RISC V Assembler

Akshaya Tharun C R

September 8, 2024

1 Files

1.1 source file

There is only one C++ source file named **CLab3.cc**. The file uses headers iostream, fstream(for file processing) and map for storing information in an organized way. g++ 17 was used for compiling the code.

1.2 Make file

The Make file is used to compile the code directly to an executable named riscv_asm. This process can be done by using the command **make**.

The target riscv_asm two prerequisites the source file and input file which both affect the ouput. The command **make clean** can be used to delete the executable. The flags are mentioned through variables.

1.3 Sample Input

The file Sample_input.s is added which showcases the various edge testcases which were crucial for debugging and checking error handling.

1.4 Report

Report.pdf contains an explanation of the coding approach in implementation and explains the testing process.

2 Instructions

- Pseudo instructions and comments are not supported.
- Invalid instructions are dealt by printing the error type along with line number and exiting the program. output till first error will be print in output.hex and error message in terminal.

- It instructions are case sensitive and commas if present should be at the end of operands and appropriate spaces between operands of various is required.
- There must be a space after a label,it must end with : and follow criteria mentioned in report.
- The offset values in load and store must be present together with the register.
- The I format instructions ending with i should have immediate value seperated from register.
- lui instruction allows till 32 bit integers.
- hexadecimal constants are also allowed.
- parantheses around operands are ignored.