# Report File

By Mayank Anand

Grade: XII-A

Submitted to: Ms. Kajal



S.NO	Name of Practical		
1	Write a python program to input any number from the user and calculate factorial of a number.		
2	Write a python program to read a line and calculate the total number of uppercase letters, lowercase letters, spaces, and digits in the given string.		
3	Write a python program to search for a given word in a string.		
4	Write a python program to input integer values in a list and calculate the sum of them.		
5	Write a python program to input a list of elements and search the given element in the list.		
6	Write a python program to input integer values in a tuple and find the largest and smallest number.		
7	Write a python program to create a dictionary with roll number, name and marks of n students in a class and display the name of the students who have scored marks above 85.		
8	Write a python program to perform the basic arithmetic operations in a menu driven program using functions.		
9	Write a python program to read a text file line by line and display each word separated by a #.		
10	Write a python program to read a text file and display the number of vowels, consonants, uppercase, lowercase characters in a file.		
11	Write a python program to remove all the lines that contain the character 'a' in a file and write it to another file.		
12	Write a python program to create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message		
13	Write a python program to create a binary file with roll number, name and marks. Input a roll number and update the marks.		
14	Write a python program to create a random number generator that generates random number between 1 and 6(simulates a dice).		

15	Write a python program to create a CSV file by entering user-id and password, read and search the password for given user-id.			
16	Write a python program to create a CSV file and store employee number, name and salary. Search employee by employee number and display name and salary, and if not found display an appropriate message.			
17	Write a python program to implement a stack using a list.			
18	Write a query to create a database School and execute following commands: i. To show database ii. To use database			
19	Write a query to create Student table using following structure :			
	Field Name	Data Type		
	Roll_no	Char(6)	Primary Key	
	Name	Varchar(20)	Not Null	
	Stream	Varchar(15)		
	DOB	Date		
	Marks	Number		
20	Write a query to perform following operations on table student: i. Insert data in table student ii. Display roll_no, name from table student iii. Display name of student having marks<85 and stream='medical'			
21	Write a query to ALTER table to add a new attribute/modify data type and drop attribute.			
22	Write a query to UPDATE Student table to modify data.			
23	Write a query to DISPLAY data in ascending/descending order.			
24	Write a query to DELETE the record of students where marks<35.			
25	Write a query to GROUP BY and find min, max, sum, count and average of marks.			

26	Write a query to join two different tables.
27	Write a python program to connect with database and store record of employee and display records.
28	Write a python program to connect with database and search employee number in the table employee and display record, if employee is not found display appropriate message.
29	Write a python program to connect with database and update the record of the entered employee number.
30	Write a python program to connect with database and delete the record of the entered employee number.

1. Write a python program to input any number from the user and calculate factorial of a number.

#### Code:

```
def factorial(n):
    if n == 0:
        return 1
    else:
        return n * factorial(n-1)
num = int(input("Enter a number: "))
if num < 0:
    print("Factorial is not defined for negative numbers.")
elif num == 0:
    print("The factorial of 0 is 1")
else:
    result = factorial(num)
    print(f"The factorial of {num} is {result}")</pre>
```

# Output:

Enter a number: 5
The factorial of 5 is 120

2. Write a python program to read a line and calculate the total number of uppercase letters, lowercase letters, spaces, and digits in the given string.

```
def count characters(line):
  upper_count = 0
  lower_count = 0
  space_count = 0
  digit count = 0
   for char in line:
      if 'A' <= char <= 'Z':
          upper_count += 1
      elif 'a' <= char <= 'z':
           lower count += 1
      elif char == ' ':
          space_count += 1
      elif '0' <= char <= '9':
           digit count += 1
   return upper_count, lower_count, space_count, digit_count
input_line = input("Enter a line of text: ")
uppercase, lowercase, spaces, digits = count_characters(input_line)
print("Total Uppercase letters:", uppercase)
print("Total Lowercase letters:", lowercase)
print("Total Spaces:", spaces)
print("Total Digits:", digits)
```

### Output:

Enter a line of text: Mayank has 20 Mangoes Total Uppercase letters: 2 Total Lowercase letters: 14 Total Spaces: 3 Total Digits: 2

3. Write a python program to search for a given word in a string.

#### Code:

```
string=input("enter the string: ")
n=input("enter the word you want to search for: ")
if n in string:
    print("yes the word is present")
else:
    print("no the word is not present")
```

## Output:

enter the string: Welcome to the world of python enter the word you want to search <u>for</u>: world yes the word is present

4. Write a python program to input integer values in a list and calculate the sum of them.

# Code:

```
def suml(var):
    a=0
    for i in 1:
        a=a+i
    return a

l=eval(input("enter the integers in the list"))
print(suml(l))
```

# Output:

enter the integers in the list[20,20,20]

5. Write a python program to input a list of elements and search the given element in the list.

#### Code:

```
l=eval(input("enter the list: "))
n=input("enter the search word: ")
if n in 1:
    print("yes")
else:
    print("no")
```

# Output:

enter the list: ['mayank','josh','john']
enter the search word: mayank
yes

6. Write a python program to input integer values in a tuple and find the largest and smallest number.

```
def find_max_min(numbers):
  if len(numbers) == 0:
      return None, None
  max_num = numbers[0]
  min_num = numbers[0]
   for num in numbers:
      if num > max_num:
          max_num = num
      elif num < min_num:</pre>
          min_num = num
  return max_num, min_num
values = tuple(map(int, input("Enter integer values separated by space: ").split()))
largest, smallest = find_max_min(values)
if largest is None or smallest is None:
```

```
print("No numbers were entered.")
else:
  print(f"Largest number: {largest}")
  print(f"Smallest number: {smallest}")
```

# Output:

Enter integer values separated by space: 4 5 6 7 8 9 25 Largest number: 25 Smallest number: 4

7. Write a python program to create a dictionary with roll number, name and marks of n students in a class and display the name of the students who have scored marks above 85.

#### Code:

```
n = int(input("Enter the number of students: "))
student_data = {}

for i in range(n):
    roll_no = input("Enter Roll Number: ")
    name = input("Enter Name: ")
    marks = int(input("Enter Marks: "))
    student_data[roll_no] = {"Name": name, "Marks": marks}

print("Students who scored above 85:")

for roll_no, i in student_data.items():
    if i["Marks"] > 85:
        print(i["Name"])
```

# Output:

Enter the number of students: 2
Enter Roll Number: 1
Enter Name: Mayank
Enter Marks: 99
Enter Roll Number: 2
Enter Name: Josh
Enter Marks: 79
Students who scored above 85:
Mayank

# 8. Write a python program to perform the basic arithmetic operations in a menu driven program using functions.

```
def add(x, y):
  return x + y
def subtract(x, y):
 return x - y
def multiply(x, y):
  return x * y
def divide(x, y):
  if y != 0:
      return x / y
  else:
      return "Cannot divide by zero"
while True:
  print("Menu:")
  print("1. Add")
  print("2. Subtract")
  print("3. Multiply")
```

```
print("4. Divide")
print("5. Exit")
choice = input("Enter your choice (1-5): ")
if choice == "5":
   break
num1 = float(input("Enter first number: "))
num2 = float(input("Enter second number: "))
if choice == "1":
    print("Result:", add(num1, num2))
elif choice == "2":
    print("Result:", subtract(num1, num2))
elif choice == "3":
    print("Result:", multiply(num1, num2))
elif choice == "4":
   print("Result:", divide(num1, num2))
else:
    print("Invalid choice")
```

# Output:

```
Menu:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Exit
Enter your choice (1-5): 3
Enter first number: 6
Enter second number: 6
Result: 36.0
Menu:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Exit
Enter your choice (1-5): 5
```

9. Write a python program to read a text file line by line and display each word separated by a #.

#### Code:

```
file_name = input("Enter the file name: ")

try:

with open(file_name, 'r') as file:

for line in file:

words = line.split()

formatted_line = "#".join(words)

print(formatted_line)

except FileNotFoundError:

print("File not found.")
```

#### Output:

Enter the file name: /Users/mayank/Downloads/Dummy.rtf Hello#welcome#to#the#world#of#python 10. Write a python program to read a text file and display the number of vowels, consonants, uppercase, lowercase characters in a file.

```
file_name = input("Enter the file name: ")
try:
  with open(file_name, 'r') as file:
      content = file.read()
      vowels = 0
      consonants = 0
      uppercase = 0
      lowercase = 0
       for char in content:
           if char.isalpha():
               if char.lower() in 'aeiou':
                   vowels += 1
               else:
                   consonants += 1
               if char.islower():
                   lowercase += 1
               else:
```

```
print("Number of vowels:", vowels)

print("Number of consonants:", consonants)

print("Number of uppercase characters:", uppercase)

print("Number of lowercase characters:", lowercase)

except FileNotFoundError:

print("File not found.")

Output:

Enter the file name: /Users/mayank/Downloads/Dummy.rtf
Number of vowels: 72
Number of consonants: 178
Number of uppercase characters: 2
Number of lowercase characters: 248
```

11. Write a python program to remove all the lines that contain the character 'a' in a file and write it to another file.

```
Code:
```

```
input file name = input("Enter the input file name: ")
output file name = input("Enter the output file name: ")
try:
  with open(input_file_name, 'r') as input_file:
      with open(output_file_name, 'w') as output_file:
           for line in input file:
              if 'a' not in line:
                  output_file.write(line)
  print("Lines containing 'a' removed and written to", output_file_name)
except FileNotFoundError:
  print("File not found.")
Output:
                                                                        . . . .
Enter the input file name: /Users/mayank/Downloads/Dummy.rtf
Enter the output file name: /Users/mayank/Downloads/Dummy copy.rtf
Lines containing 'a' removed and written to /Users/mayank/Downloads/Dummy copy.rtf
```

12. Write a python program to create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.

```
import pickle
def write_records(file_name, records):
  with open(file_name, 'wb') as file:
      pickle.dump(records, file)
def read_records(file_name):
  with open(file_name, 'rb') as file:
      records = pickle.load(file)
      return records
def search_roll_number(records, roll_number):
   for record in records:
      if record["roll_number"] == roll_number:
           return record["name"]
  return None
file_name = "student_records.dat"
```

## Output:

Enter the roll number to search: 102
Name: Bob

13. Write a python program to create a binary file with roll number, name and marks. Input a roll number and update the marks.

```
import pickle
def write records(file name, records):
  with open(file_name, 'wb') as file:
      pickle.dump(records, file)
def read_records(file_name):
  with open(file_name, 'rb') as file:
      records = pickle.load(file)
      return records
def update_marks(records, roll_number, new_marks):
   for record in records:
      if record["roll_number"] == roll_number:
          record["marks"] = new_marks
           return True
  return False
file_name = "student_records.dat"
```

```
records = [
   {"roll_number": 101, "name": "Alice", "marks": 85},
   {"roll number": 102, "name": "Bob", "marks": 92},
  {"roll number": 103, "name": "Charlie", "marks": 78}
write_records(file_name, records)
search roll = int(input("Enter the roll number to update marks: "))
new marks = int(input("Enter the new marks: "))
updated = update_marks(read_records(file_name), search_roll, new_marks)
if updated:
  write_records(file_name, records)
  print("Marks updated successfully.")
else:
  print("Roll number not found.")
```

# Output:

Enter the roll number to update marks: 103 Enter the new marks: 87 Marks updated successfully. 14. Write a python program to create a random number generator that generates a random number between 1 and 6(simulates a dice).

#### Code:

```
import random

def roll_dice():
    return random.randint(1, 6)

num_rolls = int(input("Enter the number of times to roll the dice: "))

for i in range(num_rolls):
    result = roll_dice()
    print("Roll", i+1, ":", result)
```

# Output:

Enter the number of times to roll the dice: 4
Roll 1 : 4
Roll 2 : 4

Roll 3 : 3

Roll 4 : 3

# 15. Write a python program to create a CSV file by entering user-id and password, read and search the password for given user-id.

```
import csv
def write_to_csv(file_name, data):
  with open(file_name, 'a', newline='') as file:
      writer = csv.writer(file)
      writer.writerow(data)
def read_csv(file_name):
  records = []
  with open(file_name, 'r') as file:
      reader = csv.reader(file)
      for row in reader:
          records.append(row)
  return records
def search password(records, user id):
   for record in records:
      if record[0] == user_id:
          return record[1]
   return None
```

```
file_name = "user_data.csv"
while True:
  print("Menu:")
  print("1. Create user")
  print("2. Search password")
  print("3. Exit")
  choice = input("Enter your choice (1-3): ")
  if choice == "1":
      user_id = input("Enter user ID: ")
      password = input("Enter password: ")
      write_to_csv(file_name, [user_id, password])
      print("User data saved.")
  elif choice == "2":
      user_id = input("Enter user ID to search password: ")
      records = read_csv(file_name)
      found_password = search_password(records, user_id)
      if found_password:
          print("Password:", found_password)
      else:
           print("User ID not found.")
```

```
elif choice == "3":
     break
  else:
     print("Invalid choice.")
Output:
 Menu:
 1. Create user
 2. Search password
 3. Exit
 Enter your choice (1-3): 1
 Enter user ID: 001
 Enter password: 123
 User data saved.
 Menu:
 1. Create user
 2. Search password
 3. Exit
 Enter your choice (1-3): 1
 Enter user ID: 002
 Enter password: 234
 User data saved.
Menu:
1. Create user
2. Search password
3. Exit
Enter your choice (1-3): 2
Enter user ID to search password: 001
Password: 123
Menu:
1. Create user
2. Search password
3. Exit
Enter your choice (1-3): 3
```

16. Write a python program to create a CSV file and store employee number, name and salary. Search employee by employee number and display name and salary, and if not found display an appropriate message.

```
import csv
def write_to_csv(file_name, data):
  with open(file_name, 'a', newline='') as file:
      writer = csv.writer(file)
      writer.writerow(data)
def read_csv(file_name):
  records = []
  with open(file name, 'r') as file:
      reader = csv.reader(file)
      for row in reader:
          records.append(row)
  return records
def search_employee(records, employee_number):
   for record in records:
      if record[0] == employee_number:
          return record[1], record[2]
```

```
return None, None
file_name = "employee_data.csv"
while True:
  print("Menu:")
  print("1. Add employee")
  print("2. Search employee")
  print("3. Exit")
   choice = input("Enter your choice (1-3): ")
   if choice == "1":
       employee number = input("Enter employee number: ")
       name = input("Enter name: ")
       salary = input("Enter salary: ")
       write_to_csv(file_name, [employee_number, name, salary])
       print("Employee data saved.")
   elif choice == "2":
       employee_number = input("Enter employee number to search: ")
       records = read_csv(file_name)
       found name, found salary = search employee(records, employee number)
       if found name and found salary:
          print("Name:", found_name)
```

```
print("Salary:", found_salary)
      else:
          print("Employee not found.")
  elif choice == "3":
      break
  else:
      print("Invalid choice.")
Output:
Menu:
1. Add employee
2. Search employee
3. Exit
Enter your choice (1-3): 1
Enter employee number: 001
Enter name: Josh
Enter salary: 50
Employee data saved.
Menu:
1. Add employee
2. Search employee
3. Exit
Enter your choice (1-3): 1
Enter employee number: 002
Enter name: John
Enter salary: 100
Employee data saved.
Menu:
1. Add employee
2. Search employee
3. Exit
Enter your choice (1-3): 2
Enter employee number to search: 002
Name: John
Salary: 100
Menu:
1. Add employee
2. Search employee
Exit
```

Enter your choice (1-3): 3

# 17. Write a python program to implement a stack using a list.

```
class Stack:
  def __init__(self):
      self.items = []
  def push(self, item):
      self.items.append(item)
  def pop(self):
      if not self.is_empty():
          return self.items.pop()
      else:
          return "Stack is empty"
  def peek(self):
      if not self.is_empty():
          return self.items[-1]
      else:
          return "Stack is empty"
  def is_empty(self):
```

```
return len(self.items) == 0
  def size(self):
     return len(self.items)
stack = Stack()
stack.push(5)
stack.push(10)
stack.push(15)
print("Peek:", stack.peek())
print("Size:", stack.size())
print("Popped:", stack.pop())
print("Popped:", stack.pop())
print("Is empty:", stack.is_empty())
Output:
 Peek: 15
 Size: 3
 Popped: 15
 Popped: 10
 Is empty: False
```

# 18. Write a query to create a database School and execute following commands:

- i. To show database
- ii. To use database

# Query:

CREATE DATABASE School;

SHOW DATABASES;

USE School;

# 19. Write a query to create Student table using following structure:

Field Name	Data Type	
Roll_no	Char(6)	Primary Key
Name	Varchar(20)	Not Null
Stream	Varchar(15)	
DOB	Date	
Marks	Number	

# Query:

CREATE TABLE Students (

Roll\_no CHAR(6) PRIMARY KEY,

Name VARCHAR(20) NOT NULL,

Stream VARCHAR(15),

DOB DATE,

Marks INT);

# Output:

Field	Туре	Null	Key	Default	Extra	
 Roll_no	char(6)	NO	PRI	NULL		
Name	varchar(20)	NO		NULL		
Stream	varchar(15)	YES		HULL		
DOB	date	YES		NULL		
Marks	int	YES		HULL		
Marks	int	YES		HULL		

# 20. Write a query to perform following operations on table student:

i. Insert data in table student

ii. Display roll\_no, name from table student

iii. Display name of student having marks<85 and stream='medical'

# Query:

INSERT INTO Students (Roll\_no, Name, Stream, DOB, Marks)

#### **VALUES**

```
('S001', 'John Doe', 'Science', '2000-05-15', 90),

('S002', 'Jane Smith', 'Medical', '2001-02-28', 78),

('S003', 'Alice Johnson', 'Arts', '2000-09-10', 72),

('S004', 'Bob Williams', 'Medical', '2000-12-03', 79);
```

SELECT Roll\_no, Name

FROM Students;

**SELECT Name** 

**FROM Students** 

WHERE Marks < 85 AND Stream = 'Medical';

# Output:

S001	John Doe	
S002	Jane Smith	
S003	Alice Johnson	
S004	Bob Williams	
NULL	NULL	

Name	
Jane Smith	
Bob Williams	

# 21. Write a query to ALTER table to add a new attribute/modify data type and drop attribute.

# Query:

- I. ALTER TABLE StudentsADD Address VARCHAR(50);
- II. ALTER TABLE Students MODIFY Marks FLOAT;
- III. ALTER TABLE Students DROP COLUMN Stream;
  - 22. Write a query to UPDATE Student table to modify data.

# Query:

**UPDATE Students** 

SET Marks = 85

# 23. Write a query to DISPLAY data in ascending/descending order

# Query:

**SELECT Name** 

**FROM Students** 

ORDER BY Name ASC;

**SELECT Name** 

**FROM Students** 

ORDER BY Name DESC;

24. Write a query to DELETE the record of students where marks < 35.

## Query:

**DELETE FROM Students** 

WHERE Marks < 35;

25. Write a query to GROUP BY and find min, max, sum, count and average of marks.

# Query:

SELECT Stream,

MIN(Marks) AS Min\_Marks,

MAX(Marks) AS Max\_Marks,

SUM(Marks) AS Total\_Marks,

COUNT(\*) AS Count\_Students,

AVG(Marks) AS Avg\_Marks

**FROM Students** 

GROUP BY Stream;

# 26. Write a query to join two different tables.

# Query:

SELECT A.rollno, A.name, B.fee

FROM Student A, Fees

WHERE A.rollno = B.rollno;

27. Write a python program to connect with database and store record of employee and display records.

```
import mysql.connector

mydb = mysql.connector.connect(

   host="localhost",

   user="root",

   password="root",

   database="test"
)

mycursor = mydb.cursor()

mycursor.execute('''CREATE TABLE employees (
        id INT AUTO_INCREMENT PRIMARY KEY,
        name VARCHAR(255),

   department VARCHAR(255),
```

```
position VARCHAR (255),
                   salary DECIMAL(10, 2)
               ) ' ' ' )
def insert employee record(name, department, position, salary):
   sql = "INSERT INTO employees (name, department, position, salary) VALUES (%s, %s,
   %s, %s)"
  val = (name, department, position, salary)
  mycursor.execute(sql, val)
  mydb.commit()
  print("Employee record inserted successfully!")
def display_all_employees():
  mycursor.execute("SELECT * FROM employees")
  records = mycursor.fetchall()
  if len(records) > 0:
      print("Employee Records:")
      for record in records:
          print(record)
  else:
      print("No employee records found.")
insert_employee_record('John Doe', 'IT', 'Developer', 60000)
insert employee record('Alice Smith', 'HR', 'Manager', 75000)
insert employee record('Eva Johnson', 'Marketing', 'Analyst', 55000)
display all employees()
mydb.close()
```

28. Write a python program to connect with database and search employee number in the table employee and display record, if employee not found display appropriate message

```
import mysql.connector
conn = mysql.connector.connect(
host="localhost",
user="root",
password="root",
database="test"
cursor = conn.cursor()
def search_employee(employee_id):
  sql = 'SELECT * FROM Employee WHERE ID = %s'
  cursor.execute(sql, (employee id,))
  record = cursor.fetchone()
  return record
employee_id_to_search = int(input("Enter Employee ID to search: "))
employee_record = search_employee(employee_id_to_search)
if employee record:
  print("Employee Record:")
  print("ID:", employee_record[0])
```

```
print("Name:", employee_record[1])

print("Department:", employee_record[2])

print("Salary:", employee_record[3])

else:

print("Employee not found.")

conn.close()
```

29. Write a python program to connect with database and update the record of the entered employee number.

```
import mysql.connector
conn = mysql.connector.connect(
    host="localhost",
    user="root",
    password="root",
    database="test"
)
cursor = conn.cursor()

def update_employee_record(employee_id, new_name, new_department, new_salary):
    sql = 'UPDATE Employee SET Name = %s, Department = %s, Salary = %s WHERE ID = %s'
    values = (new_name, new_department, new_salary, employee_id)
```

```
cursor.execute(sql, values)
  conn.commit()
employee id to update = int(input("Enter Employee ID to update: "))
cursor.execute('SELECT * FROM Employee WHERE ID = %s', (employee_id_to_update,))
existing employee = cursor.fetchone()
if existing employee:
  print("Current Employee Record:")
  print("ID:", existing_employee[0])
  print("Name:", existing_employee[1])
  print("Department:", existing_employee[2])
  print("Salary:", existing_employee[3])
  new_name = input("Enter new name: ")
  new_department = input("Enter new department: ")
  new_salary = float(input("Enter new salary: "))
  update_employee_record(employee_id_to_update, new_name, new_department, new_salary)
  print("Employee record updated.")
else:
  print("Employee ID not found.")
conn.close()
```

30. Write a python program to connect with database and delete the record of the entered employee number.

```
import mysql.connector
conn = mysql.connector.connect(
  host="localhost",
  user="root",
  password="root",
  database="test"
cursor = conn.cursor()
def delete_employee_record(employee_id):
  sql = 'DELETE FROM Employee WHERE ID = %s'
  cursor.execute(sql, (employee_id,))
  conn.commit()
employee_id_to_delete = int(input("Enter Employee ID to delete: "))
cursor.execute('SELECT * FROM Employee WHERE ID = %s', (employee_id_to_delete,))
```

```
existing_employee = cursor.fetchone()
if existing_employee:
  print("Employee Record to be Deleted:")
  print("ID:", existing_employee[0])
  print("Name:", existing_employee[1])
  print("Department:", existing_employee[2])
  print("Salary:", existing_employee[3])
  confirmation = input("Are you sure you want to delete this employee? (yes/no): ")
  if confirmation.lower() == "yes":
      delete_employee_record(employee_id_to_delete)
      print("Employee record deleted.")
  else:
      print("Deletion cancelled.")
else:
  print("Employee not found.")
conn.close()
```