SMART INTERNZ - APSCHE

AI / ML Training Assessment

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

```
l = float(input('Enter Length of the Rectangle: '))
 b = float(input('Enter Breadth of the Rectangle: '))
area = l * b print(f"Area of rectangle is {area:.2f}")
OUTPUT:
        Enter Length of the Rectangle: 4
        Enter Breadth of the Rectangle: 5
        Area of rectangle is 20.00
```

2. Write a program to convert miles to kilometers

```
        miles = float(input("Please enter miles:"))
        kilometers = miles * 1.6
        print(kilometers, " Kilometers")
    OUTPUT:
        Please enter miles: 22
        35.2  Kilometers
```

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

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

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

```
        def second_largest(list)
```

```
    list.sort()
    return list[-2]
li=[]
    n=int(input("Enter size of list "))
    for i in range(0,n):
    e=int(input("Enter element of list "))
    li.append(e)
    print("second largest in ",li,"is")
    print(second_largest(li))
```

5. Explain what indentation means in Python.

Indentation refers to the spaces at the beginning of a code line.

Where in other programming languages the indentation in code is for readability only, the indentation in Python is very important.

Python uses indentation to indicate a block of code.

EX:

```
if 5 > 2:
 print("Five is greater than two!")
```

6. Write a program to perform set difference operation.

```
A = {0, 2, 4, 6, 8};
B = {1, 2, 3, 4, 5};
 # union
 print("Union :", A | B)
 # intersection
print("Intersection :", A & B)
 # difference
 print("Difference :", A - B)
 # symmetric difference
print("Symmetric difference :", A ^ B)
```

Output:

```
('Union :', set([0, 1, 2, 3, 4, 5, 6, 8]))
 ('Intersection :', set([2, 4]))
 ('Difference :', set([8, 0, 6]))
('Symmetric difference :', set([0, 1, 3, 5, 6, 8]))
```

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

```
i = 1
while i <= 10:
print(i)
i += 1
Output:
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
Output:
120
```

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

```
def check(n):
if n > 0:
print("Positive")
elif n < 0:
print("Negative")
else:
print("Equal to zero")

Output:
Positive
Equal to zero
Negative
```

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

```
def maximum(a, b, c):
 if (a >= b) and (a >= c):
 largest = a
 elif (b >= a) and (b >= c):
 largest = b
else:
 largest = c
 return largest
 a = 10
 b = 14
 c = 12
print(maximum(a, b, c))
```

Output:

```
14
```

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

```
import numpy as np
    array = np.ones(5)
 print(array)
```

Output:

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

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

```
import numpy as geek
array = geek.random.rand(3, 4)
print("\n\n2D Array filled with random values :
", array);
```

Output:

```
2D Array filled with random values :
 [[ 0.94739375  0.5557614   0.69812121
0.86902435]
 [ 0.94758176  0.22254413  0.21605843
0.44673235]
 [ 0.61683839  0.40570269  0.34369248
0.46799524]]
```

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

```
import numpy as geek
```

```
print("B\n", geek.linspace(2.0, 3.0, num=5,
retstep=True), "\n")
x = geek.linspace(0, 2, 10)
print("A\n", geek.sin(x))
```

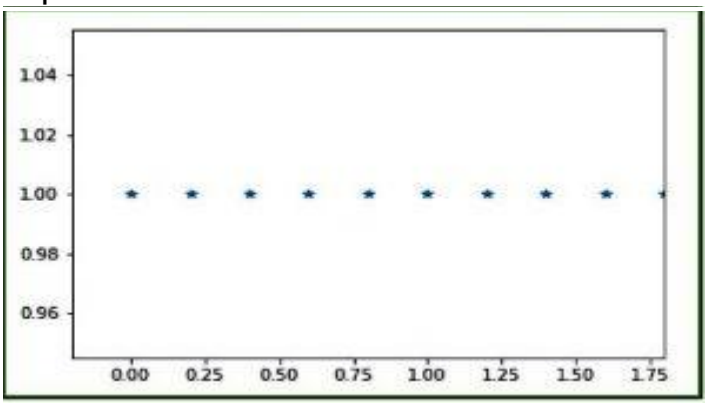
Output:

```
B
(array([ 2.  ,  2.25,  2.5 ,  2.75,  3.  ]),
0.25)
A
[ 0.          0.22039774  0.42995636
0.6183698   0.77637192  0.8961922
 0.9719379   0.99988386  0.9786557
0.90929743]
```

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

```
import numpy as geek
import pylab as p
x1 = geek.linspace(0, 2, 10, endpoint = False)
y1 = geek.ones(10)
p.plot(x1, y1, '*')
p.xlim(-0.2, 1.8)
```

Output:



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

```
# Python program to print all even numbers  in
range
for even_numbers in range(4,15,2):
#here inside range function first no denotes
starting,
```

```
#second denotes end and
#third denotes the interval
print(even_numbers,end=' ')
```

Output:

```
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.

```
import numpy as geek
print("A\n", geek.arange(4).reshape(2, 2),
"\n")
print("A\n", geek.arange(4, 10), "\n")
print("A\n", geek.arange(4, 20, 3), "\n")
```

Output:

```
A
[[0 1]
[2 3]]
  A
[4 5 6 7 8 9]
   A
[ 4  7 10 13 16 19]
```