Computer science in python XI by– Sumita Arora.**
- **Geeks for geeks**
- **ChatGPT**
- **Black Box AI**
- **With the help of our teachers**