Bahria University,

Karachi Campus



LAB EXPERIMENT NO.

**1**

LIST OF TASKS

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| TASK NO | OBJECTIVE |
| **1** | Write a python program to calculate the roots of a quadratic equation of the form ax2+bx+c, where a, b, and c are coefficients provided by the user. |
| **2** | Write a python program that calculates the factorial of a non-negative integer n provided by the user. |
| **3** | Write a python program to find the maximum and minimum number in the following array {12,56,34,2,56,98,6,54,6,54} |
| **4** | Write a python program that checks whether a given positive integer n provided by the user is a prime number or not. |
| 5 | Write a python program that takes two matrix (2 by 2) from user, and perform addition, subtraction, multiplication, and division on them. |

Submitted On:

17 September 2024

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(Date: DD/MM/YY)

**Task 1**

Write a python program to calculate the roots of a quadratic equation of the form ax2+bx+c, where a, b, and c are coefficients provided by the user.

**Solution:**

def find\_roots(a, b, c):

    d = (b\*\*2) - (4\*a\*c)

    root1 = (-b - d\*\*0.5) / (2\*a)

    root2 = (-b + d\*\*0.5) / (2\*a)

    return root1, root2

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

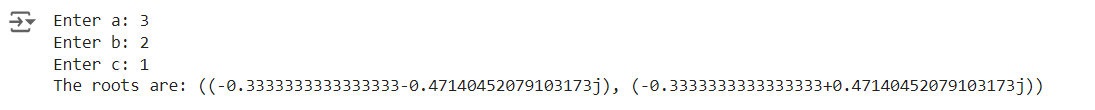
b = float(input("Enter b: "))

c = float(input("Enter c: "))

roots = find\_roots(a, b, c)

print("The roots are:", roots)

**Output:**

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**Task 2**

Write a python program that calculates the factorial of a non-negative integer n provided by the user.

**Solution:**

def factorial(n):

    if n == 0:

        return 1

    else:

        result = 1

        for i in range(1, n + 1):

            result \*= i

        return result

n = int(input("Enter a non-negative integer: "))

print("Factorial of", n, "is", factorial(n))

**Output:**

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**Task 3**

Write a python program to find the maximum and minimum number in the following array {12, 56, 34, 2, 56, 98, 6, 54, 6, 54}

**Solution:**

array = [12, 56, 34, 2, 56, 98, 6, 54]

max\_num = array[0]

min\_num = array[0]

for num in array:

    if num > max\_num:

        max\_num = num

    if num < min\_num:

        min\_num = num

print("Maximum number is:", max\_num)

print("Minimum number is:", min\_num)

**Output:**

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**Task 4**

Write a python program that checks whether a given positive integer n provided by the user is a prime number or not.

**Solution:**

def is\_prime(n):

    if n <= 1:

        return False

    for i in range(2, int(n\*\*0.5) + 1):

        if n % i == 0:

            return False

    return True

n = int(input("Enter a positive integer: "))

print(n, "is a prime number" if is\_prime(n) else "is not a prime number")

**Output:**

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**Task 5**

Write a python program that takes two matrix (2 by 2) from user, and perform addition, subtraction, multiplication, and division on them.

**Solution:**

def get\_matrix():

    matrix = []

    for i in range(2):

        row = []

        for j in range(2):

            row.append(int(input(f"Enter element [{i},{j}]: ")))

        matrix.append(row)

    return matrix

def print\_matrix(matrix):

    for row in matrix:

        print(row)

matrix1 = get\_matrix()

matrix2 = get\_matrix()

print("Matrix 1:")

print\_matrix(matrix1)

print("Matrix 2:")

print\_matrix(matrix2)

# Addition

addition = [[matrix1[i][j] + matrix2[i][j] for j in range(2)] for i in range(2)]

print("Addition:")

print\_matrix(addition)

**Output:**

