pr5 Simulator - Part 1

Sandeep Chandran

18-Sep 2024

Lab Assignment 3 (Graded)

In this lab, we will simulate the RAM and implement a mechanism to load the input ELF into the simulated RAM. Further, we will start disassembling the loaded instructions as a step towards building our RISC-V simulator called `pr5`.

1. Modify `programs/Makefile` to generate "binary" files from the ELFs. Use `objcopy` to do this. The generated binary files have to be placed in the `programs/bins` folder and should have the extension `*.r5o.bin`.
2. Modify the linker script `programs/custom/test.ld` to place `.data` section at the address `0x80008000`.
3. Implement the following tasks in Python. All the code should be in the folder `pr5/src`. The execution should start from `pr5/src/main.py`. You are strongly encouraged to organize the code of pr5 into appropriate modules.
    - Load the binary file into a simulated RAM.
    - Disassemble the instructions present in the `.text` section (that was loaded into the memory starting at `0x80000000`).
    - Print the contents of the `.data` section(that was loaded into the memory starting at `0x80008000`).