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y86emul.c

Design

This program is designed to take in one argument which is the y86 file. At first, the program performs an error check to make sure that there are correct number of arguments. If the user entered the "-h" flag, the program would print "Usage: y86emul <y86 input>" and exit the program. It also checks whether the input has a correct file name and if it does, it checks if the file actually exists. Then, after all the checkpoints, the programs begins to read the file by calling the "read_file" function. It then calls the "process_execute" function which would parse the file by breaking it into lines and then breaking those lines up by spaces. It checks to see if each directive is valid and then performs the action of the respective directive. Once all the directives have been taken care of, the execution begins.The execution is a switch statement which calls upon multiple small functions which use the following unions and struct to manipulate the data in memory to perform the action.

Cpu struct: Represents certain parts of the cpu along with its size as well as the three flags.

Byte union: Contains a struct and a char of the same size (1 byte). The struct includes two unsigned ints with hold values from 0-15 for hexadecimal values.

Long_p union: Contains a struct and int of the same size(4 bytes). The struct includes four chars to represent the individual bytes of an int.

Challenges

- Writing and debugging the execution functions for switch statement
- Manipulating the memory