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-H)** | Summer Semester - 2025

Course Number: EEE 4416 | Full Marks: 20

Course Title: Simulation Lab | Time: 35 minutes

Question – 01

Write an anonymous function **'perfect_sq'** to check whether a given number is a perfect square or not.

Test case – 01

- Input: 9
- Output: 1

Test case – 02

- Input: 27
- Output: 0

Test case – 03

- Input: 97
- Output: 0

Test case – 04

- Input: 64
- Output: 1

Question – 02

Write a function called **‘isPangram**’ that takes a character vector or string s and returns a logical 1 (true) if s is a pangram—i.e., it uses every letter of the English alphabet (A–Z) at least once, and 0 (false) otherwise. The check should be case-insensitive and ignore non-letter characters.

Test case – 01

- Input: "The quick brown fox jumps over the lazy dog";
- Output: 1

Test case – 02

- Input: "Sphinx of black quartz, judge my vow";
- Output: 1

Test case – 03

- Input: "Hello, world!"
- Output: 0

Test case – 04

- Input: “Arise! Arise! Riders of Theoden, of Rohan.”
- Output: 0

Question – 03

Write a function named **'monotonicfun'** that returns logical true if the elements of the input vector increase monotonically (i.e., each element is larger than the previous). Return false otherwise.

Test case – 01

- Input: [-3 0 7]
- Output: 1

Test case – 02

- Input: [5 5.6 8 12]
- Output: 0

Test case – 03

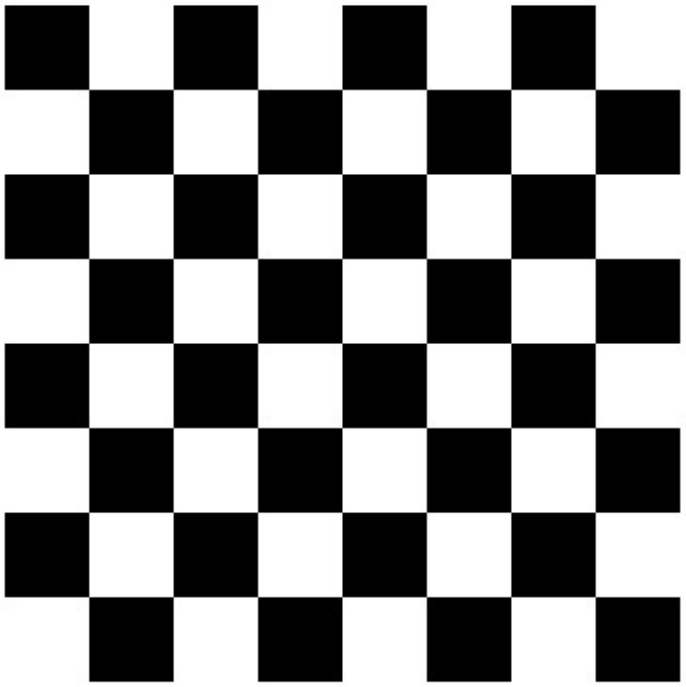
- Input: [2, 2, 2]
- Output: 0

Test case – 04

- Input: [1.5 -5.6 0 8 -12]
- Output: 0

Question – 4

A chessboard looks like this: one white square, then one black square, and so on.



Suppose that the white square represents 1 and the black square represents 0.

Create a checkerboard matrix like this –

```
[0 1 0 1 0
 1 0 1 0 1
 0 1 0 1 0
 1 0 1 0 1]
```

The matrix should be of size n [n is an integer – try values like 5, 10, 30, 100]