B. Sc. in EEE
Summer semester

Date: July 2025

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Lab Quiz - **02 (Set-I)** | Summer Semester - 2025

Course Number: EEE 4416 | Full Marks: 20

Course Title: Simulation Lab | Time: 35 minutes

Question – 01

Write a script that counts the number of negative numbers in a matrix M.

Test case – 01

- Input: [1 -2; -3 4]
- Output: 2

Test case – 02

- Input: [4, 5, 6; 8, 9, 0]
- Output: 0

Test case – 03

- Input: magic(4)
- Output: 0

Test case – 04

- Input: [8 -6 -5 5
  -3 3 2 0
  1 -1 -2 4
  -4 6 7 -7]
- Output: 7

Question – 02

Write a function called **'common_words'** that takes two strings and returns the common words between them. Case sensitive.

Test case – 01

- Input: 'Kingdom of heaven', 'of'
- Output: {'of'}

Test case – 02

- Input: 'Save our Souls', 'Our'
- Output: {}

Test case – 03

- Input: 'once upon a time', 'once upon a while'
- Output: {'once', 'upon', 'a'}

Test case – 04

- Input: 'Everything they have built will fall, and from the ashes of their world, we will build a better one.', 'our they we us you'
- Output: {'they', 'we'}

Question – 03

Write a function named **'primemean'.** It finds the numeric mean of the prime numbers in a matrix. There will always be at least one prime in the matrix.

Test case – 01

- Input: [3 0 3]
- Output: 1.5

Test case – 02

- Input: [8 3; 5 9]
- Output: 4

Test case – 03

- Input: [11 23; 44 5]
- Output: 13

Test case – 04

- Input: [4, 4, 4, 79]
- Output: 79

Question – 4

Write a function called '**longest_inc_seq**' that takes an array as input and returns the **length** of the longest increasing subsequence, that is, all elements of the subsequence are strictly **increasing**. The elements of the subsequence **do not need to be contiguous**.

For example, arr = [10, 9, 2, 5, 3, 7, 101, 18]
Here, there can be many increasing subsequences. Such as:

- [10, 101, 18]
- [9, 101, 18]
- [2, 5, 7, 101]
- [2, 3, 7, 101]
- [2, 7, 101]
- … …

You need to find the longest possible subsequence under the condition that the values are increasing. There can be multiple possible sequences.

Test case – 01

- Input: [2, 5, 10, 3, 1]
- Output: 3

Test case – 02

- Input: [10, 20, 30, 40, 50]
- Output: 5

Test case – 03

- Input: [9, 6, 4, 5, 2, 1, 4, 4, 9, 11, 2, 5]
- Output: 4

Test case – 04

- Input: [2, 2, 2, 2, 2, 2]
- Output: 1

Test case – 05

- Input: [0, 8, 4, 12, 2, 10, 6, 14, 1, 9]
- Output: 4