Assignment 3
CS2600, Fall 2022

Lab 3 – `head`

In this programming assignment, you will demonstrate your ability to write a basic Unix/Linux program utilizing systems calls by writing a version of the `head` program.

Program Requirements

Your program should implement a subset of the functionality of the `head` program, as implemented on the Unix/Linux system. The functionality to be implemented is described below.

Begin by familiarizing yourself with the `head` program on the Linux workstations, both by reading the `man` pages and by running the command itself.

In its simplest form, `head` prints the first ten lines of each argument file to standard output. If more than one file name is given as an argument, each ten-line output should be preceded by a one-line header giving the name of the corresponding file.

`head` also accepts several command line options, which may be interspersed along with the files to be processed. Your program should also handle the following options:

- "`-n` *N*", where *N* is a positive integer. If specified, the program should print the first *N* lines of the file, instead of the first ten lines.
- "`-c` *N*", where *N* is a positive integer. If specified, the program should print the first *N* bytes of the file, independent of the number of lines.
- "`-q`". If specified, the program should *never* print file name headers, regardless of the number of file arguments specified.
- "`-v`". If specified, the program should *always* print file name headers, regardless of the number of file arguments specified.

Note that several options may be given at once. Run the `head` program on the Linux workstations to observe the effects. In particular, pay close attention to how `head` handles the situation when contradictory options a specified.

Program NON-Requirements

You are only required to implement the features as described above. In particular, note that you are *not* asked to do *any* of the following:

- Handle arguments given to any option without an intervening space (e.g. "`-n25`").
- Handle multiple arguments given in the same option string (e.g. "`-vn 8`").
- Handle negative numeric arguments (e.g. "`-n-10`").
- Handle "-" as filename.

Your program will be tested by running the program on files on various sizes, using various options, and comparing the results to that given by the Unix/Linux version of `head`.

Submitting Your Program

Before 11:59:59 p.m., Tuesday, October 18, 2022, you must upload a zip archive to the course Blackboard assignment for Assignment 3. This zip archive must contain all source code files for your *C-code program* and a *README* file of the information on how to compile and run your program. No code printouts are required. Work must be completed by each individual student. If it is determined that a piece of work has been copied, all parties involved will receive zero credit, and a letter grade may be deducted at the end of the semester.