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FPGA Ignite 2023 Summer School High-Level Synthesis Lab Preparations

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We will use LegUp HLS to synthesize hardware from a C-language software program. We will simulate the hardware with ModelSim. All of these tools will run in an Ubuntu linux Docker container. We will be using the open-source version of LegUp HLS in keeping with the theme of Ignite 2023.

Important Note: These instructions are for a Mac user. Docker is available for Windows and Linux and the Docker-specific aspects of these instructions should work for Windows and Linux too.

Docker

Docker for Mac is available here: <https://docs.docker.com/desktop/install/mac-install/>

Creating the Docker Image

Download the **Dockerfile** to your host machine from <https://janders.eecg.utoronto.ca/ignite>

Create an empty directory, and put **Dockerfile** into that directory.

Launch Docker (run it!)

In the preferences of Docker, configure Docker to have 8 GB of memory and 2 GB of swap disk.

Now, in a terminal on your host machine, in the **same** directory as the Dockerfile, type the following command, which will take a while to complete (go grab a coffee):

```
docker build -t ignite .
```

Launching the Docker Container, Finish and Test the Installation

```
docker run -it -v /sys:/sys:ro -v $(pwd):/build ignite bash
```

The Linux docker container should start, and do the following to complete the configuration and installation:

```
cd /opt/altera/modelsim_ase  
chmod 777 ./vco  
vi ./vco  
// look for the string linux_rh60 and change to linux
```

Complete the installation:

```
cd /tmp/legup  
tar xvf ignite_legup.tar
```

The last step will take a while, and will produce a few errors at the end, which can be safely ignored.

Test the installation:

```
cd /tmp/legup/legup-master
```

```
source setup.sh
cd /tmp/legup/legup-master/examples/chstone/mips
make
make v
```

If you see “PASS” in the ModelSim output then you are now ready to go for the HLS session at Ignite 2023!!! You may type exit to pause the Docker instance.

```
exit
```