

# # Installing Linux for the FPGA board (DE1-SoC Board with ARMv7)

## ## Resources used:

FPGA Manuals & Instructions (DE1-SoC rev.F): <https://www.terasic.com.tw/cgi-bin/page/archive.pl?Language=English&CategoryNo=205&No=836&PartNo=4#contents>

Linux image: [http://download.terasic.com/downloads/cd-rom/de1-soc/linux\\_BSP/](http://download.terasic.com/downloads/cd-rom/de1-soc/linux_BSP/)

(de1soc\_lxde\_1604.zip || de1soc\_ubuntu\_1604.zip)

## ## Procedure/Documentation:

### ### The FPGA

0. Device used: Altera DE1-SoC FPGA with ARMv7, University Program

1. Set the MSEL [4..0] to "00000" (to revert back to lab-mode: "10010")

> NOTE: functionality of MSEL at 5 is yet to be discovered.

2. Plug in the power source, VGA, keyboard, mouse (optional), ethernet cable (optional)

3. Plug in the SD card with Linux to the the SD card slot

4. Press the power button to turn on the FPGA

5. As things should work, the FPGA will boot Linux and display it on the screen

### ### The Operating System (Linux, with LXDE or Ubuntu)

1. Download the LXDE/Ubuntu image:

```
$ wget http://download.terasic.com/downloads/cd-rom/de1-soc/linux_BSP/de1soc_ubuntu_1604.zip
```

or

```
$ wget http://download.terasic.com/downloads/cd-rom/de1-soc/linux_BSP/de1soc_lxde_1604.zip
```

> NOTE: The Ubuntu flavor is Lubuntu, with LXQt desktop instead of GNOME

2. Use an imager to install the image to SD Card (Here I use Raspberry Pi Imager<sup>AUR</sup>)

3. (Optional & Situational) Partition the disk, as the default storage space is not the entire SD card storage space.

4. (Optional) Set swap space

### ### Ubuntu trial

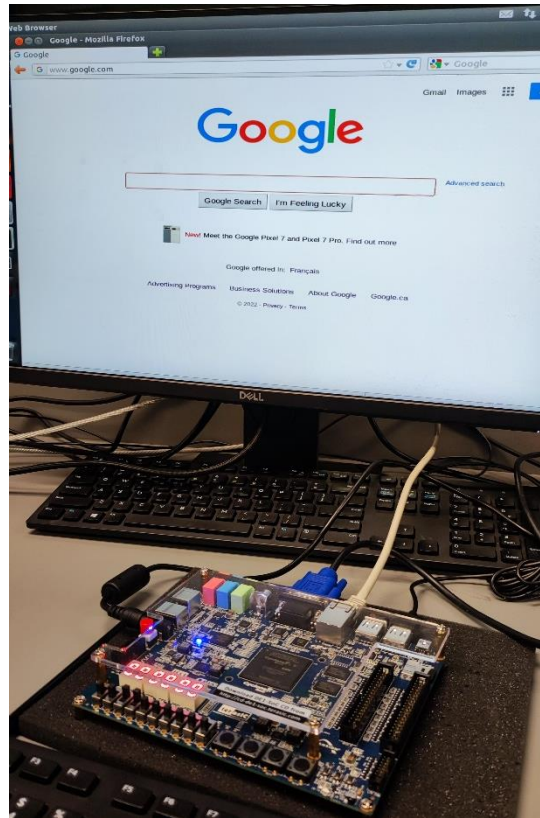


Figure 2: The setup. Here I'm browsing Google on Firefox, on the FPGA  
(p/s: This was during a failed trial that I installed an old image of Ubuntu,  
so it came with GNOME 2 desktop)

## ## Future experiments

- Use the FPGA as a personal computer:
  - + Watch a YouTube video
  - + Send an email
- Program the FGPA directly from the FPGA (maybe?)