

ASSESSMENT-1

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

```
length = float(input('Enter the length of a Rectangle: '))
width = float(input('Enter the width of a Rectangle: '))

area = length * width
print(area)
```

```
Enter the length of a Rectangle: 23.4
Enter the width of a Rectangle: 22.1
517.14
```

2)Write a program to convert miles to kilometers

```
miles = float(input("Enter value in miles: "))

conv_fac = 1.60934
kilometers = miles * conv_fac

print(kilometers)
```

```
Enter value in miles: 123
197.94882
```

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

```
def isPalindrome(s):
    return s == s[::-1]

s = input()
ans = isPalindrome(s)
if ans:
    print("Yes")
else:
    print("No")
```

```
taat
Yes
```

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

```
def second_largest(lst):  
    lst.sort()  
    return lst[-2]  
  
max1 = [20,33,23,221,57]  
print("Second largest element is:",second_largest(max1))
```

Second largest element is: 57

5. Explain what indentation means in Python.

A)It is used to define the structure and scope of code blocks. Unlike many other programming languages that use curly braces or keywords like begin and end to denote code blocks, Python uses indentation to indicate which statements are grouped together.

6. Write a program to perform set difference operation.

```
X = [1, 2, 3, 4]  
Y= [2, 6]  
  
result = list(set(X) - set(Y))  
print(result)
```

[1, 3, 4]

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

```
number = 1  
while number <= 10:  
    print(number)  
    number += 1
```

```
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.

```
def factorial(n):  
    num = 1  
    while n >= 1:  
        num = num * n  
        n = n - 1  
    return num  
number = int(input())  
result = factorial(number)  
print(result)
```

```
23  
25852016738884976640000
```

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

```
num = float(input())  
if num > 0:  
    print("Positive number")  
elif num == 0:  
    print("Zero")  
else:  
    print("Negative number")
```

```
-1  
Negative number
```

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

```
n1=int(input())  
n2=int(input())  
n3=int(input())  
  
if(n1>n2 and n1>n3):  
    print(n1)  
elif(n2>n1 and n2>n3):  
    print(n2)  
else:  
    print(n3)
```

```
3  
4  
5  
5
```

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

```
import numpy as np
ones_1d = np.ones(5)
print(ones_1d)
ones_2d = np.ones((2, 3))
print(ones_2d)
```

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

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

```
import numpy as np
rows, cols = 3, 4

random_array = np.array([[np.random.randint(10) for _ in range(cols)] for _ in range(rows)])
```

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

```
import numpy as np
start = 0
stop = 5
num_points = 10
result = np.linspace(start, stop, num_points)

print(result)
```

```
[0.          0.55555556 1.11111111 1.66666667 2.22222222 2.77777778
 3.33333333 3.88888889 4.44444444 5.          ]
```

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

```
import numpy as np
my_array = np.linspace(1, 100, num=10)

print(my_array)
```

```
[ 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.

```
▶ even_numbers_list = []  
  for i in range(2, 21, 2):  
      even_numbers_list.append(i)  
  print(even_numbers_list)
```

[2, 4, 6, 8, 10, 12, 14, 16, 18, 20]

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

```
▶ import numpy as np  
  my_array = np.arange(1, 10.5, 0.5)  
  print(my_array)
```

[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 10.]