

CS3160 Lab Setup Guide

This document prescribes the steps to follow when using the machines kept in the lab A01-109.

1 RISC-V Toolchain Installation

NOTE: Skip this step if you already have setup and tested `riscv-none-elf-gcc`.

1. Login to the lab machine with your LDAP username and password. (Rest of the steps assume that the environment variable `$HOME` points to your home directory `/home/<ROLLNO>`).
2. Open a browser and point it to `http://10.129.5.7/data`.
3. Download `tools.zip` file. (You should see this file in your `$HOME/Downloads` folder)
4. Right-click and extract the zip file. (You will see a new folder named `tools` appear under `$HOME/Downloads`)
5. Rename this folder to `riscv-tools`. (You will now see a folder named `riscv-tools` under `$HOME/Downloads`)
6. Move this folder to your home directory. (You should now see `riscv-tools` folder under `$HOME`)
7. Add the binaries (executables) under this folder to the `$PATH` variable. Open a terminal and type:

```
export PATH=$HOME/riscv-tools/bin:$PATH
```

8. In the same terminal, type:

```
riscv-none-elf-gcc --version
```

(You should see a message that says GCC 13.1.0, and **NOT** get the "Command Not Found" error).

2 Spike Installation

Spike is a RISC-V Instruction Set Simulator. We will use this to execute (or "run") the RISC-V assembly programs that we will write in this course.

1. Open a browser and point it to `http://10.129.5.7/data`.
2. Download the `spike.zip` file. (You should see this file in `$HOME/Downloads`)
3. Right-click and extract the zip file. (You should see a new folder named `spike` in `$HOME/Downloads`)
4. Move this `spike` folder to the home directory. (You should now see the `spike` folder under the `$HOME` directory)
5. Add the binaries (executables) under `spike` to the `$PATH` variable:

```
export PATH=$HOME/spike/bin:$PATH
```

6. In the same terminal, type:

```
spike --version
```

(You should see a message that says "1.1.1-dev 628ba126", and **NOT** "Command Not Found").

3 Bitbucket and Git

3.1 Setup SSH Keys

1. Open a terminal and type:

```
ssh-keygen
```

Keep hitting Enter when prompted.

2. Login to your Bitbucket account (<https://bitbucket.org/>).
3. Click the gear icon (top-right corner), and go to "Personal Bitbucket Settings".
4. On the left panel, click on "SSH Keys".
5. Click the "Add key" button.
6. Go back to the terminal and type:

```
cat ~/.ssh/id_rsa.pub
```

7. Copy the output, paste it into the "Key" field in Bitbucket, and press "Add key".

3.2 Clone a Repo

1. In Bitbucket, click "Repositories" (top of the page).
2. Select the repo with your <ROLLNO> (under the project CA_2025). The URL in your address bar will look like:
`https://bitbucket.org/sandeepchandran28/<ROLLNO>/src/main/`
3. Click "Clone" (top right).
4. Copy the link (with SSH selected). It will look like: `git clone git@bitbucket.org:sandeepch`
5. Paste this in a terminal, append `cs3160`, and hit Enter:

```
git clone git@bitbucket.org:sandeepchandran28/<ROLLNO>.git cs3160
```

- (a) This will clone the repo into a folder named `cs3160`.
- (b) If you forgot `cs3160`, the repo will be cloned into <ROLLNO>. You can rename it to `cs3160`.

3.3 Committing and submitting changes

1. Open a terminal and cd into the `cs3160` folder (the cloned repo).
2. Work inside this folder for lab assignments.
3. Commit your changes regularly:

- (a) Check modified files:

```
git status
```

- (b) Stage changes (all files):

```
git add .
```

- (c) Commit changes:

```
git commit -m "<YOUR MSG HERE>"
```

- (d) Pull remote changes (rebasing):

```
git pull --rebase
```

- (e) Push changes to remote:

```
git push
```