Program – 25

Object – Write a prgram to display fibonacci sequence using recursion.

Code :

```
def fibonacci(n):
    if n<=1:
        return n
    else:
        return fibonacci(n-1) + fibonacci(n-2)

num_terms = int(input("Enter the number of terms : "))

if num_terms <= 0:
    print("Invalid input!")
    print("Please enter a positive number")
else:
    print("Fibinacci series upto", num_terms, "is : ")
    for i in range(num_terms):
        if i == num_terms-1:
            print(fibonacci(i))
        else:
            print(str(fibonacci(i)) + ",", end=" ")
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/m
Enter the number of terms : 7
Fibinacci series upto 7 is :
0, 1, 1, 2, 3, 5, 8
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 26

Object – Write a program to transpose a matrix using a nested loop.

Code :

```
matrix1 = [[1,2,3], [4,5,6], [7,8,9]]
result = [[0,0,0], [0,0,0], [0,0,0]]

print("The matrix is : ", matrix1)
for i in range(len(matrix1)):
    for j in range(len(matrix1[0])):
        result[j][i] = matrix1[i][j]

print("The transapose of the matrix is : ")
for r in result:
    print(r)
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/m
The matrix is :  [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
The transapose of the matrix is :
[1, 4, 7]
[2, 5, 8]
[3, 6, 9]
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 27

Object – Write a program to sort alphabetically the words from strings provided by user.

Code :

```
my_str = input("Enter a sentence : ")

words = []
for word in my_str.split():
    words.append(word.lower())

words.sort()

for word in words:
    print(word)
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/m
Enter a sentence : He will come tomorrow
come
he
tomorrow
will
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 28

Object – Write a program to find sum of natural numbers using recursion.

Code :

```
def sum_num(n):
    if n <= 1:
        return 1
    else:
        return n + sum_num(n-1)

num = int(input("Enter a number : "))
if num < 0:
    print("Invalid input!")
    print("Enter a positive integer")
else:
    print("Sum of ",num,"natural numbers is ", sum_num(num))
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/m
Enter a number : 10
Sum of  10 natural numbers is  55
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 29

Object – Write a program to find factorial of number using recursion.

Code :

```
def fact(n):
    if n == 1:
        return 1
    else:
        return n*fact(n-1)

num = int(input("Enter a number : "))

if num < 0:
    print("Invalid input, Enter a positive integer!")
elif num == 0:
    print("The factorial of 0 is 1")
else:
    print("The factorial", num, "is", fact(num))
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/m
Enter a number : 10
The factorial 10 is 3628800
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 30

Object – Write a program to print binary number using recursion.

Code :

```
def convert_to_binary(n):
    if n > 1:
        convert_to_binary(n//2)
    print(n%2, end='')

num = int(input("Enter decimal value : "))

print("The binary value for",num,"is", end=' ')
convert_to_binary(num)
print()
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/m
Enter decimal value : 10
The binary value for 10 is 1010
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 31

Object – Write a program to remove punctuations from a string.

Code :

```
punctuations = "!(){}[]-;:,""\<>./?@#$%^&*_~"

my_str = input("Enter string : ")

no_punctuation = ""
for char in my_str:
    if char not in punctuations:
        no_punctuation = no_punctuation + char

print("The string with no punctuation is --> ", no_punctuation)
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/mnt/A
Enter string : Hi!!! there-- how, are.. you??\
The string with no punctuation is -->  Hi there how are you
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 32

Object – Write a program to check if two strings are anagrams.

Code :

```
#input strings
str1 = input("Enter first string : ")
str2 = input("Enter second string : ")

#convert string to lowercase
str1 = str1.lower()
str2 = str2.lower()

#check if length is same
if len(str1) != len(str2):
    print("Input strings are not anagrams")
else:
    sorted_str1 = sorted(str1)
    sorted_str2 = sorted(str2)
    if sorted_str1 == sorted_str2:
        print("Input strings are anagram")
    else:
        print("Input strings are not anagram.")
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/mnt/A
Enter first string : Race
Enter second string : Care
Input strings are anagram
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/mnt/A
Enter first string : dfg
Enter second string : dfghjk
Input strings are not anagrams
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 33

Object – Write a program to use a global variable in nested function.

Code :

```
def foo():
    x = 20

    def bar():
        global x
        x = 25

    print("Value of x before calling bar -->",x)
    print("Now calling bar function...")
    bar()
    print("Value of x after calling bar -->",x)

#main function
foo()
print("Value of x in main -->",x)
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/mnt/A
Value of x before calling bar --> 20
Now calling bar function...
Value of x after calling bar --> 20
Value of x in main --> 25
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```

Program – 34

Object – Write a program to import a module.

Code :

```
#import statement for importing standard module path
import math
print("(Importing module) The value of pi =", math.pi)


#import module by renaming it
import math as m
print("(Importing module & renaming it) The value of pi =",m.pi)
```

Output :

```
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$ python -u "/mnt/A2A25781A
(Importing module) The value of pi = 3.141592653589793
(Importing module & renaming it) The value of pi = 3.141592653589793
ap-73@AP:/mnt/A2A25781A257593D/Practical6th$
```