SFWRENG 2MP3 – Programming for Mechatronics

Fall 2018

Assignment 3: Arrays and Functions

Note: Weekly course assignments account for 20% of the final course grade. **This assignment is due October 7th, 2018 at 11:59pm.**

Objectives

The purpose of this activity is to develop a greater understanding of arrays and functions within the C programming language.

Tasks

In order to complete this assignment, you must submit a written report of the C code and output for each of the following questions.

Question 1a: Create a main function that will ask the user to specify dimensions for two matrices. Dimensions could be same or different, could be a square matrix or not. The appropriate arrays will be created in the main function to store integer values in the two matrices. The program should then use a loop to constantly receive input from the user for one of the menu options. At the end of performing any action, the menu will be displayed again to the user for further actions:

1. Load Values in the Matrix (A or B)
2. Subtract matrices (A-B or B-A)
3. Print matrix (A or B)
4. Transpose matrix (A or B)
5. Rank of matrix (A or B)
6. Exit

Question 1b: Create a function loadValues to populate the matrix with the values provided by the user. Write appropriate code to collect the values from the user. The function can also be used to change/modify the content of the matrix. Also, ask the user to specify the matrix on which the action should be performed, A or B.

Question 1c: Create a function Subtract which will print the subtraction of matrix A minus matrix B or vice versa. Ask the user for (A-B) or (B-A)

Question 1d: Create a function Print that will print the values of the specified matrix.

Question 1e: Create a function transpose that will compute the transpose of the specified matrix and print to the screen

Question 1f: Create a function rank that will determine the rank of the specified matrix and print the result to the screen

Additional Requirements:

- Display the suitable prompts for the convenience of the user.
- Perform necessary error checks.

Submission Requirements:

- You have to submit the code in one single ".c" file.
- Also, you have to submit your report in the following format/template. Please create a PDF file.
    - Add one screen shot showing the error free compilation of your code.
    - Add one screen shot for option 6 to show the successful execution of your program.
    - For options 1-5, add two screen shots, one for each sub option, to show the successful execution of your program.
    - For options 2-3, think of a scenario when user action can not be performed. Add on screen shot each for the execution of that scenario.