COMSATS University Islamabad
Department of Computer Science
Programming Fundamentals (CSC103) – BSCS-2A & 2B
Class Assignment – 3 (CLO-3)

Due Date: December 17, 2021 (11:59 pm)

Total Marks: 3 x 5 = 15

Instructions

Answer to all questions must be submitted in PDF Format.

Answer to all questions should begin on new page.

Assignment document must contain a title page showing Assignment-3, your name and registration number.

Assignment document must also contain JAVA source code along with output.

Solution to JAVA Programming problems must be created in separate .java file (for each question). For example, Question1.java

You must follow proper JAVA naming convention for identifiers and properly document your source code

Combine all your work in one folder. The folder must contain .JAVA source files and a PDF file.

Name of the Assignment document file should be your Registration Number. E.g. FA21BCS01.pdf

Submit your work via MS Teams

Plagiarism: Plagiarism is not allowed. If found plagiarized, zero marks will be awarded in the assignment.

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Question – 1:

Write a JAVA Program to Multiply Two Matrix Using Multi-Dimensional Arrays. This program takes two matrices of order r1*c1 and r2*c2 respectively. Then, the program multiplies these two matrices (if possible) and displays it on the screen.

Question – 2:

An array my_Array[] consisting 'a' s, 'b' s and 'c's. The task is to write a method that arranges the array such that all 'a's are placed first, then all 'b's and then all 'c's in last.

Question – 3:

Write a Menu Driven JAVA program that creates one-dimensional array **arr[]** and initialize it with user. The program should do following Tasks using Menu, the menu operations are implemented using methods:

1. Write a method ***count()***, that counts the occurrences of x (a number) in arr[].
2. Write a method ***partition(),*** that take the first element of the array x and put x in a position such that all smaller elements (smaller than x) are before x, and put all greater elements (greater than x) after x.
3. Write a method ***duplicates(),***which calculate the frequencies of all the elements and display them.
4. Write a method ***circular(),***which replace every element of the array by the sum of next two consecutive elements in a circular manner i.e.
   arr[0] = arr[1] + arr[2], arr[1] = arr[2] + arr[3], … arr[n – 1] = arr[0] + arr[1].
5. Write a method ***shiftCircular(),*** which shifts an array circularly left by two positions. Thus, if p[0] = 15, p[1]= 30, p[2] = 28, p[3]= 19 and p[4] = 61 then after the shift p[0] = 28, p[1] = 19, p[2] = 61, p[3] = 15 and p[4] = 30.