PROGRAM

```
def factorial(n):
   if n==0 or n==1:
      return 1
   else:
      return n * factorial (n-1)
num=int(input("Enter a number:"))
result=factorial(num)
print(result)
```

OUTPUT

```
Enter a number:5
120
```

PROGRAM

```
rows=int(input("Enter the number of rows: "))

for i in range (1, rows + 1) :

   for j in range (i) :

      print( ' * ' , end= '')

   print('')
```

OUTPUT

```
Enter the number of rows: 5
*
* *
* * *
* * * *
* * * * *
```

PROGRAM

```
def is_prime(num):
    if num<2:
        return False
    if num==2:
        return True
    for i in range(2,num):
        if num % i==0:
            return False
    return True
n=int(input("Enter a number"))
for num in range(2,n):
    if is_prime(num):
        print(num)
```

OUTPUT

```
Enter a number20
2
3
5
7
11
13
17
19
```

PROGRAM

```
def is_right_triangle (a,b,c):
    sides=sorted([a,b,c])
    return sides [2]**2==sides[0]**2+sides[1]**2
side1=float(input('Enter the length of the first side: '))
side2=float(input('Enter the length of second side:'))
side3=float(input('Enter the lenfth of third side:'))
if is_right_triangle(side1,side2,side3):
    print('The triangle is a right triangle')
else:
    print('The triangle is not a right triangle')
```

OUTPUT

```
= RESTART: C:/Users/STUDENTS.CADLAB01030
n/Python312/4.py
Enter the length of the first side: 4
Enter the length of second side:5
Enter the lenfth of third side:6
The triangle is not a right triangle

= RESTART: C:/Users/STUDENTS.CADLAB01030
n/Python312/4.py
Enter the length of the first side: 3
Enter the length of second side:4
Enter the lenfth of third side:5
The triangle is a right triangle
```

PROGRAM

```
def add (a,b):
   if b ==0:
      return a
   else:
      return add(a+1,b-1)
num1=int(input("Enter the first positive number:"))
num2 =int(input("Enter the second positive number:"))
sum =add(num1,num2)
print(f"The sum of {num1} and {num2} is {sum}")
```

OUTPUT

```
Enter the first positive number:5
Enter the second positive number:7
The sum of 5 and 7 is 12
```

PROGRAM

```
def multiply(a,b):
    if b == 0:
        return 0
    else :
        return a + multiply(a,b-1)
num1=int(input("Enter the first positive number:"))
num2=int(input("Enter the second positive number:"))
result=multiply(num1,num2)
print(f"The product of {num1} and {num2} is {result}")
```

OUTPUT

```
Enter the first positive number:45
Enter the second positive number:54
The product of 45 and 54 is 2430
```

PROGRAM

```
import numpy as np

my_list=np.array([1,2,3,4,5])

print("Original List:",my_list)

my_list=np.append(my_list,[6,7])

print("List after appending [6,7]:",my_list)

my_list=np.delete(my_list,1)

print("List after removing the second element:",my_list)
```

OUTPUT

```
Original List: [1 2 3 4 5]

List after appending [6,7]: [1 2 3 4 5 6 7]

List after removing the second element: [1 3 4 5 6 7]
```

PROGRAM

```
def is_valid_mobile_number(number):
    if len(number)==10 and number.isdigit():
        if number[0] in '789':
            return True
        return False
number=input("Enter the mobile number:")
if is_valid_mobile_number(number):
    print("The mobile number is valid.")
else:
    print("The mobile number is invalid.")
```

OUTPUT

```
Enter the mobile number:7235006301
The mobile number is valid.
Enter the mobile number:6235006304
The mobile number is invalid.
```

PROGRAM

```
str1=input("Enter the first string")

str2=input("Enter the second string")

concat=str1+str2

print("concatinated string=",concat)

substring=concat[0:5]

print("substring=",substring)
```

OUTPUT

```
= RESTART: C:/Users/STUDENTS.DESKTOP-2GN2
D50/AppData/Local/Programs/Python/Python3
12/uu.py
Enter the first stringhello
Enter the second stringworld
concatinated string= helloworld
substring= hello
```

Program

```
from datetime import datetime

now=datetime.now()

format1=now.strftime("%a %b %d %H:%M:%S IST %Y")

format2=now.strftime("%Y-%m-%d %H:%M:%S")

format3=now.strftime("%d-%m-%Y")

format4=now.strftime("%H:%M:%S")

print("Format 1(e.g Sun May 29 02:26:23 IST 2023):",format1)

print("Format 2(ISO Format):",format2)

print("Format 3(Date only):",format3)

print("Format 4(Time only):",format4)
```

Output

```
Format 1(e.g Sun May 29 02:26:23 IST 2023): Fri Nov 01 15:30:00 IST 2024
Format 2(ISO Format): 2024-11-01 15:30:00
Format 3(Date only): 01-11-2024
Format 4(Time only): 15:30:00
```