Noel Ball
CSE13S

Writeup Document life.c

Makefile:

I built my Makefile off of my previous assignment, although I included -gdwarf-4 in my CFLAGS to test with valgrind and removed it to submit. I also used -lncurses in my LDFLAGS to link ncurses().

life.c:

I built my switch-case statement off of my previous assignment, although I switched back to using booleans rather than sets because it feels more readable. I struggled with how to correctly read a string as a command line argument to be set to the input and output file pointers, as I mistakenly copied my previous optarg uses with strtol, and attempted to type cast the converted long to a file pointer. Upon debugging my fcanf() with valgrind, I not only learned how to use valgrind, but I found my error was my input file being stored as NULL. Using fopen(optarg) with read and write modes for the in and out files respectively I was able to correct my mistake. On the discord, I learned how to use SCNu32 in order to properly format-specify the uint32's I'm scanning from the file. This assignment also taught me how to use ncurses to create a display window in the terminal, the documentation covered the specifics enough although it took me some tweaking with the number of generations in the main loop and when to refresh the screen to get the exact output as the sample binary.

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universe.c:

I was able to implement the arithmetic in calculating neighboring cells fairly easily, as I had used similar techniques in a chess type of program in CSE30 python. I learned how to create a Struct data type, and how to access the struct fields to create properties like the rows and columns, the double pointer grid of values, and the toroidal setting. This assignment also really helped my understanding and use of pointers. With learning how to use fscanf(), the universe pointers, accessing struct fields with pointers using the -> shorthand, and swapping the universes, I am much more comfortable using them and will be less intimidated on future assignments by them.