Date: February 14, 2024

SMART INTERNZ - APSCHE

AI / ML Training

Assessment

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

```
length = float(input("Enter the length of the rectangle: "))
width = float(input("Enter the width of the rectangle: "))
area = length * width
print("The area of the rectangle is:", area)
```

2. Write a program to convert miles to kilometers

```
miles = float(input("Enter the distance in miles: "))
conversion_factor = 1.60934
kilometers = miles * conversion_factor
print("The distance in kilometers is:", kilometers)
```

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

```
string = input("Enter a string: ")
if string == string[::-1]:
    print("The string is a palindrome.")
else:
    print("The string is not a palindrome.")
```

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

```
my_list = [int(x) for x in input("Enter elements of the list separated by space: ").split()]
my_list.sort()
print("The second largest element in the list is:", my_list[-2])
```

5. Explain what indentation means in Python.

   Indentation refers to the spaces or tabs at the beginning of a line of code that indicate the block of code to which it belongs. In Python, indentation is used to denote the structure and nesting of code blocks, such as loops, conditional statements, and function definitions.

6. Write a program to perform set difference operation.

```
set1_input = input("Enter elements of the first set separated by space: ")
set1 = set(map(int, set1_input.split()))
set2_input = input("Enter elements of the second set separated by space: ")
set2 = set(map(int, set2_input.split()))
difference = set1 - set2
print("The set difference is:", difference)
```

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

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

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

```
num = int(input("Enter a number: "))
factorial = 1
while num > 0:
    factorial *= num
    num -= 1
print("The factorial is:", factorial)
```

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

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

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

```
a, b, c = map(float, input("Enter three numbers separated by space: ").split())
largest = a if (a > b and a > c) else (b if (b > c) else c)
print("The largest number is:", largest)
```

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

```
import numpy as np
shape = tuple(map(int, input("Enter shape of array (separated by space): ").split()))
array = np.ones(shape)
print("Array filled with ones:")
print(array)
```

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

```
import numpy as np
```

```
rows, cols = map(int, input("Enter number of rows and columns (separated by space): ").split())
array = np.random.randint(0, 100, (rows, cols))
print("2D array initialized with random integers:")
print(array)
```

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

```
import numpy as np

start, stop, num = map(float, input("Enter start, stop, and number of samples (separated by space): ").split())

array = np.linspace(start, stop, num)

print("Array of evenly spaced numbers over the specified range:")

print(array)
```

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

```
import numpy as np
array = np.linspace(1, 100, 10)
print("Array of 10 equally spaced values between 1 and 100:")
print(array)
```

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

```
import numpy as np
array = np.arange(2, 21, 2)
print("Array containing even numbers from 2 to 20:")
print(array)
```

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
array = np.arange(1, 10.5, 0.5)
print("Array containing numbers from 1 to 10 with a step size of 0.5:")
print(array)
```