COURSE OUTCOME 2

DATE: 22/10/2024

1. Program to find the factorial of a number

PROGRAM

```
n=int(input("Enter number: "))
fact=1
i=1
while i <= n:
  fact=fact*i
  i=i+1
print("Factorial of ",n,"is ",fact)
```

OUTPUT

```
Enter number: 5
Factorial of  5 is  120

Enter number: 7
Factorial of  7 is  5040
```

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2. Generate Fibonacci series of N terms

PROGRAM

```
n = int(input("Enter the number of terms: "))
a, b = 0, 1
fibonacci_series = []
for i in range(n):
    fibonacci_series.append(a)
    a, b = b, a + b
print(f"Fibonacci series of {n} terms: {fibonacci_series}")
```

OUTPUT

```
Enter the number of terms: 5
Fibonacci series of 5 terms: [0, 1, 1, 2, 3]

Enter the number of terms: 10
Fibonacci series of 10 terms: [0, 1, 1, 2, 3, 5, 8, 13, 21, 34]
```

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3. Find the sum of all items in a list

PROGRAM

```
l=[int(i) for i in input("Enter List : ").split()]
print("Sum : ",sum(l))
```

OUTPUT

```
Enter List : 1 2 3 4 5
Sum :  15

Enter List : 5 10 15 20
Sum :  50
```

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4. Generate a list of four-digit numbers in a given range with all their digits even and the number is a perfect square.

PROGRAM

```
import math
start = int(input("Start Limit : "))
end = int(input("End Limit : "))
even_perfect_squares = []
for num in range(math.isqrt(start), math.isqrt(end) + 1):
    square = num ** 2
    if all(int(digit) % 2 == 0 for digit in str(square)):
        even_perfect_squares.append(square)
print("Four-digit perfect squares with all even digits:", even_perfect_squares)
```

OUTPUT

```
Start Limit : 4000
End Limit : 9999
Four-digit perfect squares with all even digits: [4624, 6084, 6400, 8464]
```

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5. Display the given pyramid with step number accepted from user. Eg: N=4

```
1
2 4
3 6 9
4 8 12 16
```

PROGRAM

```
n= int(input("Enter a number :"))
for i in range(1,n+1):
  for j in range(1,i+1):
   print(i*j,end=" ")
  print(" ")
```

OUTPUT

```
Enter a number :4
1
2 4
3 6 9
4 8 12 16

Enter a number :5
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
```

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6. Count the number of characters (character frequency) in a string.

PROGRAM

```
input_string = input("Enter a string: ")
char_frequency = {}
for char in input_string:
    char_frequency[char] = char_frequency.get(char, 0) + 1
print("Character frequencies:")
for char, count in char_frequency.items():
    print(f"'{char}': {count}")
```

OUTPUT

```
Enter a string: MALAYALAM
Character frequencies:
'M': 2
'A': 4
'L': 2
'Y': 1

Enter a string: programming
Character frequencies:
'p': 1
'r': 2
'o': 1
'g': 2
'a': 1
'm': 2
'i': 1
'n': 1
```

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7. Add ‘ing’ at the end of a given string. If it already ends with ‘ing’, then add ‘ly’

PROGRAM

```
input_string = input("Enter a string: ")
if len(input_string) >= 3:
    if input_string.endswith("ing"):
        result = input_string + "ly"
    else:
        result = input_string + "ing"
else:
    result = input_string
print("Modified string:", result)
```

OUTPUT

Enter a string: talk

Modified string: talking

Enter a string: running

Modified string: runningly

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8. Accept a list of words and return length of longest word.

PROGRAM

```
words = input("Enter a list of words : ").split()
longest = max(len(word) for word in words)
print("Length of the longest word:", longest)
```

OUTPUT

```
Enter a list of words : Python Programming
Length of the longest word: 11

Enter a list of words separated by spaces: India States
Length of the longest word: 6
```

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9. Construct following pattern using nested loop

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

PROGRAM

```
for i in range(5):
    for j in range(i + 1):
        print("*", end=" ")
    print()

for i in range(5):
    for j in range(5-i-1):
        print("*", end=" ")
    print()
```

OUTPUT

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

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10. Generate all factors of a number.

PROGRAM

```
num = int(input("Enter a number: "))
factors = [i for i in range(1, num + 1) if num % i == 0]
print("Factors of the number:", factors)
```

OUTPUT

Enter a number: 30

Factors of the number: [1, 2, 3, 5, 6, 10, 15, 30]

Enter a number: 20

Factors of the number: [1, 2, 4, 5, 10, 20]

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11. Write lambda functions to find area of square, rectangle and triangle.

PROGRAM

```
area1=lambda a :a*a
area2=lambda l,b :l*b
area3=lambda b,h :0.5*b*h
s=int(input("Enter side of square: "))
print("Area of square= ",area1(s))
l=int(input("Enter length of rectangle: "))
b=int(input("Enter breadth of rectangle: "))
print("Area of rectangle= ",area2(l,b))
p=int(input("Enter base of triangle: "))
h=int(input("Enter height of triangle: "))
print("Area of triangle= ",area3(p,h))
```

OUTPUT

```
Enter side of square: 4
Area of square=  16
Enter length of rectangle: 4
Enter breadth of rectangle: 5
Area of rectangle=  20
Enter base of triangle: 3
Enter height of triangle: 4
Area of triangle=  6.0

Enter side of square: 6
Area of square=  36
Enter length of rectangle: 4
Enter breadth of rectangle: 3
Area of rectangle=  12
Enter base of triangle: 2
Enter height of triangle: 8
Area of triangle=  8.0
```