

SMART INTERNZ - APSCHE

AI/ML Training Assessment

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

```
def area_simple_multiplication(length, width):  
    return length * width  
# Example usage:  
length = 5  
width = 8  
result = area_simple_multiplication(length, width)  
print(f"Area of Rectangle: {result}")
```

Output:

Area of Rectangle: 40

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]

```

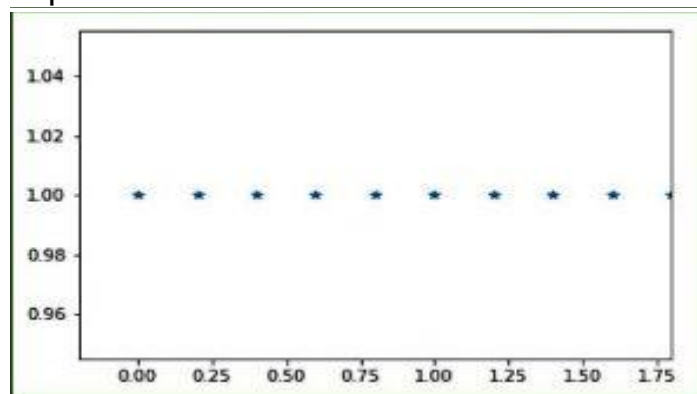
14. Write a program to generate an array of 10 equally spaced values between 1 and 100 using linspace.

```

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]
```