1. Write a python program to calulate the area of rectangle given its length and width.

def rectangle\_area(length, width):

""" Calculates the area of a rectangle.

Parameters:

length (float): Length of the rectangle.

width (float): Width of the rectangle.

Returns:

float: The area of the rectangle.

"""

return length \* width

if \_\_name\_\_ == "\_\_main\_\_":

try:

length = float(input("Enter the length of the rectangle: "))

width = float(input("Enter the width of the rectangle: "))

if length <= 0 or width <= 0:

print("Please enter positive values for length and width.")

else:

area = rectangle\_area(length, width)

print("The area of the rectangle is:", area)

except ValueError

print("Invalid input. Please enter numeric values for length and width.")

**INPUT:**

Enter the length of the rectangle: 15

Enter the width of the rectangle: 10

**OUTPUT:**

The area of the rectangle is: 150.0

2. Write a program to convert miles to kilometers ?

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

conversion\_factor = 1.60934

kilometers = miles \* conversion\_factor

print('%.4f miles = %0.4f kilometers' %(miles, kilometers))

**OUTPUT:**

Enter the value in miles: 4

4.0000 miles = 6.4374 kilometers

**3.** Write a function to check if a given string is palindrome or not?

|  |
| --- |
| **def** isPalindrome(s):  **return** s **==** s[::**-**1]   # Driver code  s **=** "malayalam"  ans **=** isPalindrome(s)  **if** ans:      print("Yes")  **else**:      print("No") |

**Output**

Yes

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

lst = []

for i in range(int(input("Enter the number of elements to enter in the list: "))):

x = int(input("Enter the element: "))

lst.append(x)

def method1(lst):

lst.sort()

print("The second largest element of the list is: ", lst[-2])

method1(lst)

**OUTPUT:**

Enter the number of elements to enter in the list: 5

Enter the element: 20

Enter the element: 10

Enter the element: 5

Enter the element: 30

Enter the element: 40

The second largest element of the list is: 30

5. Explain what indentation means in Python.

Indentation refers to the spaces at the beginning of a code line. Whereas in other programming languages, the indentation in code is for readability only, the indentation in Python is significant. Python uses indentation to indicate a block of code.

6. Write a program to perform set difference operation.

E = {0, 2, 4, 6, 8};

N = {1, 2, 3, 4, 5};

print("Union of E and N is",E | N)

print("Intersection of E and N is",E & N)

print("Difference of E and N is",E - N)

print("Symmetric difference of E and N is",E ^ N)

**Output:**

Union of E and N is {0, 1, 2, 3, 4, 5, 6, 8}

Intersection of E and N is {2, 4}

Difference of E and N is {8, 0, 6}

Symmetric difference of E and N is {0, 1, 3, 5, 6, 8}

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

print('Numbers from 1 to 10:')

n = 1

while n <= 10:

print(n, end=' ')

n = n+1

**Output:**

Numbers from 1 to 10:

1 2 3 4 5 6 7 8 9 10

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

num = int(input("enter a number: "))

fac = 1

i = 1

while i <= num:

fac = fac \* i

i = i + 1

print("factorial of ", num, " is ", fac)

**Output:**

enter a number: 4

factorial of 4 is 24

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

num = float(input("Enter a number: "))

if num > 0:

print("Positive number")

elif num == 0:

print("Zero")

else:

print("Negative number")

**Output 1:**

Enter a number: 2

Positive number

**Output 2:**

Enter a number: 0

Zero

10. write a Python program to determine the largest program among three numbers using conditional statement.

num1 = 10

num2 = 14

num3 = 12

#num1 = float(input("Enter first number: "))

#num2 = float(input("Enter second number: "))

#num3 = float(input("Enter third number: "))

if (num1 >= num2) and (num1 >= num3):

largest = num1

elif (num2 >= num1) and (num2 >= num3):

largest = num2

else:

largest = num3

print("The largest number is", largest)

**OUTPUT:**

The largest number is 14.0

11. write a Python program to create a numpy array filled with one of the given shape.

import numpy as geek

b = geek.empty(2, dtype = int)

print("Matrix b : \n", b)

a = geek.empty([2, 2], dtype = int)

print("\nMatrix a : \n", a)

c = geek.empty([3, 3])

print("\nMatrix c : \n", c)

**Output :**

Matrix b :

[ 0 1079574528]

Matrix a :

[[0 0]

[0 0]]

Matrix a :

[[ 0. 0. 0.]

[ 0. 0. 0.]

[ 0. 0. 0.]]

12. Write a Python 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 values numbers over specified range using linspace.

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]