

**Background**

This assignment will allow you to become, if you are not already, a Jedi master in the use of arrays and pointers and some other things along the way. Sounds like a lot, but this time the program has been written for you...mostly.

**Problem Statement**

You need to copy the file `ewa_08_assignment.cpp` into your account, fill in the blanks, compile your completed program, run it for some sample cases, and submit your source code and your output file.

The file is located in `/srv/share/EED/engr1281/students/EWA/EWA_08`

**Instructions***Represent*

- Create a flowchart, algorithm, or pseudo code for solving the problem.

*Plan*

- Outline the steps your program will take by adding comment statements to your file based on the flowchart, algorithm, or pseudo code.

*Implement*

- In the program file perform the following tasks
  - Open the output file `EWA_08.txt` for writing, perform error checking when opening `EWA_08.txt`, and take the appropriate steps to quit the program if the file fails to open.
  - Write everything to the file `EWA_08.txt` that it writes to the screen.
  - Initialize a one-dimensional `int` matrix with ten elements and a two-dimensional float matrix with twenty-five elements with zeroes.
  - Loop indefinitely and prompts the user for commands to:
    - a, A - Display the one-dimensional matrix with its elements in a row
    - b, B - Display the one-dimensional matrix with its elements in a column
    - c, C - Fill the one-dimensional matrix beginning with the int of the user's choosing, incrementing each element by 1.
    - d, D - Display the two-dimensional matrix in five rows and five columns
    - e, E - Fill the two-dimensional matrix beginning with the float of the user's choosing, incrementing each element by 0.5.
    - q, Q - Quit
  - Once a command (except for Quit) completes execution, the user is prompted to perform another command. Error messages are provided if the user selects a command that is not a valid option.
  - Closes the output file when the program is finished.
- Compile, Link, and Run your program.

*Evaluate*

- A fully functional demo version of the program, `EWA_08_DEMO.out` is in same directory as the source code. Feel free to copy this version to your directory and test drive it.

*Document*

- Assemble all of your code, output, and documentation into a single PDF and submit to Carmen according to the DAL.

Include the standard comment and `fprintf()` statements indicating name, seat number, etc.

**HINT 1:** This applies primarily to the matrix and pointer portion of the assignment. Although we think of 2D arrays in terms of rows and columns, in memory those rows are lined up one after the other, contiguously. That is, in terms of memory addresses, the first element in the second row is immediately

AFTER the last element in the first row...and so on. We organize them as one row below the previous one, but in memory the rows follow each other. So, in a 2D array of integers, if the address of the last element in a row is 2000, then the address of the first element in the next row is 2004. This may prove useful when completing MatrixFill ().

**HINT 2:** In case you are unaware of it, \t is a “tab”.