

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

```
In [3]: length = float(input("Enter length: "))
width = float(input("Enter Width: "))
area = length*width
print("Area of the rectangle is",area)
```

```
Enter length: 10
Enter Width: 20
Area of the rectangle is 200.0
```

2. Write a program to convert miles to kilometers

```
In [6]: miles = float(input("Enter miles: "))
kilometers = miles * 1.60934
print(miles,"miles is Equal to",kilometers,"kilometers")
```

```
Enter miles: 10
10.0 miles is Equal to 16.0934 kilometers
```

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

```
In [13]: x = input()
result = lambda x: "Palindrome" if x == x[::-1] else "Not Palindrome"
print(result(x))
```

```
123h321
Palindrome
```

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

```
In [19]: l = [3,4,6,1,6,8,3]
z = sorted(set(l),reverse=True)
print(z[1])
```

```
6
```

5. Explain what indentation means in Python.

Indentation means, it defines a block of code. The code under written in the indentation defines that it is in a block. Indentation defines the beginning and Ending of the block of

code. we use indentation in loopas and definations

6. Write a program to perform set difference operation.

```
In [22]: s1 = {1,2,3,4,5,6}
s2 = {1,3,5,6,8,9}
difference = s1 - s2
print(difference)
```

```
{2, 4}
```

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

```
In [23]: for i in range(1,11):
print(i)
```

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

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

```
In [62]: n = int(input("Enter number: "))
n1=n
fact=1
while(n>=1):
    fact*=n
    n-=1
print(n1,"Factorial is ",fact)
```

```
Enter number: 4
4 Factorial is 24
```

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

```
In [28]: n = int(input("Enter a Number: "))
if (n==0):
    print("Zero")
elif(n<0):
    print("Negative Number")
else:
    print("Positive Number")
```

Enter a Number: -9
Negative Number

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

```
In [50]: n1 = int(input("Enter Number-1: "))
n2 = int(input("Enter Number-2: "))
n3 = int(input("Enter Number-3: "))

if n1>=n2 and n1>=n3:
    print("Largest number is",n1)
elif n2>=n1 and n2>=n3:
    print("Largest number is",n2)
else:
    print("Largest number is",n3)
```

Enter Number-1: 89
Enter Number-2: 00
Enter Number-3: 99
Largest number is 99

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

```
In [31]: import numpy as np
```

```
In [48]: zeroarr = np.zeros((5,5),dtype=int)
print(zeroarr)
```

```
[[0 0 0 0 0]
 [0 0 0 0 0]
 [0 0 0 0 0]
 [0 0 0 0 0]
 [0 0 0 0 0]]
```

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

```
In [43]: arr = np.random.randint(1,100,(3,4))
print(arr)
np.ndim(arr)
```

```
[[30 42 51 66]
 [97 98  2 13]
 [17 18  4  9]]
```

Out[43]: 2

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

```
In [39]: linsspace1 = np.linspace(1,50,num=10,dtype=int)
print(linsspace1)
```

```
[ 1  6 11 17 22 28 33 39 44 50]
```

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

```
In [37]: linsspace2 = np.linspace(1,100,num=10)
print(linsspace2)
```

```
[ 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 [33]: array1 = np.arange(2,20,2)
print(array1)
```

```
[ 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 [36]: array2 = np.arange(1,10,0.5)  
print(array2)
```

```
[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]
```