Northern Michigan University (Marquette Co, MI)
CS 426-01-26F: Operating Systems

Program 6
Due: Friday 5 December 2026 3:00 P.M. EST

Create a directory called “PG6” in the root of your CS426-01-26F folder. When you are ready for your program to be graded, put a (possibly empty) file in the root of your PG5 folder called “DONE”.

Bit Striping

You are to write (in C) a program that accepts a filename as input. It then splits the file into eight pieces, each one eighth the size of the original.

Each byte in the original file has eight bits. The first bit has to be written to file 1; the second bit to file 2, and so forth. Of course, you can't write a single bit to a file; you have to write a whole byte. So, the first byte of file 5 would look like:

<fifth bit of first byte, fifth bit of second byte, fifth bit of third byte, fifth bit of fourth byte, fifth bit of fifth byte, fifth bit of sixth byte, fifth bit of seventh byte, fifth bit of eighth byte>.

If the file size is a multiple of 64, then everything works out nicely, but most files do not have a file size so convenient. So each file will need to store the number of bits being held in the file.

You will need to write a second program that will take eight filenames as input and merge them back into the original file.

As always, make sure your file is well-commented. You do not need to restrict yourself to low-level system calls for this one.