

# pr5 Simulator - Part 3

Sandeep Chandran

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## Lab Assignment 5 (Graded)

In this lab, we will simulate a 5-stage pipelined RISC-V processor. Given below are a few mandatory points:

- Modify the code developed as part of lab 4 to implement the 5-stage pipelined processor discussed in the class. Therefore, the command line options, and output formats mandated for the lab 4 continues to hold for this lab too.
- Take in an additional command-line argument with the option identifier `--stats` which specifies the name and location of the statistics files generated as a result of the simulation. The default value for the `--stats` argument is `run.stats`. This stats file will be created in the same folder from which the command was executed. Example commands to simulate the execution of the binary `1-even.r5o` are given below. This produces a statistics file named `1-even.stats` in the folder `programs/runs`. The second command creates a file named `run.stats` in the folder `pr5` (which is the folder from which the command was launched).

```
$ cd pr5
$ python3 src/main.py --stats programs/runs/1-even.stats \
  programs/bins/1-even.r5o
$ python3 src/main.py programs/bins/1-even.r5o
```

The contents of the stats file should be as follows:

- The first line should be the command used to run the simulation
- The second line is empty
- Each following line should mention one metric and its count in the following format

```
<metric>: <count>
```

where, `< metric >` is the metric being tracked such as the number of cycles, the number of instructions, etc.

An example stats file is shown below (for the first command)

```
$ cat programs/runs/1-even.stats
python3 src/main.py --stats programs/runs/1-even.stats programs/bins/1-even.

Total cycles: 1000000
Total instructions: 1000000
```