CHIPYARD Repository Setup

***Note: Only for Linux operating system specifically for Ubuntu/Debian-based platforms.**

Open terminal in the home directory of your user account (that is: */home/your_username*). Now run these commands one by one:

```
set -ex

sudo apt-get install -y build-essential bison flex

sudo apt-get install -y libgmp-dev libmpfr-dev libmpc-dev zlib1g-dev vim git
default-jdk default-jre

echo "deb https://dl.bintray.com/sbt/debian /" | sudo tee -a
/etc/apt/sources.list.d/sbt.list

curl -sL "https://keyserver.ubuntu.com/pks/lookup?
op=get&search=0x2EE0EA64E40A89B84B2DF73499E82A75642AC823" | sudo apt-key add

sudo apt-get update

sudo apt-get install -y sbt

sudo apt-get install -y texinfo gengetopt

sudo apt-get install -y libexpat1-dev libusb-dev libncurses5-dev cmake

sudo apt-get install -y python3.6 patch diffstat texi2html texinfo subversion
chrpath git wget

sudo apt-get install -y libgtk-3-dev

sudo apt-get install -y python3-pip python3.6-dev rsync libguestfs-tools expat
ctags

sudo apt-get install -y device-tree-compiler

git clone http://git.veripool.org/git/verilator

cd verilator

git checkout v4.034

autoconf && ./configure && make -j4 && sudo make install

cd ..

git clone https://github.com/ucb-bar/chipyard.git

cd chipyard

./scripts/init-submodules-no-riscv-tools.sh
```

```
export MAKEFLAGS=-j4

./scripts/build-toolchains.sh riscv-tools esp-tools
```

This last command will take considerable amount of time (20-30 minutes). After this, we will set the path variables for the executable files of chipyard. Open file manager and on your home directory, press: Ctrl+H. This will show hidden files, now open the file: .bashrc in text editor and add these two commands at the very end: (DON'T TYPE THESE IN THE TERMINAL)

```
source $HOME/chipyard/env.sh

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

Save and close this file. Just to recheck, type these commands on your terminal:

```
echo $RISCV

echo $PATH
```

Expected outcome of first command:
/home/your_username/chipyard/esp-tools-install

Expected outcome of second command:
/home/your_username/chipyard/esp-tools-install/bin:/home/your_username/chipyard/software/firemarshal:{a lot of other paths}:/home/your_username/verilator/bin

The setup for chipyard is now finished, whenever you will open your terminal. The path variables will be set for you automatically. Now lets do some initial testing on a default configuration rocket chip. Go to the directory: /home/your_username/chipyard/sims/verilator and open terminal. Type the following commands:

```
make -j4

./simulator-chipyard-RocketConfig +verbose $RISCV/riscv64-unknown-elf/share/riscv-tests/isa/rv64ui-p-simple
```

Lets do the same for a small configuration boom chip (this takes a lot of memory, close all other apps):

```
make -j4 CONFIG=SmallBoomConfig run

./simulator-chipyard-SmallBoomConfig +verbose $RISCV/riscv64-unknown-elf/share/riscv-tests/isa/rv64ui-p-simple
```

Both tests should end successfully.

References:

1. Chipyard Documentation – Initial Repository Setup:
   https://chipyard.readthedocs.io/en/latest/Chipyard-Basics/Initial-Repo-Setup.html

2. How to set $PATH variable in Linux:
   https://opensource.com/article/17/6/set-path-linux