CS 202 - Assignment 2 (20 points)

Create a subdirectory of your home directory called `a2` and place within it your solutions to the problems below. Name your programs `p01.c`, `p02.c`, etc. Be sure to check for command line argument, input, and file opening errors, and display helpful error messages. As always, pay close attention to indentation and spacing within your programs.

1. (1 point) Write a C program that prints all command line arguments, one per line. Note that the first command line argument is `argv[1]`. Hint: use `%s` as format specifier in `printf`.

2. (1 point) Write a C program that reads one integer n as a command line argument and prints "Hello, World!" n times. Example output:

   ```
   > ./p02 5
   Hello, World!
   Hello, World!
   Hello, World!
   Hello, World!
   Hello, World!
   ```

3. (1 point) Write a C program that reads two integers, n and m, as command line arguments and prints integers $1 \ldots n$ in steps of m, one per line.

4. (1 point) Write a C program that reads one integer n as a command line argument and prints n, n^2, n^3, n^4, one per line.

5. (2 points) Write a C program that reads one integer n as a command line argument and prints out all prime numbers below n, one per line.

6. (2 points) Write a C program that opens and reads a file, named as a command line argument, one character at a time and counts the number of non-alphabetical characters. Print the count.

7. (2 points) Write a C program that opens and reads a file, named as a command line argument, one character at a time and prints all uppercase characters found.

8. (2 points) Write a C program that opens and reads a file named as a command line argument. Count the number of occurrences of the following words:

   - is
   - and
   - or

   Print the count.

9. (2 points) Write a C program that opens and reads a file named as a command line argument and count the number of words in the file. Print the count.

10. (2 points) Write a C program that reads one integer at a time from `stdin` and prints the maximum and minimum integers read.

11. (2 points) Write a C program that reads an integer n as a command line argument. Print an $n \times n$ matrix of `*`'s.

12. (2 points) Write a C program that reads two integers n and m as command line arguments. Print an $n \times m$ matrix of `*`'s.