**BIT 2102 CAT 2**

**Question 1**

for i in range(4, 8):

print(str(i) \* i)

**Question 2**

import math

print('Select the calculation you want to perform:')

print('i. Calculate the area of a circle (A = πR^2)')

print('ii. Calculate the volume of a cylinder (V = πR^2h)')

print('iii. Calculate the area of a rectangle (A = L \* W)')

selection = input('Enter your selection (i, ii, or iii): ')

if selection == 'i':

radius = float(input('Enter the radius of the circle: '))

area = math.pi \* radius \*\* 2

print('The area of the circle is:', area)

elif selection == 'ii':

radius = float(input('Enter the radius of the cylinder: '))

height = float(input('Enter the height of the cylinder: '))

volume = math.pi \* radius \*\* 2 \* height

print('The volume of the cylinder is:', volume)

elif selection == 'iii':

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)

else:

print('Invalid selection')

**Question 3**

The print() function in Python is used to output data to the standard output device (screen) or to a text stream file

example:

name = "John Doe"

print("Hello, my name is", name)

**Question 4**

A multidimensional array is an array that has more than one dimension(It is an array of arrays) while a one-dimensional array is a simple array that has only one dimension.

Example of one dimensional array:

numbers = [1, 2, 3, 4, 5]

Example of multidimensional array:

matrix = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]

**Question 5**

import numpy as np

array\_2d = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])

print(array\_2d)

**Question 6**

1. Define the array: First, you need to have an array (or any iterable object) that you want to iterate over.
2. Use a loop: Typically, a for loop is used in Python to iterate over the elements of an array. Inside the loop, you can perform operations on each element.
3. Access each element: Within the loop, access each element of the array using the loop variable.
4. Perform operations: Perform any desired operations on each element of the array.

Example:

numbers = [1, 2, 3, 4, 5]

for num in numbers:

print(num)

doubled\_numbers = []

for num in numbers:

doubled\_numbers.append(num \* 2)

print("Doubled numbers:", doubled\_numbers)

**Question 7**

Array indexing is the process of accessing or modifying the elements of an array using an index value

In most programming languages, array indexing starts from 0. This is known as zero-based indexing. The reason why array indexing typically starts from 0 is due to the way arrays are stored in memory. When an array is created, it is stored in a continuous block of memory.