# PYTHON LAB CYCLE

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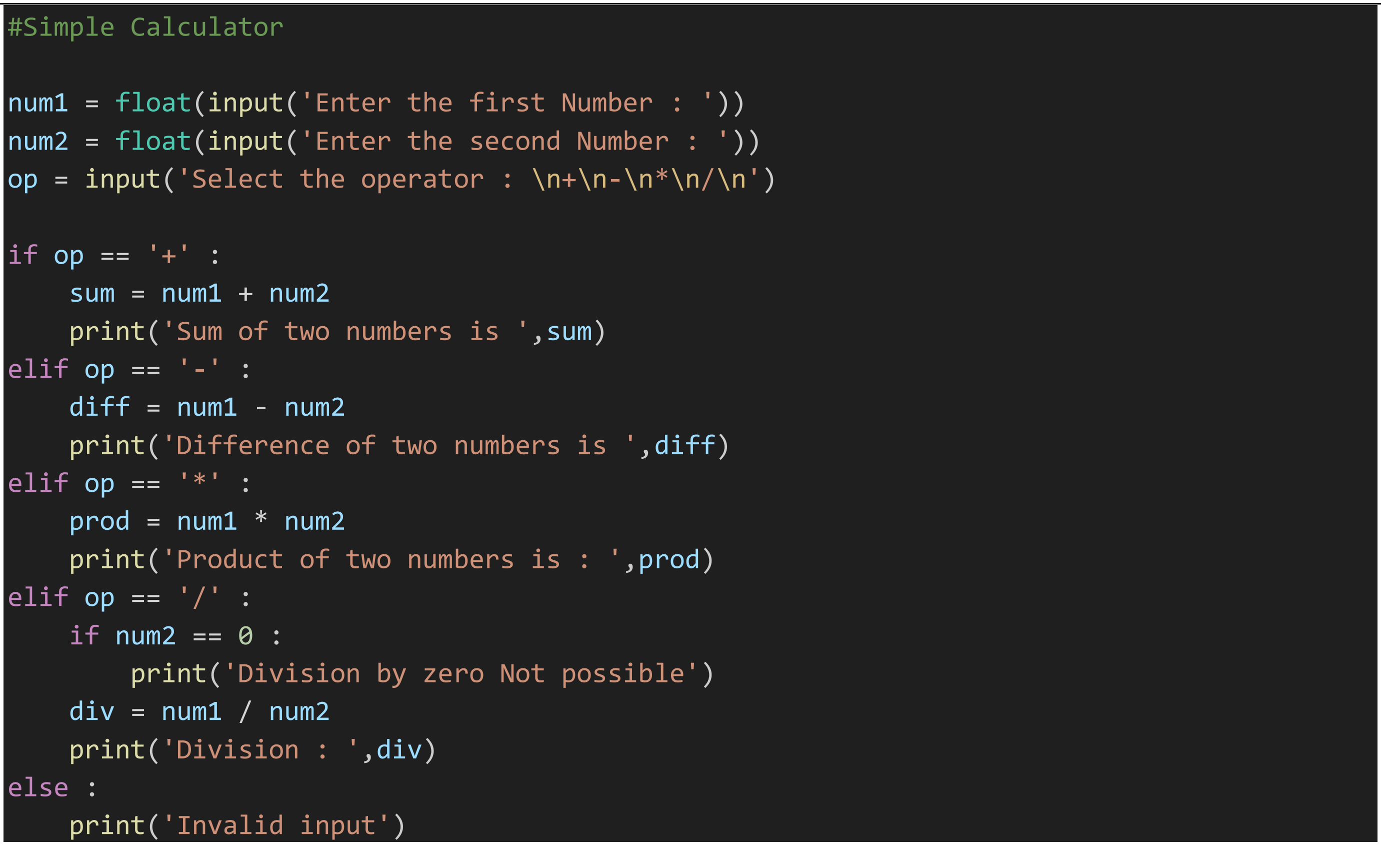
**MCA2336**

## 1. Python Programming

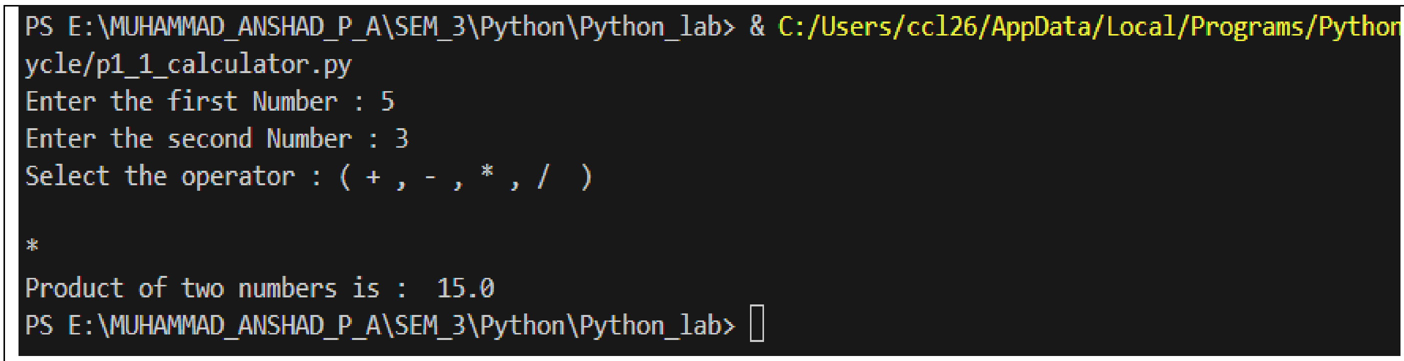
### 1.1. Create a simple calculator in Python.

**PROGRAM:**



```python
#Simple Calculator

num1 = float(input('Enter the first Number : '))
num2 = float(input('Enter the second Number : '))
op = input('Select the operator : \n+\n-\n*\n/\n')

if op == '+' :
    sum = num1 + num2
    print('Sum of two numbers is ',sum)
elif op == '-' :
    diff = num1 - num2
    print('Difference of two numbers is ',diff)
elif op == '*' :
    prod = num1 * num2
    print('Product of two numbers is : ',prod)
elif op == '/' :
    if num2 == 0 :
        print('Division by zero Not possible')
    div = num1 / num2
    print('Division : ',div)
else :
    print('Invalid input')
```

**OUTPUT:**



```
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab> & C:/Users/ccl26/AppData/Local/Programs/Python
ycle/p1_1_calculator.py
Enter the first Number : 5
Enter the second Number : 3
Select the operator : ( + , - , * , /  )

*
Product of two numbers is :  15.0
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab> 
```

**1.2. An electric power distribution company charges domestic customers as follows: Consumption unit Rate of charge:**

**1.2.1. 0-200 Rs. 0.50 per unit**

**1.2.2. 201-400 Rs. 0.65 per unit in excess of 200**

**1.2.3. 401-600 Rs 0.80 per unit excess of 400**

**1.2.4. 601 and above Rs 1.00per unit excess of 600**

**1.2.5. If the bill exceeds Rs. 400, then a surcharge of 15% will be charged,**

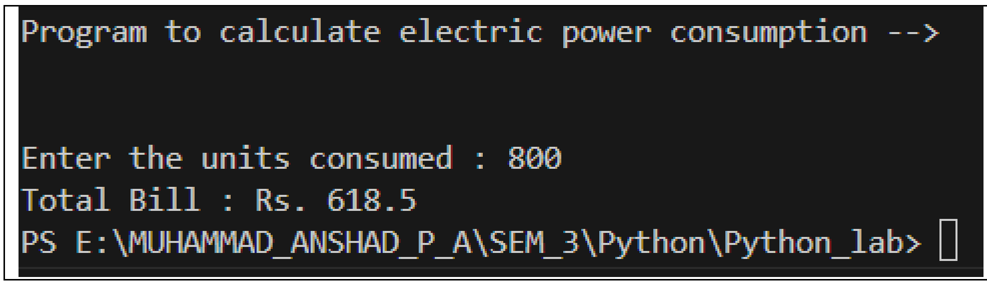
**and the minimum bill should be Rs. 100/-**

**Create a Python program based on the scenario mentioned above.**

**PROGRAM:**

```python
#Function to calculate Bill
def billCalculator(cUnits):
    if cUnits <= 200:
        bill = cUnits * 0.50
    elif cUnits <= 400:
        bill = (200 * 0.50) + (cUnits -200) * 0.65
    elif cUnits <= 600:
        bill = (200 * 0.50) + (200 * 0.65) + (cUnits - 400) * 0.80
    else:
        bill = (200 * 0.50) + (200 * 0.65) + (200 * 0.80) + (cUnits - 600) * 1.00

    #Add surcharge to bill if bill amount > 400
    if bill > 400 :
        surCharge = (bill - 400) * 0.15
        bill += surCharge

    #If bill < 100 Make bill as 100
    if bill < 100 :
        bill = 100

    return bill
print("\nProgram to calculate electric power consumption -->\n")

consumedUnits = float(input("\nEnter the units consumed : "))

totalBill = billCalculator(consumedUnits)
print(f"Total Bill : Rs. {totalBill}")
```

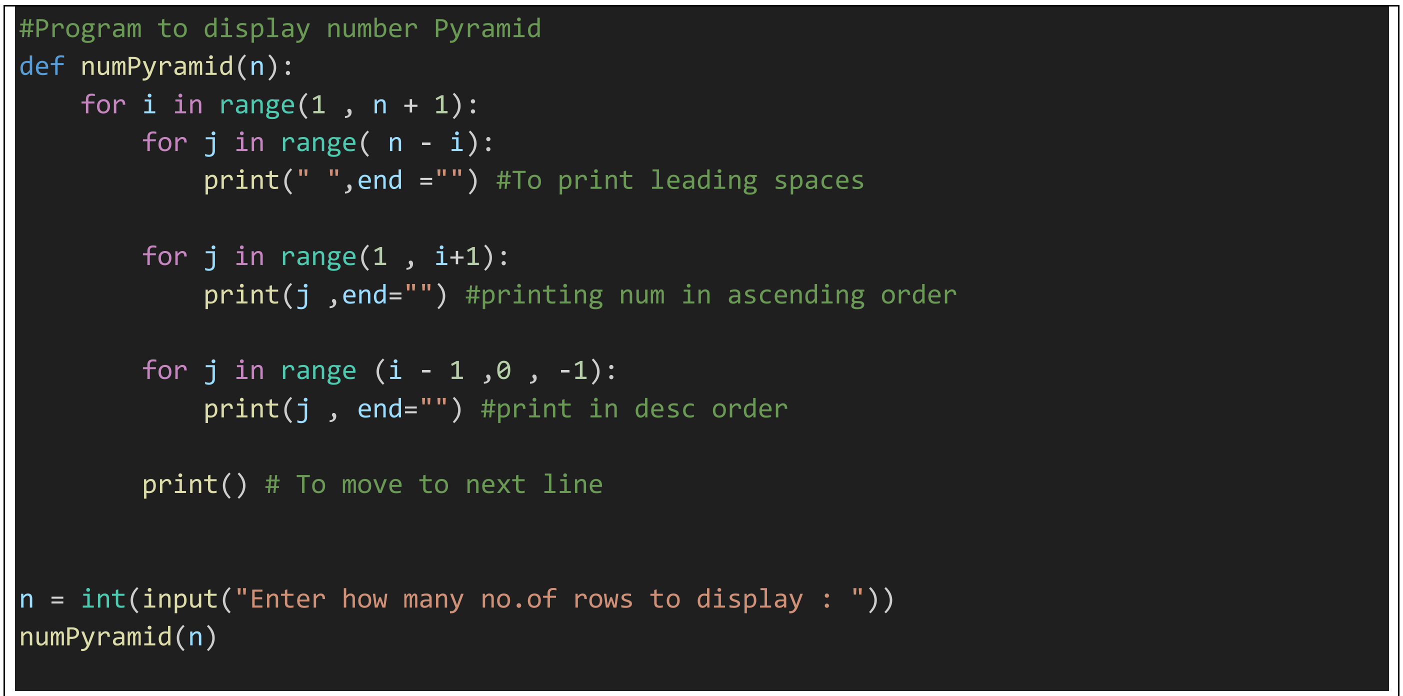
**OUTPUT:**



```
Program to calculate electric power consumption -->


Enter the units consumed : 800
Total Bill : Rs. 618.5
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

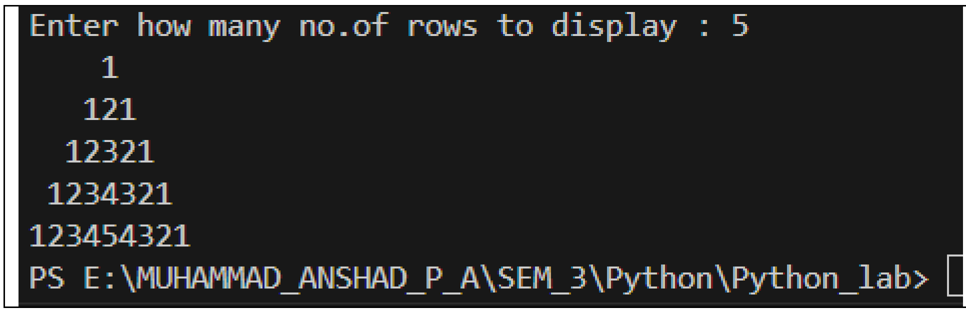
## 1.3. Print the pyramid of numbers using for loops.

**PROGRAM:**



```python
#Program to display number Pyramid
def numPyramid(n):
    for i in range(1 , n + 1):
        for j in range( n - i):
            print(" ",end ="") #To print leading spaces

        for j in range(1 , i+1):
            print(j ,end="") #printing num in ascending order

        for j in range (i - 1 ,0 , -1):
            print(j , end="") #print in desc order

        print() # To move to next line


n = int(input("Enter how many no.of rows to display : "))
numPyramid(n)
```

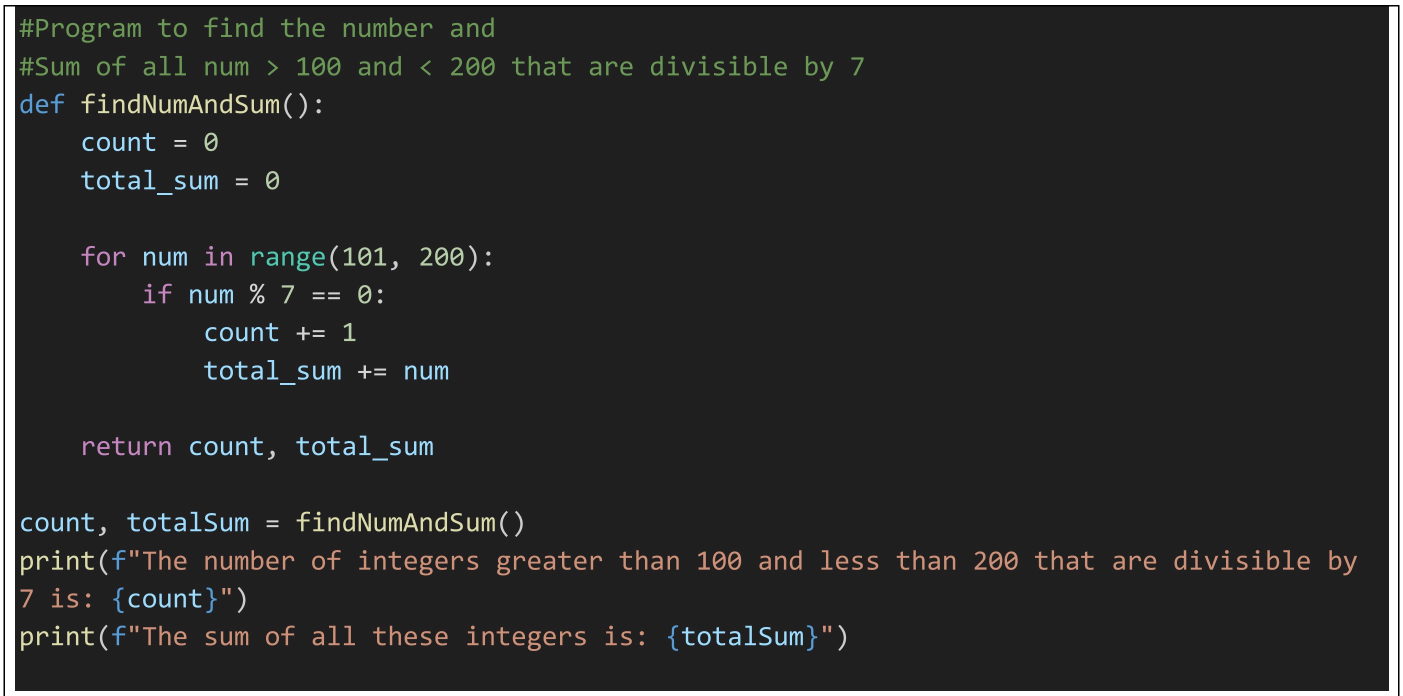
**OUTPUT:**



```
Enter how many no.of rows to display : 5
    1
   121
  12321
 1234321
123454321
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

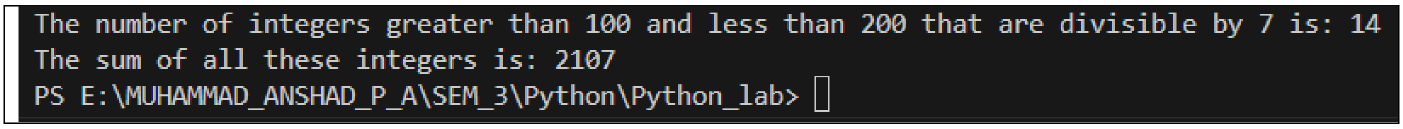
**1.4. Write a program to find the number and sum of all integers greater than 100 and less than 200 that are divisible by 7.**

## PROGRAM:



```python
#Program to find the number and
#Sum of all num > 100 and < 200 that are divisible by 7
def findNumAndSum():
    count = 0
    total_sum = 0

    for num in range(101, 200):
        if num % 7 == 0:
            count += 1
            total_sum += num

    return count, total_sum

count, totalSum = findNumAndSum()
print(f"The number of integers greater than 100 and less than 200 that are divisible by
7 is: {count}")
print(f"The sum of all these integers is: {totalSum}")
```

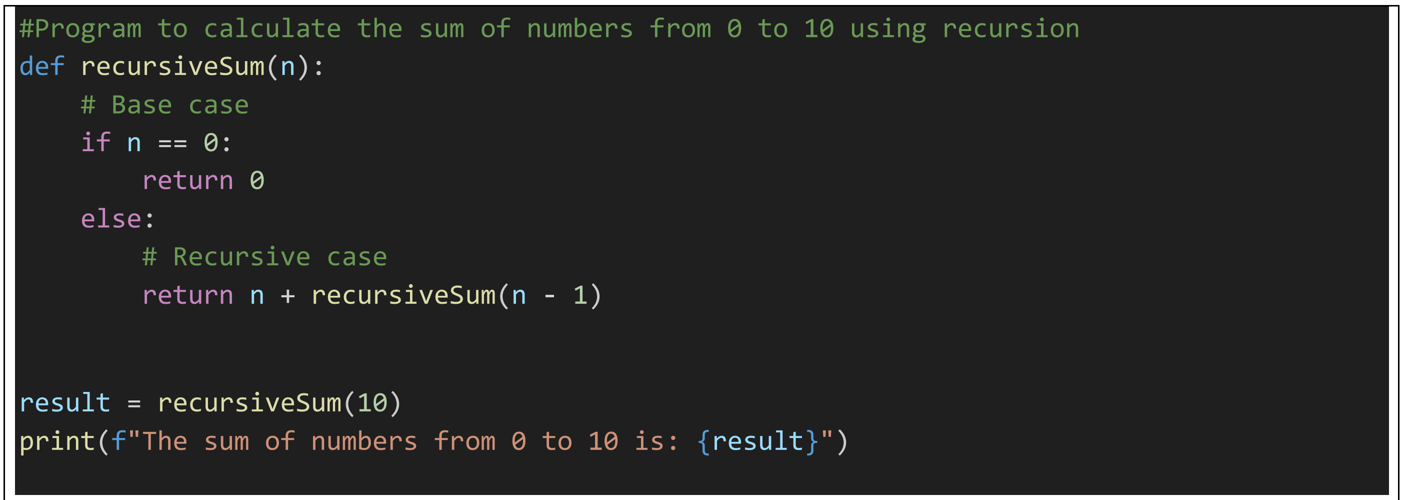
## OUTPUT:



```
The number of integers greater than 100 and less than 200 that are divisible by 7 is: 14
The sum of all these integers is: 2107
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

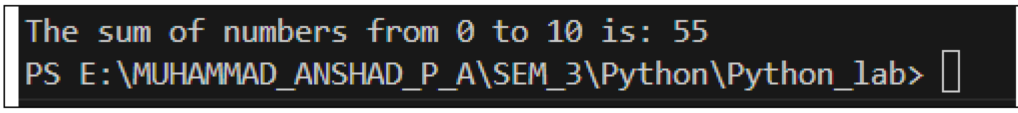
## 1.5. Write a recursive function to calculate the sum of numbers from 0 to 10

**PROGRAM :**



```python
#Program to calculate the sum of numbers from 0 to 10 using recursion
def recursiveSum(n):
    # Base case
    if n == 0:
        return 0
    else:
        # Recursive case
        return n + recursiveSum(n - 1)


result = recursiveSum(10)
print(f"The sum of numbers from 0 to 10 is: {result}")
```

**OUTPUT:**



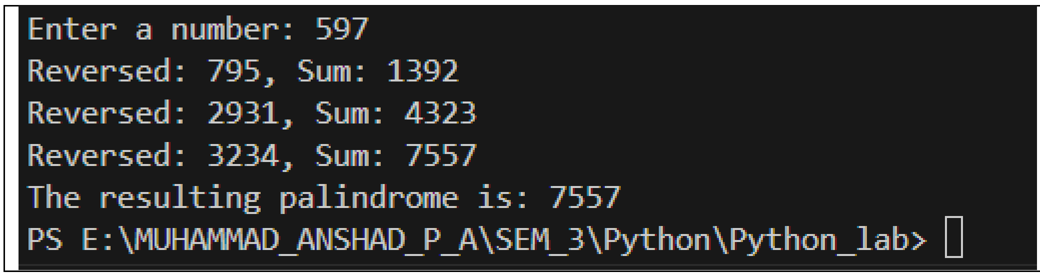
```
The sum of numbers from 0 to 10 is: 55
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

**1.6. Write a Python program to reverse the digits of a given number and add them to the original. If the sum is not a palindrome, repeat this procedure.**

## PROGRAM :

```python
#Write a Python program to reverse the digits of a given number and add them
#to the original. If the sum is not a palindrome, repeat this procedure.

def isPalindrome(n):
    original = n
    reverse = 0
    while n > 0:
        digit = n % 10
        reverse = reverse * 10 + digit
        n = n // 10
    return original == reverse

def reverseNumber(n):
    reverse = 0
    while n > 0:
        digit = n % 10
        reverse = reverse * 10 + digit
        n = n // 10 # It returns the quotient which is rounded down to the nearest integer.
    return reverse

def reverseAndAddUntilPalindrome(n):
    while not isPalindrome(n):
        reversed_n = reverseNumber(n)
        n = n + reversed_n
        print(f"Reversed: {reversed_n}, Sum: {n}")
    return n

number = int(input("Enter a number: "))
result = reverseAndAddUntilPalindrome(number)
print(f"The resulting palindrome is: {result}")
```

## OUTPUT :



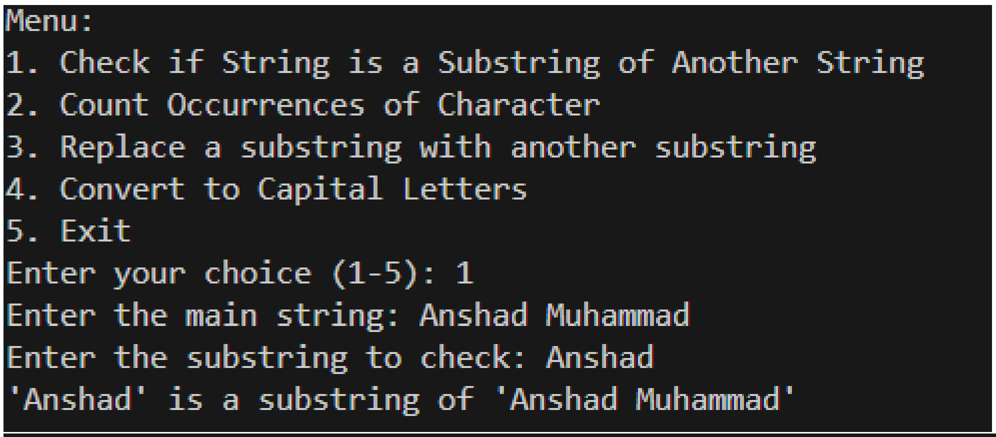
```
Enter a number: 597
Reversed: 795, Sum: 1392
Reversed: 2931, Sum: 4323
Reversed: 3234, Sum: 7557
The resulting palindrome is: 7557
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

**1.7. Write a menu-driven program that performs the following operations on strings**
**1.7.1. Check if the String is a Substring of Another String**
**1.7.2. Count Occurrences of Character**
**1.7.3. Replace a substring with another substring**
**1.7.4. Convert to Capital Letters**

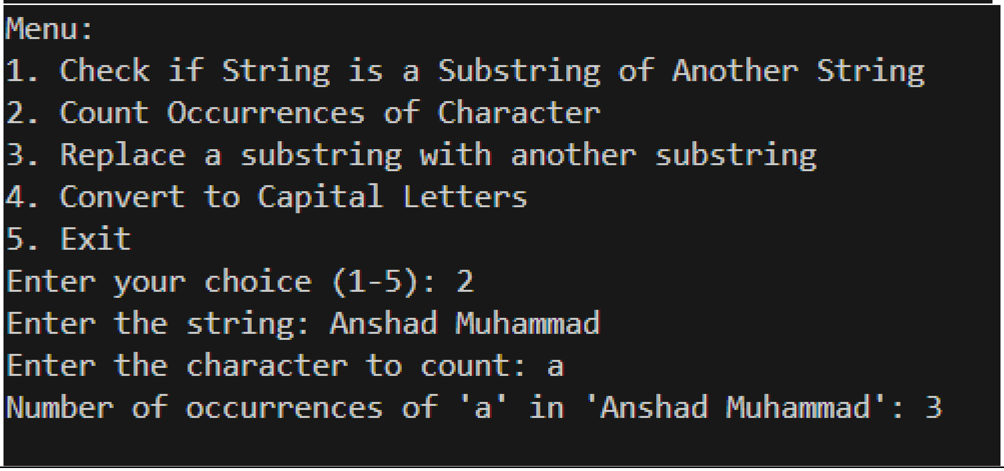
**PROGRAM :**

```
#Write a menu-driven program that performs the following operations on
# strings
# 1. Check if the String is a Substring of Another String
# 2. Count Occurrences of Character
# 3. Replace a substring with another substring
# 4. Convert to Capital Letters

def checkSubstring():
    string = input("Enter the main string: ")
    substring = input("Enter the substring to check: ")

    if substring in string:
        print(f"'{substring}' is a substring of '{string}'")
    else:
        print(f"'{substring}' is not a substring of '{string}'")

def countOccurrences():
    string = input("Enter the string: ")
    char = input("Enter the character to count: ")

    count = string.count(char)
    print(f"Number of occurrences of '{char}' in '{string}': {count}")

def replaceSubstring():
    string = input("Enter the main string: ")
    old_substring = input("Enter the substring to replace: ")
    new_substring = input("Enter the new substring: ")

    new_string = string.replace(old_substring, new_substring)
    print(f"Modified string: '{new_string}'")

def convertToUpper():
    string = input("Enter the string to convert to uppercase: ")
    uppercase_string = string.upper()
    print(f"Uppercase string: '{uppercase_string}'")

# Main program
while True:
    print("\nMenu:")
    print("1. Check if String is a Substring of Another String")
    print("2. Count Occurrences of Character")
    print("3. Replace a substring with another substring")
    print("4. Convert to Capital Letters")
    print("5. Exit")

    choice = input("Enter your choice (1-5): ")

    if choice == '1':
        checkSubstring()
    elif choice == '2':
        countOccurrences()
    elif choice == '3':
        replaceSubstring()
    elif choice == '4':
        convertToUpper()
    elif choice == '5':
        print("Exiting the program...")
        break
    else:
        print("Invalid choice! Please enter a number from 1 to 5.")
```

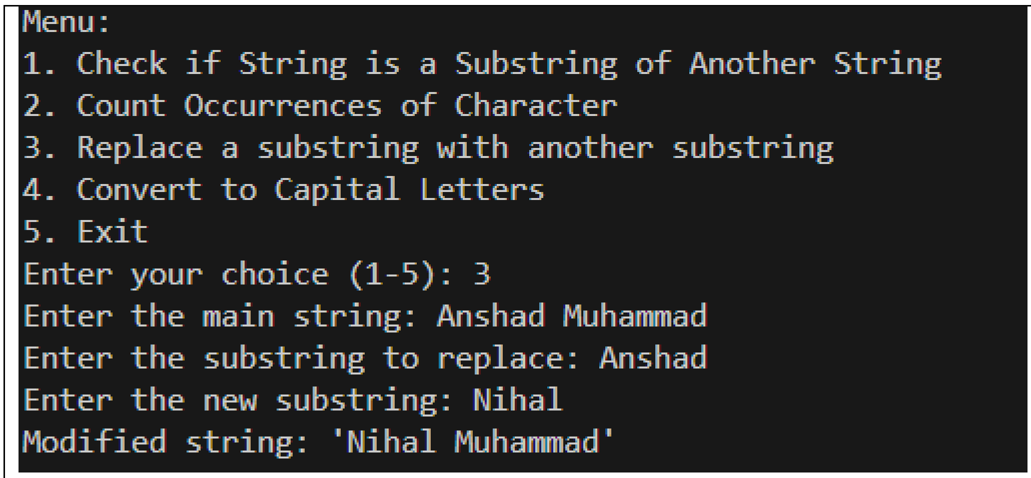
## OUTPUT :



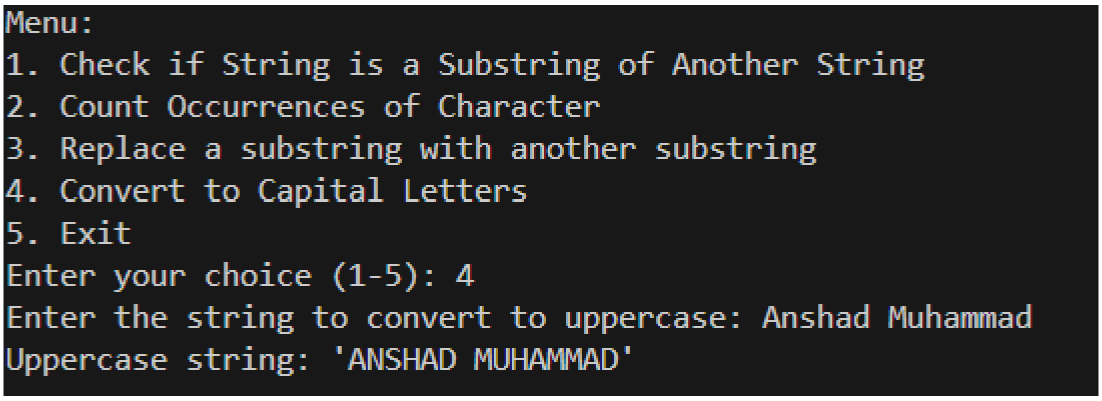
```
Menu:
1. Check if String is a Substring of Another String
2. Count Occurrences of Character
3. Replace a substring with another substring
4. Convert to Capital Letters
5. Exit
Enter your choice (1-5): 1
Enter the main string: Anshad Muhammad
Enter the substring to check: Anshad
'Anshad' is a substring of 'Anshad Muhammad'
```



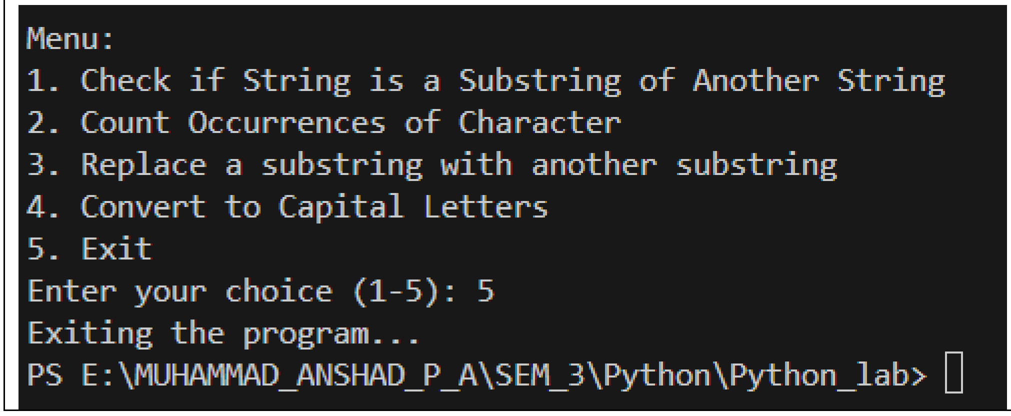
```
Menu:
1. Check if String is a Substring of Another String
2. Count Occurrences of Character
3. Replace a substring with another substring
4. Convert to Capital Letters
5. Exit
Enter your choice (1-5): 2
Enter the string: Anshad Muhammad
Enter the character to count: a
Number of occurrences of 'a' in 'Anshad Muhammad': 3
```



```
Menu:
1. Check if String is a Substring of Another String
2. Count Occurrences of Character
3. Replace a substring with another substring
4. Convert to Capital Letters
5. Exit
Enter your choice (1-5): 3
Enter the main string: Anshad Muhammad
Enter the substring to replace: Anshad
Enter the new substring: Nihal
Modified string: 'Nihal Muhammad'
```



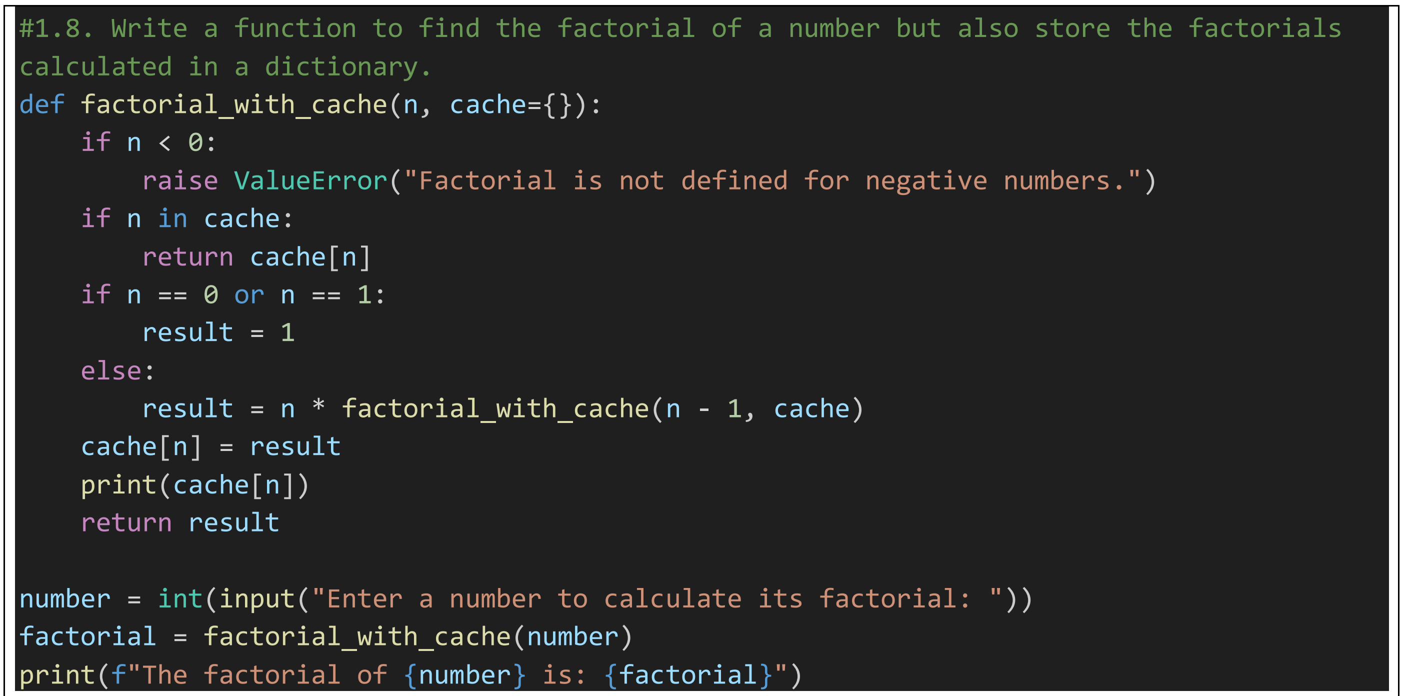
```
Menu:
1. Check if String is a Substring of Another String
2. Count Occurrences of Character
3. Replace a substring with another substring
4. Convert to Capital Letters
5. Exit
Enter your choice (1-5): 4
Enter the string to convert to uppercase: Anshad Muhammad
Uppercase string: 'ANSHAD MUHAMMAD'
```



```
Menu:
1. Check if String is a Substring of Another String
2. Count Occurrences of Character
3. Replace a substring with another substring
4. Convert to Capital Letters
5. Exit
Enter your choice (1-5): 5
Exiting the program...
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

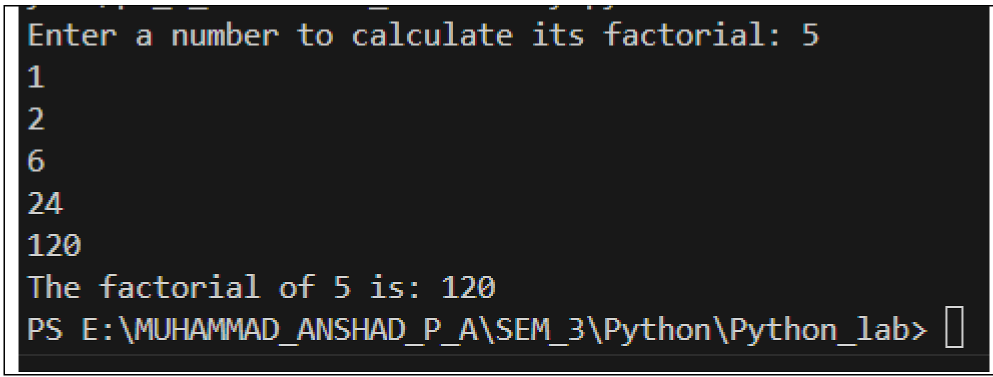
**1.8. Write a function to find the factorial of a number but also store the factorials calculated in a dictionary.**

## PROGRAM:



```python
#1.8. Write a function to find the factorial of a number but also store the factorials calculated in a dictionary.
def factorial_with_cache(n, cache={}):
    if n < 0:
        raise ValueError("Factorial is not defined for negative numbers.")
    if n in cache:
        return cache[n]
    if n == 0 or n == 1:
        result = 1
    else:
        result = n * factorial_with_cache(n - 1, cache)
    cache[n] = result
    print(cache[n])
    return result

number = int(input("Enter a number to calculate its factorial: "))
factorial = factorial_with_cache(number)
print(f"The factorial of {number} is: {factorial}")
```

## OUTPUT:



```
Enter a number to calculate its factorial: 5
1
2
6
24
120
The factorial of 5 is: 120
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

## 1.9. Perform various set operations

### 1.9.1. Set Union

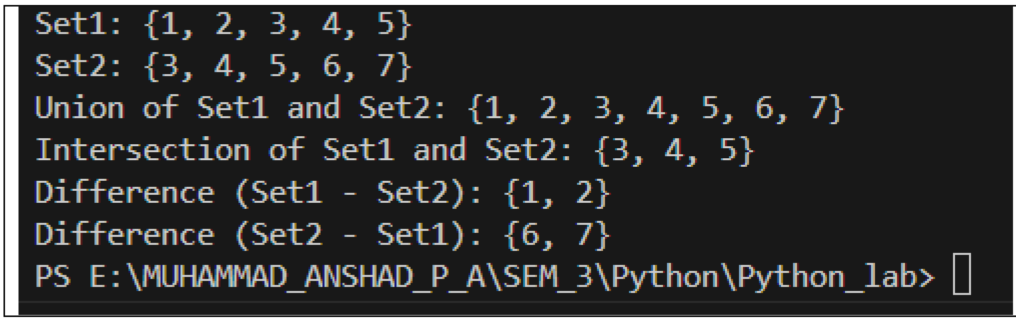
### 1.9.2. Set Intersection

### 1.9.3. Set Difference

## PROGRAM :

```
#Perform various set operations
# 1. Set Union
# 2. Set Intersection
# 3. Set Difference
def setOperations(set1, set2):

    union_set = set1.union(set2)


    intersection_set = set1.intersection(set2)


    difference_set1 = set1.difference(set2)


    difference_set2 = set2.difference(set1)

    return union_set, intersection_set, difference_set1, difference_set2


set1 = {1, 2, 3, 4, 5}
set2 = {3, 4, 5, 6, 7}

union_set, intersection_set, difference_set1, difference_set2 = setOperations(set1,
set2)

print(f"Set1: {set1}")
print(f"Set2: {set2}")

print(f"Union of Set1 and Set2: {union_set}")
print(f"Intersection of Set1 and Set2: {intersection_set}")
print(f"Difference (Set1 - Set2): {difference_set1}")
print(f"Difference (Set2 - Set1): {difference_set2}")
```

**OUTPUT:**



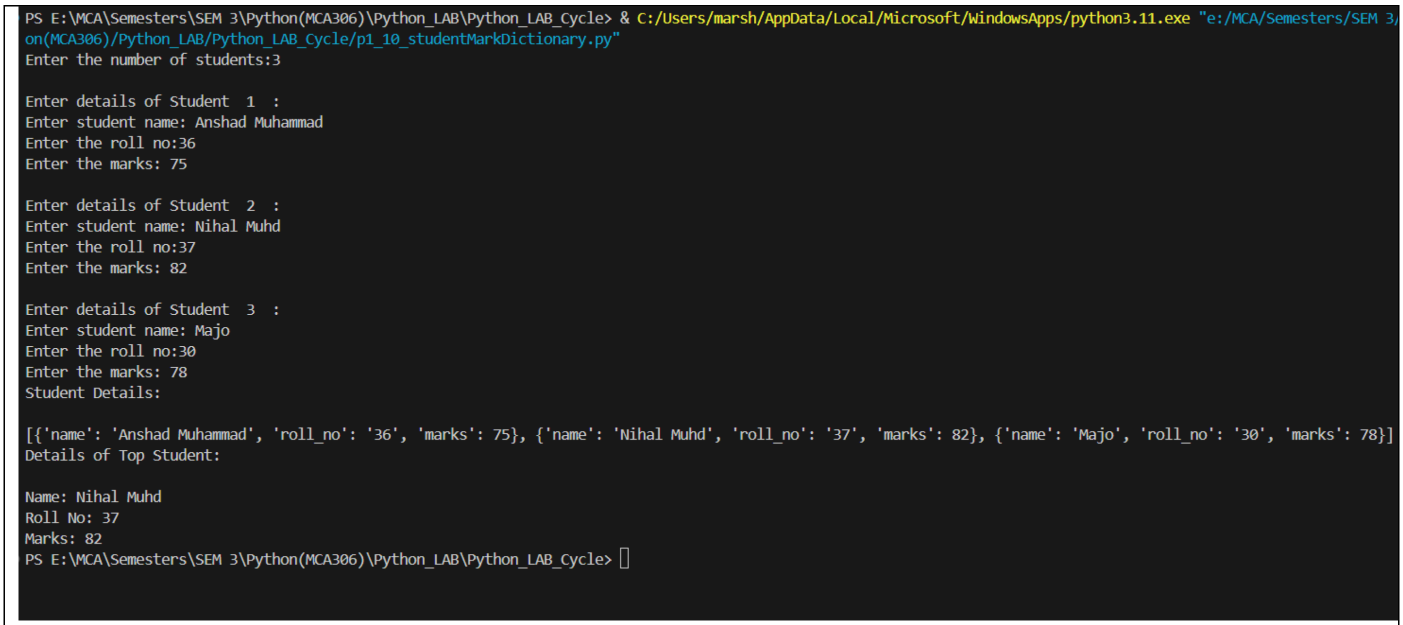
```
Set1: {1, 2, 3, 4, 5}
Set2: {3, 4, 5, 6, 7}
Union of Set1 and Set2: {1, 2, 3, 4, 5, 6, 7}
Intersection of Set1 and Set2: {3, 4, 5}
Difference (Set1 - Set2): {1, 2}
Difference (Set2 - Set1): {6, 7}
PS E:\MUHAMMAD_ANSHAD_P_A\SEM_3\Python\Python_lab>
```

**1.10. Create a dictionary to store the name, roll_no, and total_mark of N students.
Now print the details of the student with the highest total_mark.**

**PROGRAM :**

```python
# Create a dictionary to store the name, roll_no, and total_mark of N students.
#Now print the details of the student with the highest total_mark.

#lambda x: x['marks'] is a lambda function defined inline.
#  It takes an argument x (which represents each student dictionary in students) and
returns x['marks'].
# This lambda function extracts the 'marks' value from each student dictionary.
def student_details(N):
    student=[]
    for i in range(N):
        print("\nEnter details of Student ",i+1," : ")
        name = input("Enter student name: ")
        roll_no=input("Enter the roll no:")
        marks = int(input("Enter the marks: "))
        students={
            'name':name,
            'roll_no':roll_no,
            'marks':marks
        }
        student.append(students)
    return student
def find_top_student(students):
    top_student = max(students, key=lambda x: x['marks'])
    return top_student
N=int(input("Enter the number of students:"))
Student=student_details(N)
print("Student Details:\n")
print(Student)
top_student=find_top_student(Student)
print("Details of Top Student:\n")
print("Name:",top_student['name'])
print("Roll No:",top_student['roll_no'])

print("Marks:",top_student['marks'])
```

**OUTPUT :**



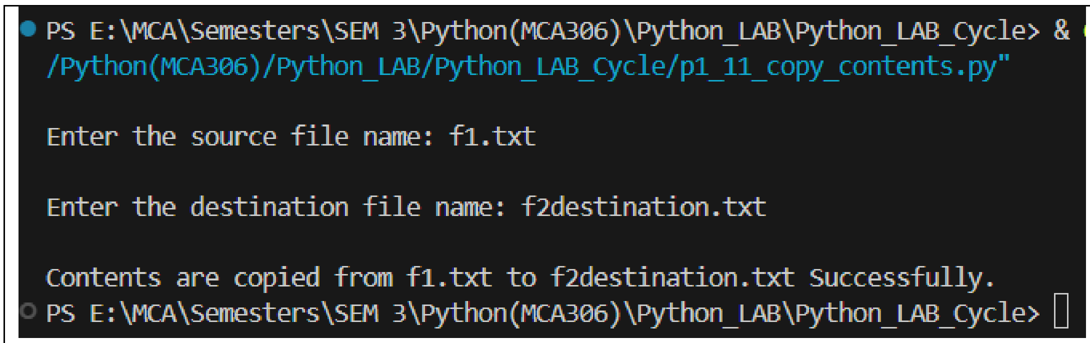
```
PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle> & C:/Users/marsh/AppData/Local/Microsoft/WindowsApps/python3.11.exe "e:/MCA/Semesters/SEM 3/
on(MCA306)/Python_LAB/Python_LAB_Cycle/p1_10_studentMarkDictionary.py"
Enter the number of students:3

Enter details of Student  1  :
Enter student name: Anshad Muhammad
Enter the roll no:36
Enter the marks: 75

Enter details of Student  2  :
Enter student name: Nihal Muhd
Enter the roll no:37
Enter the marks: 82

Enter details of Student  3  :
Enter student name: Majo
Enter the roll no:30
Enter the marks: 78
Student Details:

[{'name': 'Anshad Muhammad', 'roll_no': '36', 'marks': 75}, {'name': 'Nihal Muhd', 'roll_no': '37', 'marks': 82}, {'name': 'Majo', 'roll_no': '30', 'marks': 78}]
Details of Top Student:

Name: Nihal Muhd
Roll No: 37
Marks: 82
PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle> 
```

**1.11. Write a Python program to copy the contents of a file into another file, line by line.**

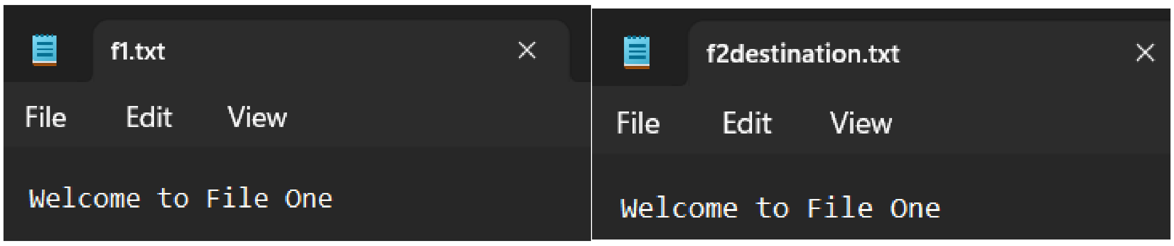
## PROGRAM :

```python
# Write a Python program to copy the contents of a file into another file, line by line.


# Function to copy contents from one file to another
def Copy(sourceFile, destinationFile):
    try:
        # Open the source file in read mode
        with open(sourceFile, 'r') as src:
            # Open the destination file in write mode
            with open(destinationFile, 'w') as dest:
                # Read and write each line from source to destination
                for line in src:
                    dest.write(line)
        print(f"\nContents are copied from {sourceFile} to {destinationFile} Successfully.")
    except FileNotFoundError:
        print(f"\nThe file {sourceFile} does not exist.")
    except IOError as e:
        print(f"An error occurred: {e}")
# Take input from user:
sourceFile = input("\nEnter the source file name: ")
destinationFile = input("\nEnter the destination file name: ")
Copy(sourceFile, destinationFile) #Calling method
```

## OUTPUT:



```
PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle> &
/Python(MCA306)/Python_LAB/Python_LAB_Cycle/p1_11_copy_contents.py"

Enter the source file name: f1.txt

Enter the destination file name: f2destination.txt

Contents are copied from f1.txt to f2destination.txt Successfully.
PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle>
```



```
Welcome to File One
```

```
Welcome to File One
```

**1.12. Use the OS module to perform :**

**1.12.1. Create a directory**

**1.12.2. Directory Listing**

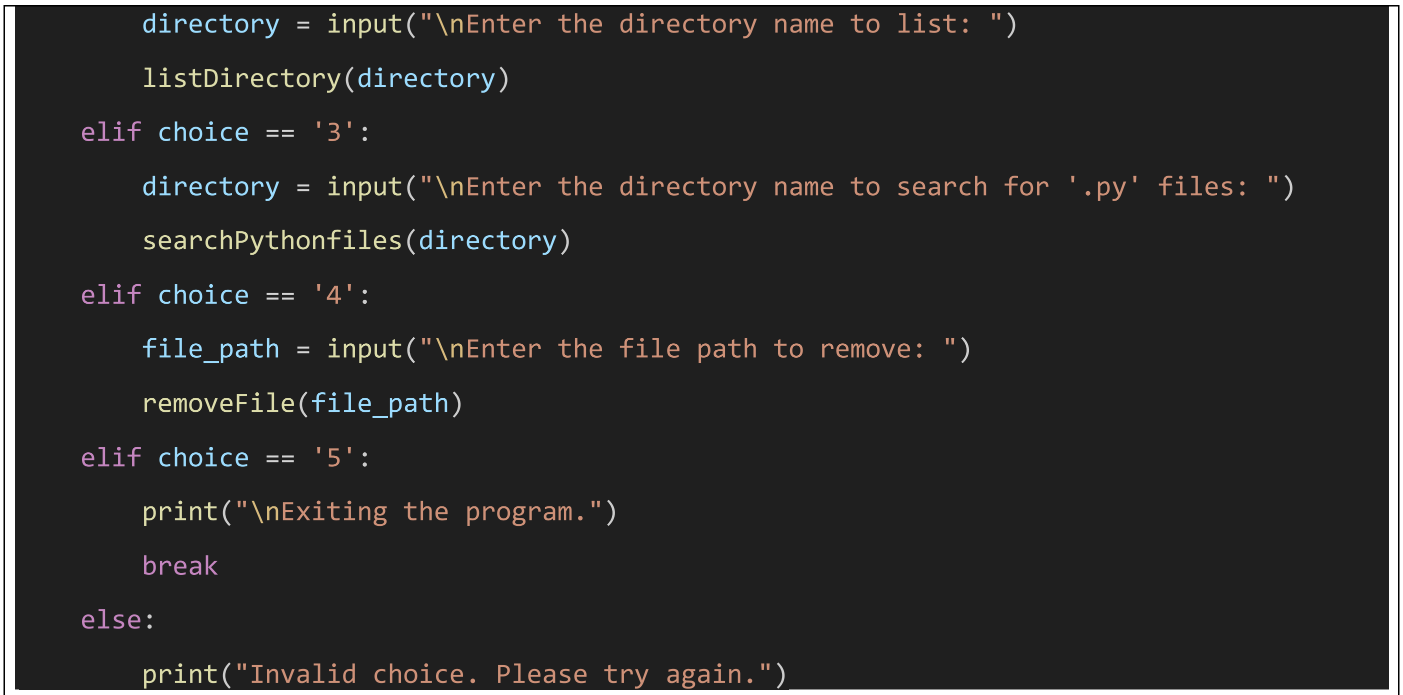
**1.12.3. Search for ".py" files**

**1.12.4. Remove a particular file**

**PROGRAM :**

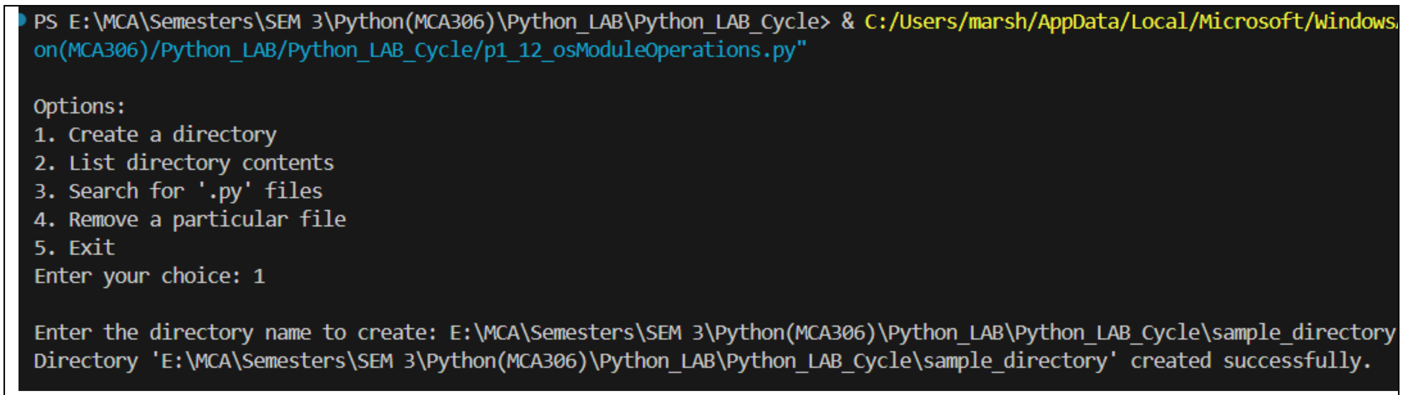
```
#1.Use the OS module to perform
    #1.1. Create a directory
    #1.2. Directory Listing
    #1.3. Search for ".py" files
    #1.4. Remove a particular file

import os

def createDirectory(directory):
    try:
        os.makedirs(directory)
        print(f"Directory '{directory}' created successfully.")
    except FileExistsError:
        print(f"Directory '{directory}' already exists.")
    except Exception as e:
        print(f"An error occurred: {e}")

def listDirectory(directory):
    try:
        files = os.listdir(directory)
        print(f"Listing contents of '{directory}':")
        for file in files:
            print(file)
    except FileNotFoundError:
        print(f"Directory '{directory}' does not exist.")
    except Exception as e:
        print(f"An error occurred: {e}")
```

```python
def searchPythonfiles(directory):
    try:
        py_files = [f for f in os.listdir(directory) if f.endswith('.py')]
        if py_files:
            print(f"'.py' files in '{directory}':")
            for file in py_files:
                print(file)
        else:
            print(f"No '.py' files found in '{directory}'.")
    except FileNotFoundError:
        print(f"Directory '{directory}' does not exist.")
    except Exception as e:
        print(f"An error occurred: {e}")

def removeFile(file_path):
    try:
        os.remove(file_path)
        print(f"File '{file_path}' removed successfully.")
    except FileNotFoundError:
        print(f"File '{file_path}' does not exist.")
    except Exception as e:
        print(f"An error occurred: {e}")

while True:
    print("\nOptions:")
    print("1. Create a directory")
    print("2. List directory contents")
    print("3. Search for '.py' files")
    print("4. Remove a particular file")
    print("5. Exit")
    choice = input("Enter your choice: ")

    if choice == '1':
        directory = input("\nEnter the directory name to create: ")
        createDirectory(directory)
    elif choice == '2':
```

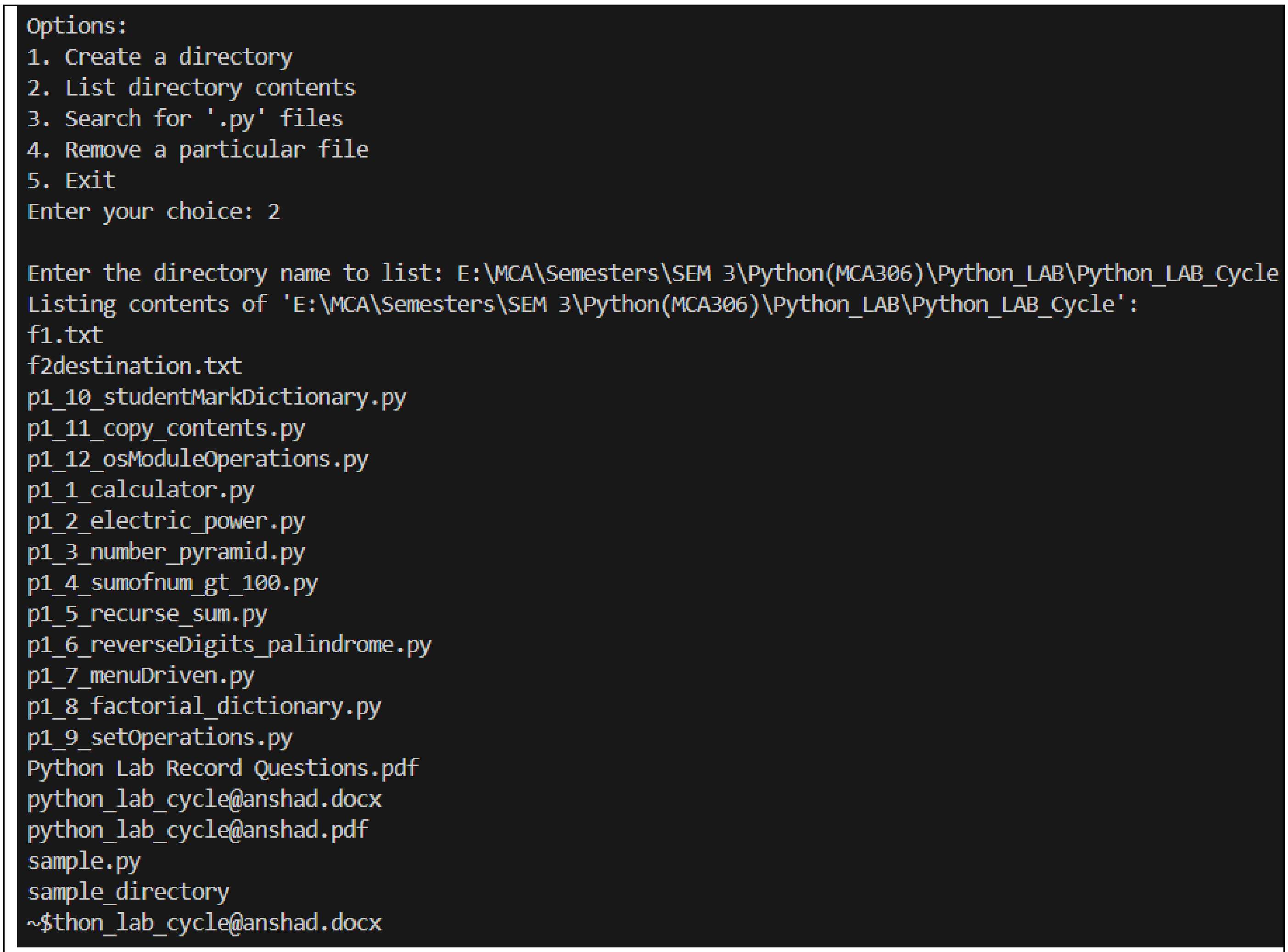


```
        directory = input("\nEnter the directory name to list: ")
        listDirectory(directory)
    elif choice == '3':
        directory = input("\nEnter the directory name to search for '.py' files: ")
        searchPythonfiles(directory)
    elif choice == '4':
        file_path = input("\nEnter the file path to remove: ")
        removeFile(file_path)
    elif choice == '5':
        print("\nExiting the program.")
        break
    else:
        print("Invalid choice. Please try again.")
```

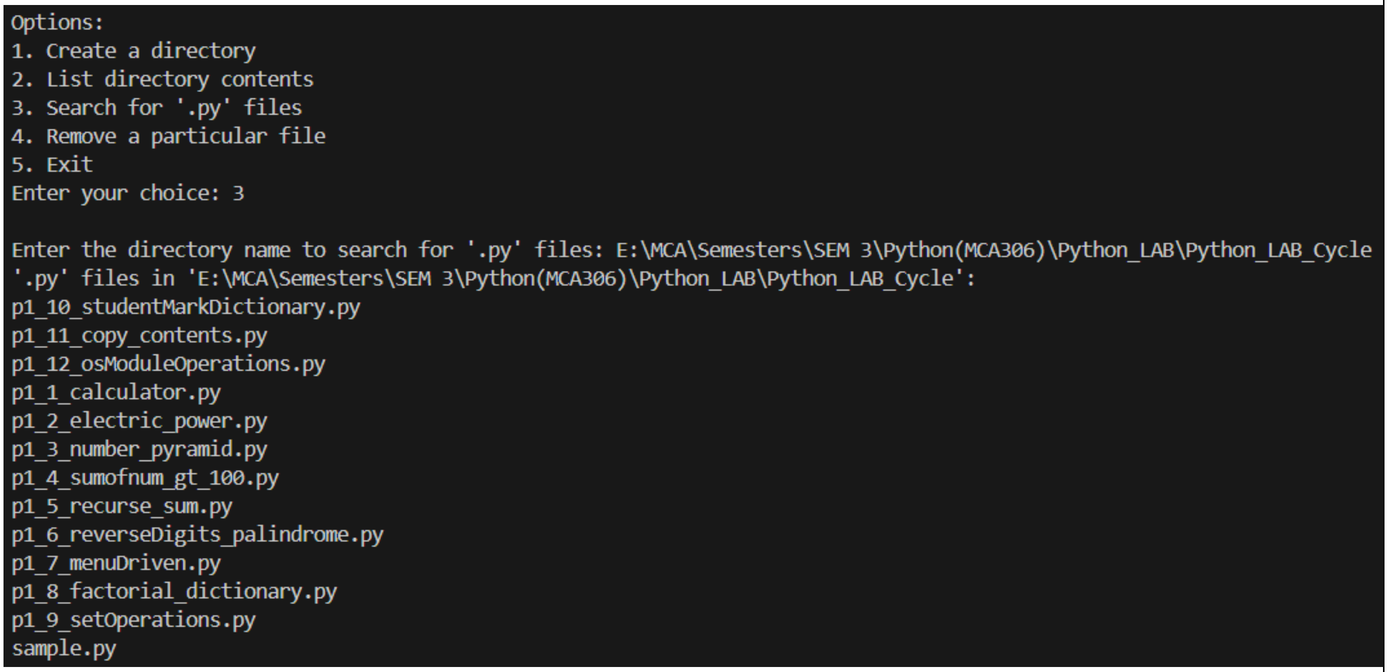
## OUTPUT:



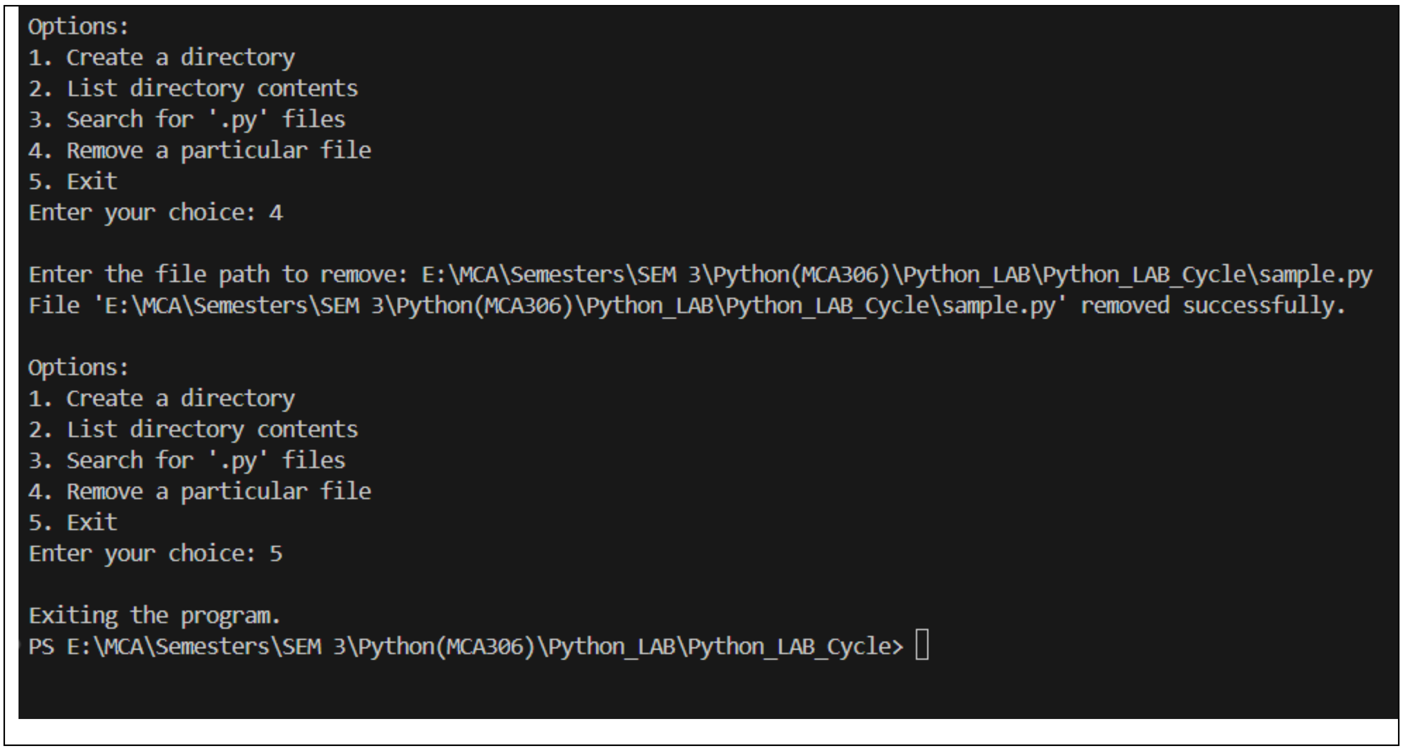
```
PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle> & C:/Users/marsh/AppData/Local/Microsoft/Windows
on(MCA306)/Python_LAB/Python_LAB_Cycle/p1_12_osModuleOperations.py"

Options:
1. Create a directory
2. List directory contents
3. Search for '.py' files
4. Remove a particular file
5. Exit
Enter your choice: 1

Enter the directory name to create: E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle\sample_directory
Directory 'E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle\sample_directory' created successfully.
```



```
Options:
1. Create a directory
2. List directory contents
3. Search for '.py' files
4. Remove a particular file
5. Exit
Enter your choice: 2

Enter the directory name to list: E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle
Listing contents of 'E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle':
f1.txt
f2destination.txt
p1_10_studentMarkDictionary.py
p1_11_copy_contents.py
p1_12_osModuleOperations.py
p1_1_calculator.py
p1_2_electric_power.py
p1_3_number_pyramid.py
p1_4_sumofnum_gt_100.py
p1_5_recurse_sum.py
p1_6_reverseDigits_palindrome.py
p1_7_menuDriven.py
p1_8_factorial_dictionary.py
p1_9_setOperations.py
Python Lab Record Questions.pdf
python_lab_cycle@anshad.docx
python_lab_cycle@anshad.pdf
sample.py
sample_directory
~$thon_lab_cycle@anshad.docx
```



```
Options:
1. Create a directory
2. List directory contents
3. Search for '.py' files
4. Remove a particular file
5. Exit
Enter your choice: 3

Enter the directory name to search for '.py' files: E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle
'.py' files in 'E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle':
p1_10_studentMarkDictionary.py
p1_11_copy_contents.py
p1_12_osModuleOperations.py
p1_1_calculator.py
p1_2_electric_power.py
p1_3_number_pyramid.py
p1_4_sumofnum_gt_100.py
p1_5_recurse_sum.py
p1_6_reverseDigits_palindrome.py
p1_7_menuDriven.py
p1_8_factorial_dictionary.py
p1_9_setOperations.py
sample.py
```



```
Options:
1. Create a directory
2. List directory contents
3. Search for '.py' files
4. Remove a particular file
5. Exit
Enter your choice: 4

Enter the file path to remove: E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle\sample.py
File 'E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle\sample.py' removed successfully.

Options:
1. Create a directory
2. List directory contents
3. Search for '.py' files
4. Remove a particular file
5. Exit
Enter your choice: 5

Exiting the program.
PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle>
```

## 1.13. Create a simple banking application by using inheritance.

## PROGRAM :

```python
#Create a simple banking application by using inheritance.


class Account:
    def __init__(self, owner, balance=0.0):
        self.owner = owner
        self.balance = balance

    def deposit(self, amount):
        if amount > 0:
            self.balance += amount
            print(f"Deposited {amount}. New balance is {self.balance}.")
        else:
            print("Deposit amount must be positive.")

    def withdraw(self, amount):
        if amount > 0:
            if self.balance >= amount:
                self.balance -= amount
                print(f"Withdrew {amount}. New balance is {self.balance}.")
            else:
                print("Insufficient funds.")
        else:
            print("Withdrawal amount must be positive.")

    def display_balance(self):
        print(f"Account owner: {self.owner}, Balance: {self.balance}")

class SavingsAccount(Account):
    def __init__(self, owner, balance=0.0, interest_rate=0.01):
        super().__init__(owner, balance)
        self.interest_rate = interest_rate

    def add_interest(self):
        interest = self.balance * self.interest_rate
        self.balance += interest
        print(f"Interest added. New balance is {self.balance}.")

class CurrentAccount(Account):
    def __init__(self, owner, balance=0.0, overdraft_limit=500):
        super().__init__(owner, balance)
        self.overdraft_limit = overdraft_limit

    def withdraw(self, amount):
        if amount > 0:
            if self.balance + self.overdraft_limit >= amount:
                self.balance -= amount
                print(f"Withdrew {amount}. New balance is {self.balance}.")
            else:
                print("Overdraft limit exceeded.")
        else:
            print("Withdrawal amount must be positive.")

def main():
   accounts = {}

    while True:
        print("\nBanking System Menu:")
        print("1. Create Savings Account")
        print("2. Create Current Account")
        print("3. Deposit")
        print("4. Withdraw")
        print("5. Display Balance")
        print("6. Add Interest (Savings Account only)")
        print("7. Exit")

        choice = input("\nEnter your choice: ")

        if choice == '1':
            owner = input("\nEnter account owner's name: ")
            balance = float(input("\nEnter initial balance: "))
            interest_rate = float(input("\nEnter interest rate: "))
            accounts[owner] = SavingsAccount(owner, balance, interest_rate)
            print("\nSavings account created successfully.")

        elif choice == '2':
            owner = input("\nEnter account owner's name: ")
            balance = float(input("\nEnter initial balance: "))
            overdraft_limit = float(input("\nEnter overdraft limit: "))
            accounts[owner] = CurrentAccount(owner, balance, overdraft_limit)
            print("\nCurrent account created successfully.")

        elif choice == '3':
            owner = input("\nEnter account owner's name: ")
            if owner in accounts:
                amount = float(input("\nEnter amount to deposit: "))
                accounts[owner].deposit(amount)
            else:
                print("\nAccount not found.")

        elif choice == '4':
            owner = input("\nEnter account owner's name: ")
            if owner in accounts:
                amount = float(input("\nEnter amount to withdraw: "))
                accounts[owner].withdraw(amount)
            else:
                print("\nAccount not found.")

        elif choice == '5':
            owner = input("\nEnter account owner's name: ")
            if owner in accounts:
                accounts[owner].display_balance()
            else:
                print("\nAccount not found.")

        elif choice == '6':
            owner = input("\nEnter account owner's name: ")
            if owner in accounts:
                account = accounts[owner]
                if isinstance(account, SavingsAccount):
                    account.add_interest()
                else:
                    print("\nInterest can only be added to savings accounts.")
            else:
                print("\nAccount not found.")

        elif choice == '7':
            print("\nExiting the program.")
            break
        else:
            print("\nInvalid choice. Please try again.")

if __name__ == "__main__":
    main()
```

## OUTPUT:

```
PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle> &
C:/Users/marsh/AppData/Local/Microsoft/WindowsApps/python3.11.exe
"e:/MCA/Semesters/SEM
3/Python(MCA306)/Python_LAB/Python_LAB_Cycle/p1_13_bankingApp.py"


Banking System Menu:
1. Create Savings Account
2. Create Current Account
3. Deposit
4. Withdraw
5. Display Balance
6. Add Interest (Savings Account only)
7. Exit


Enter your choice: 1
Enter account owner's name: Anshad


Enter initial balance: 15000


Enter interest rate: 8


Savings account created successfully.


Banking System Menu:
1. Create Savings Account
2. Create Current Account
3. Deposit
4. Withdraw
5. Display Balance
6. Add Interest (Savings Account only)
7. Exit


Enter your choice: 2


Enter account owner's name: Dilsha C P


Enter initial balance: 25000


Enter overdraft limit: 50000


Current account created successfully.


Banking System Menu:
1. Create Savings Account
2. Create Current Account
3. Deposit
4. Withdraw
5. Display Balance
6. Add Interest (Savings Account only)
7. Exit
```

```
Enter your choice: 3

Enter account owner's name: Anshad

Enter amount to deposit: 20000
Deposited 20000.0. New balance is 35000.0.

Banking System Menu:
1. Create Savings Account
2. Create Current Account
3. Deposit
4. Withdraw
5. Display Balance
6. Add Interest (Savings Account only)
7. Exit

Enter your choice: 4

Enter account owner's name: Dilsha C P

Enter amount to withdraw: 5000
Withdrew 5000.0. New balance is 20000.0.

Banking System Menu:
1. Create Savings Account
2. Create Current Account
3. Deposit
4. Withdraw
5. Display Balance
6. Add Interest (Savings Account only)
7. Exit

Enter your choice: 5
Enter account owner's name: Anshad
Account owner: Anshad, Balance: 35000.0


Banking System Menu:
1. Create Savings Account
2. Create Current Account
3. Deposit
4. Withdraw
5. Display Balance
6. Add Interest (Savings Account only)
7. Exit


Enter your choice: 6


Enter account owner's name: Dilsha C P


Interest can only be added to savings accounts.


Banking System Menu:
1. Create Savings Account
2. Create Current Account
3. Deposit
4. Withdraw
5. Display Balance
6. Add Interest (Savings Account only)
7. Exit


Enter your choice: 6


Enter account owner's name: Anshad
Interest added. New balance is 315000.0.


Banking System Menu:
1. Create Savings Account
2. Create Current Account
```

```
3. Deposit

4. Withdraw

5. Display Balance

6. Add Interest (Savings Account only)

7. Exit


Enter your choice: 7


Exiting the program.

PS E:\MCA\Semesters\SEM 3\Python(MCA306)\Python_LAB\Python_LAB_Cycle>
```