CSC3050

Project 1 Report

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General Idea

The first thing that needs to be done is to tokenize each MIPS function. This will make each of the functions (which is in the .text part) be able to be translated into binary numbers (machine codes). To do this, the Label class is created, which can store the address and other things such as the name, data type, and the content of the functions. The Label class is also used to tokenize the .data part. However, I do not understand how to allocate the memory and how the program can execute the machine code.

Functions

- class Label

The main use of the Label class is to store the address, name, data type of .data and .text

- string makeR_type(string instruction, string rd, string rs, string r t, string shamt, string funct)

Transforms the R-format into machine code.

- string makeI_type(string instruction, string op, string rt, string r s, string immediate)

Transforms the I-format into machine code.

- string makeJ_type(string op, string address)

Transforms the J-format into machine code

- string trim(string line)

Removes any spaces at the start or at the end of a line (used in string formatting)

- bool operator==(Label label, string string)
- bool operator==(string string, Label label)

Overloading operators for == for the label class.

- Remove_comments

Self-explanatory. Removes the comments from the input.

- Void firstParse(string iss)

Stores the labels.

- Stringstream secondParse(stringstream & is)

The function that assembles the input.

- Int assemble (string filename)

Open the file and uses the other functions to assemble.

- Int main()

Main function.

Sample Output