1. Write a Python program to calculate the area of a rectangle given its length and width.

In [24]:
```
def area(length,breadth):
    return length*breadth
length=int(input("Enter the length:"))
breadth=int(input("\nEnter the breadth:"))
result=area(length,breadth)
print("\nArea of rectangle:",result)
```

```
Enter the length:10

Enter the breadth:100

Area of rectangle: 1000
```

2. Write a program to convert miles to kilometers.

In [3]:
```
def conversion(miles):
    return miles*1.609
miles=int(input("no. of miles:"))
result=conversion(miles)
print("Value in kilometers:",result)
```

```
no. of miles:10
Value in kilometers: 16.09
```

3. Write a function to check if a given string is a palindrome

In [4]:
```
def palindrome(string):
    return string==string[::-1]
string=input("Enter the string:")
result=palindrome(string)
```

3. Write a function to check if a given string is a palindrome

In [4]:
```
def palindrome(string):
    return string==string[::-1]
string=input("Enter the string:")
result=palindrome(string)
if(result):
    print("It is a palindrome")
else:
    print("Given string is not a palindrome")
```

```
Enter the string:121
It is a palindrome
```

4. Write a Python program to find the second largest element in a list.

In [5]:
```
list=[1,10,3,4,5]
list.sort()
print(list)
m=list[len(list)-2]
print("The second largest term is:" ,m)
```

```
[1, 3, 4, 5, 10]
The second largest term is: 5
```

6. Write a program to perform set difference operation.

Indentation is a line after the loop's or condition's ending with colon in which it's block get started with the tab space which is nothing but the indentation before the starting of the every statement until the loop or conditiin ends.

5. Explain what indentation means in Python.

5. Explain what indentation means in Python.

In [6]:
```
set1={1,10,5,4,3,2}
set2={1,4,10}
set=set1-set2
print(set)
```

```
{2, 3, 5}
```

7. Write a Python program to print numbers from 1 to 10 using a while loop.

In [7]:
```
n=1
while(n<=10):
    print(n)
    n=n+1
```

```
1
2
3
4
5
6
7
8
9
10
```

8. Write a program to calculate the factorial of a number using a wh

In [8]:
```
def factorial(n):
    fact=1
```

8. Write a program to calculate the factorial of a number using a while loop.

In [8]:
```
def factorial(n):
    fact=1
    while(n>=1):
        fact=fact*n
        n=n-1
    return fact
n=int(input("Enter value of n:"))
result=factorial(n)
print(result)
```

```
Enter value of n:5
120
```

9. Write a Python program to check if a number is positive, negative, or zero using if-elif-else statements.

In [10]:
```
n=int(input("Enter the value of n:"))
if(n>0):
    print("n is positive")
elif(n<0):
    print("n is negative")
else:
    print("n is zero")
```

```
Enter the value of n:0
n is zero
```

10. Write a program to determine the largest among three numbers using conditional statements.

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10. Write a program to determine the largest among three numbers using conditional statements.

In [14]:
```
a=int(input("enter the a:"))
b=int(input("enter the b:"))
c=int(input("enter the c:"))
if(a>b>c):
    print("a is largest")
elif(b>c):
    print("b is largest")
else:
    print("c is largest")
```

```
enter the a:3
enter the b:2
enter the c:5
c is largest
```

11. Write a Python program to create a numpy array filled with ones of given shape.

In [17]:
```
import numpy as np
arr=np.ones((5,5))
print(arr)
```

```
[[1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]]
```

12. Write a program to create a 2D numpy array initialized with random

12. Write a program to create a 2D numpy array initialized with random integers.

In [25]:
```
import numpy as np
import random
a=np.random.randint(1,10,(5,5))
print(a)
```

```
[[9 2 6 8 3]
 [8 2 4 4 6]
 [5 9 7 2 8]
 [1 9 2 8 5]
 [4 6 9 6 9]]
```

13. Write a Python program to generate an array of evenly spaced numbers over a specified range using linspace.

In [26]:
```
import numpy as np
b=np.linspace(1,50,25)
print(b)
```

```
[ 1.          3.04166667  5.08333333  7.125       9.16666667 11.20833333
 13.25       15.29166667 17.33333333 19.375      21.41666667 23.45833333
 25.5        27.54166667 29.58333333 31.625      33.66666667 35.70833333
 37.75       39.79166667 41.83333333 43.875      45.91666667 47.95833333
 50.        ]
```

14. Write a program to generate an array of 10 equally spaced values between 1 and 100 using linspace.

In [27]:
```
c=np.linspace(1,100,10)
print(c)
```

14. Write a program to generate an array of 10 equally spaced values between 1 and 100 using linspace.

In [27]:
```
c=np.linspace(1,100,10)
print(c)
```

```
[  1.  12.  23.  34.  45.  56.  67.  78.  89. 100.]
```

15. Write a Python program to create an array containing even numbers from 2 to 20 using arange.

In [23]:
```
d=np.arange(2,20,2)
print(d)
```

```
[ 2  4  6  8 10 12 14 16 18]
```

16. Write a program to create an array containing numbers from 1 to 10 with a step size of 0.5 using arange.

In [28]:
```
e=np.arange(1,10,0.5)
print(e)
```

```
[1.  1.5 2.  2.5 3.  3.5 4.  4.5 5.  5.5 6.  6.5 7.  7.5 8.  8.5 9.  9.5]
```