Managing Linux with the Embedded Perspective

Exercise 2

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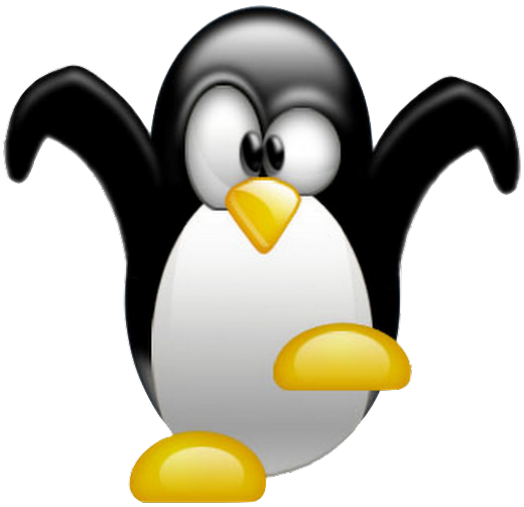

Write a program

We need to write a fairly simple C Program with multiple files to experiment with compiling from the command line using gcc. You can divide the functionality into separate files as you see fit. The main purpose is to get a handle on preprocessor, compilation, and linking. This means that you should use at a minimum 2 C files and 1 user made H file.

The program should generate random values from a range of values given by the user. The program should be able to run by using command line arguments for the min and max random value as well as the number of unique random values you wish to generate. If no command line arguments are provided, you should prompt the user to input the range and number of unique values to be generated. You should have functionality to ensure that all values given are valid. i.e. inputs should be numbers and the number of values should not exceed the number of values in the range. if the range is 1 - 5, then you cannot give more than 5 unique values. Additionally when giving arguments from the command line, make sure that the program is called with the correct number of valid arguments.

Preprocessor

Invoke GCC and only carry out the preprocessor command. Write the output of the preprocessor to another .c file so that you can look at the differences between your .c files and what they look like after the preprocessor has done its thing. Briefly describe what you notice about the difference between them.

Compilation

Now it is time to compile our files. Please make sure to compile with the -Wall, -Wextra, -Wfatal-errors, and -Wpedantic active. Please identify what all of these do and make sure that you program compiles with no errors or warnings. Please define what all of these compiler flags do.

Look for other compiler flags and experiment.

Linking

After successful compilation generate an executable file to be run on your computer.

Execution and debugging

Execute your program and debug to make sure that it is functioning correctly. Test different cases and ranges. Try things that shouldn't work as well. Additionally, screenshot the output of your program running by giving command line arguments and also without. Please also provide your observations about the output of your file when preprocessor only is invoked. Please also explain the behavior of the compiler flags.

Please Note: All coding and compilation should be done in the terminal