Convert Hexadecimal to Decimal

1. Problem Statement

The assigned task was to design a MIPS assembly language program that request a file name from the user (.txt) and then opens the file, reads the contents which are hexadecimal values, and then converts them and writes it out to the console.

1. Approach to Solution

By using MIPS assembly language in a simulator called, MIPS Assembler and Runtime Simulator (MARS). First step was to create the design of how the project is going to be created.

The design was outlined to read file name from the user with the .txt extention attached to the file, since they were all going to read the .txt file. This helped set the *.data* section of the code to start, and nothing else needed to be outlined for that. The *.text* design was simply to have the input statement stored in a register, then to load the string value into an argument, and convert the values read from file into register than covert those register by moving or multiplication. The *syscall* command is then used to execute the code. Using a loop to convert the string and open the file.

In order to test this program, a text file was created in the same directory with a randomly generated hexadecimal values were listed inside, then followed to the system messages to see if there were any errors generated in the code. Once the code showed no error, the program was run to input then to display the output of the file that was in question. The program was able to successfully read the program.

1. Solution

The requested file name, and read, and display task was designed, and implemented to show successful results from test. By using the directions provided as guideline. It was a bit tedious, but perfectly outlined directions. The file was to open, read the contents, and then write out the contents of the file to the console.

In this solution:

1. A Text file name has to be entered in by the User.
2. The file name must have a .txt extension which is then compared with the documents in the same directory as the .asm file.
3. That string is then stored into the register. (Code will be in .text)
4. The *la* command loads the value that was stored in the register, in this case file name, into an argument that will get read and printed to console.
5. The file is then loaded into register and then coverted from hexadecimal value to decimal value.
6. The system call command executes the display of the text file onto the console.
7. Test run is done to make sure that all values displayed are the actual conversion
8. Program then terminates
9. MARS simulator completing the assemble.

A screenshot of a social media post

Description automatically generated

1. MIPS Keyboard for Input

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1. A screenshot of a social media post

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2. Hex Conversion to Decimal being printed which was inputted in.

A close up of a logo

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