	Air University - Aerospace and Aviation Campus, Kamra **Department of Computer Science**

Programming Fundamental (CS111)
Assignment # 04

[CLO-4, Taxonomy Level-C4, PLO-4]

Course: BSCS-1 **Semester: 1st (**Fall 2023)

Due Date: 07/12/2023 **Total** Marks**:** 30

Instructions

1. *Plagiarism, copy & past material will lead to the cancellation of your assignment.*
2. *Write your* Name, Reg# on the first page (title page) of your submission.
3. No late submission

Functions enable modular and reusable code by encapsulating a set of instructions, promoting code organization and readability. Functions allows for structured and scalable solutions in C++ programming.

Q.1 **Analyze** each of the following scenarios and provide a C++ program by utilizing data types, operators, control structures, arrays, and functions.
(the code must have proper indention and comments) (Mark: 05+ 5+5+5+10)

1. Write a C++ program with a function **isPrime** that determines whether a given number is prime or not. The program should take user input, call the function, and display whether the number is prime.

2. Create a C++ program that defines a function **calculateAverage** to find the average of elements in an array. The program should take user input for the array size and elements, call the function, and display the result.

3. Develop a C++ program that includes a function **findMaxElement** to find the maximum element in an array (integer array). The program should take user input for the array size and elements, call the function, and return the maximum element of the array.

4. Develop a C++ program with a recursive function **power** that calculates the power of a number (a^b). The program should take user input for base and exponent, call the function, and display the result (recursive function only).

5. Write a C++ program that defines functions for matrix operations:

    a. **addMatrices** to add two matrices.
    b. **multiplyMatrices** to multiply two matrices.
    c. **transposeMatrix** to find the transpose of a matrix.