Assembler README

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Contents

1 Download

- First, download the zip file **Lab3_CS23BTECH11041_CS23BTECH11044.zip** and extract it in your computer.
- The folder will contain -
  - Header file - assembler.h
  - Source files - main.cpp, gen_func.cpp, b_format.cpp, i_format.cpp, j_format.cpp, r_format.cpp, s_format.cpp, u_format.cpp
  - Input file - input.s : write your assembly code in this file
  - Makefile
  - Test Cases - file containing cases we tested our code with while developing
  - README file
  - Report file
- Open the folder in terminal and run the command

  make

  This command will create the .o object files and the riscv_asm executable.
- You can also run the command **make all** instead of make to do the same thing.

2 How To Use

- Since we have already created the executable file : riscv_asm (by using the command make - please see the Download section).
  To use the executable we have the syntax :

  ./riscv_asm

- To convert the RISC-V (RV64I variant) assembly code to its equivalent machine code, write the code in the **input.s file**.

- The input instructions should follow the format :

  instruction_name appropriate_operands

  where, there is only 1 space in between the instruction and the first operand. Also, only 1 space between "," and second operand and so on. Similarly, one colon after the label and then one space.

- Example :

  addi x1, x0, 4

- The program should start from the first character in each line.
- There should not be any blank lines in the input assembly code file.
- There should only be one instruction per line.
- There should not be any comments in the input assembly code file.
- There should not be any pseudo instructions in the input assembly code file.
- Label names cannot have spaces or colons.
- The output for each line will be printed in the **output.hex** file.
- In the event of format not being correct, the Error will be printed on the **Terminal** and the **output.hex** file.

3 Cleaning

- To remove all the object files and the executable file created by the command make run the following command :

  make clean

- After running the above command your directory will be left with just the files that you had initially downloaded and the output file - output.hex .

4 Usage Example

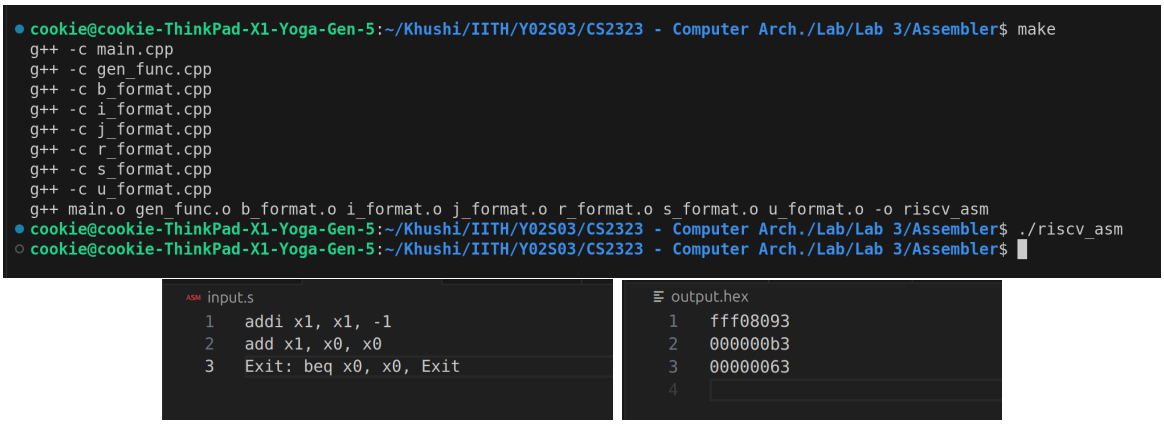

Figure 1: Executable example with correct input and using make command

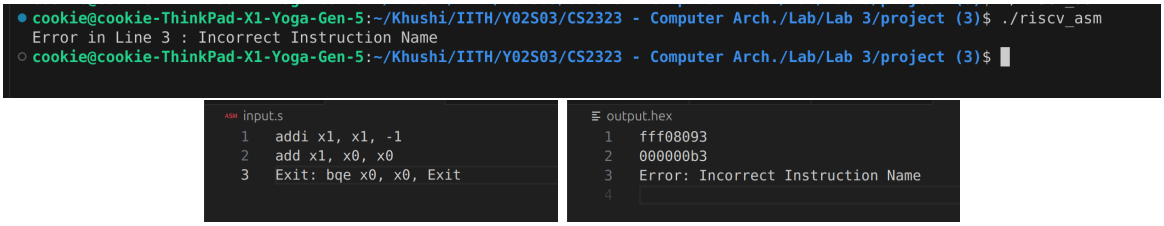

Figure 2: Executable example with incorrect input

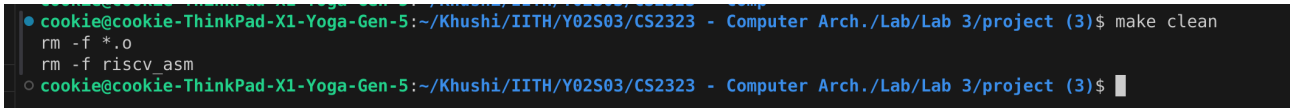

Figure 3: Cleaning - make clean