# Bahria University,

## Karachi Campus



COURSE: GSL 321

Numerical Analysis Lab

TERM: SPRING 2024, CLASS: BSE- 7(B)

Submitted By:

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Submitted To:

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Signed Remarks: Score:\_\_

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| SNO | DATE | LAB NO | LAB OBJECTIVE | SIGN |
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| 02 | 21/02 | 02 | Python Packages |  |
| 03 | 28/02 | 03 | Uninformed Searches |  |
| 04 | 06/03 | 04 | A\* Algorithm and its Implementation |  |
| 05 | 13/03 | 05 | Adversial Search Game Play in AI |  |
| 06 | 20/03 | 06 | Logical Inference in AI |  |
| 07 | 27/03 | 07 | Genetic Algorithm |  |
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LAB EXPERIMENT NO.

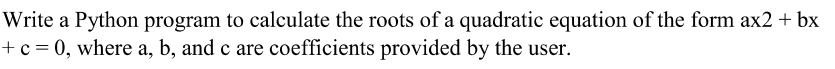
**\_01\_**

LIST OF TASKS

|  |  |
| --- | --- |
| **TASK NO** | **OBJECTIVE** |
| 01 |  |
| 02 |  |
| 03 |  |
| 04 |  |
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Submitted On:

Date: 17/09/2024

**Task No 01: **

**Solution:**

a=int(input("Enter a value: "))

b=int(input("Enter b value: "))

c=int(input("Enter c value: "))

x= -b + (b\*\* - 4\*a\*c)\*\*0.5/2\*a

x1= -b - (b\*\* - 4\*a\*c)\*\*0.5/2\*a

print(x)

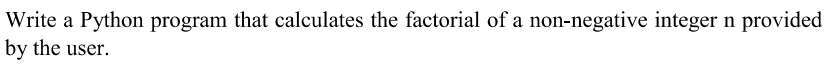
print(x1)

**Output:**

**A screenshot of a computer code

Description automatically generated**

**Task No 02:**



**Solution:**

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

factorial = 1

if num < 0:

   print("Sorry, factorial does not exist for negative numbers")

elif num == 0:

   print("The factorial of 0 is 1")

else:

   for i in range(1,num + 1):

       factorial = factorial\*i

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

**Output:**

**A white background with black text

Description automatically generated**

**Task No 03:**



**Solution:**

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

min=12

max=12

for i in range(1,len(arr)):

    if(arr[i]>max):

      max=arr[i]

    if(arr[i]<min):

      min=arr[i]

print("The Maximum value is ",max)

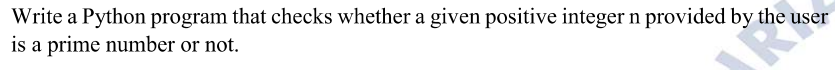
print("The Minimum value is ",min)

**Output:**

**A white background with black text

Description automatically generated**

**Task No 04:**

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**Solution:**

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

if num == 0 or num == 1:

    print(num, "is not a prime number")

elif num > 1:

    for i in range(2, num):

        if (num % i) == 0:

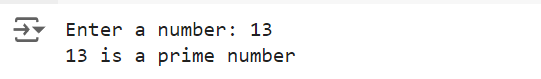
            print(num, "is not a prime number")

            break

    else:

        print(num, "is a prime number")

**Output:**

****

**Task No 05:**



**Solution:**

import numpy as np

def matrix\_operations(matrix1, matrix2):

print("Matrix 1:")

print(matrix1)

print("Matrix 2:")

print(matrix2)

addition = np.add(matrix1, matrix2)

print("Addition of Matrix 1 and Matrix 2:")

print(addition)

subtraction = np.subtract(matrix1, matrix2)

print("Subtraction of Matrix 1 from Matrix 2:")

print(subtraction)

multiplication = np.matmul(matrix1, matrix2)

print("Multiplication of Matrix 1 and Matrix 2:")

print(multiplication)

try:

division = np.divide(matrix1, matrix2)

print("Element-wise Division of Matrix 1 by Matrix 2:")

print(division)

except ZeroDivisionError:

print("Division by zero occurred!")

def input\_matrix():

print("Enter the elements of the 2x2 matrix:")

return np.array([[float(input(f"Element [{i},{j}]: ")) for j in range(2)] for i in range(2)])

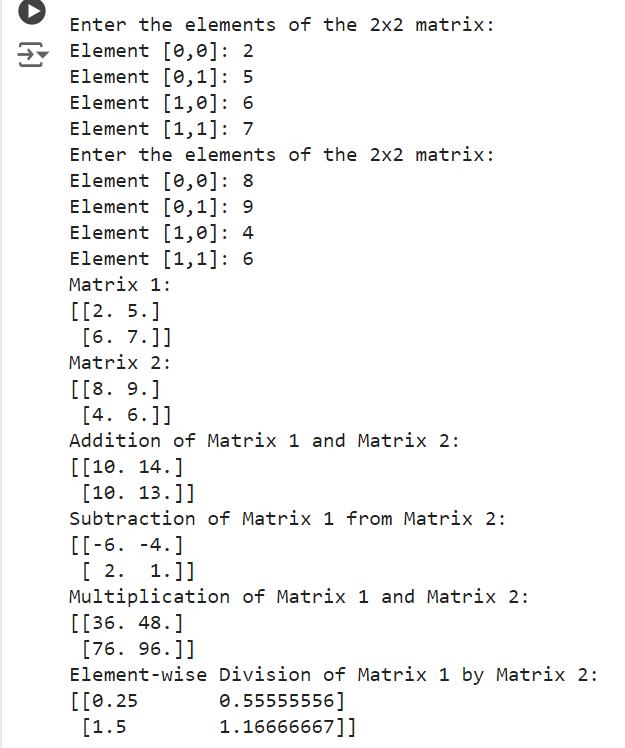
if \_\_name\_\_ == "\_\_main\_\_":

matrix1 = input\_matrix()

matrix2 = input\_matrix()

matrix\_operations(matrix1, matrix2)

**Output:**

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