

# Linux in Embedded Systems

Lab guide

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## 1 Prerequisites

Prepare 2 terminals:

- In one of them go to your Buildroot directory - we will refer to this one as your local terminal.
- In the other one run the following:

```
minicom -D /dev/ttyUSB0 -b 115200 -o
```

This will allow you to interact with the Raspberry Pi, so that's how we will call it.

## 2 Building Linux

Do this in your local terminal

### 2.1 If you're building for the first time

- `make raspberrypi4_64_defconfig`

This will set up the default configuration for the Raspberry Pi.

- `make menuconfig`

This command opens interactive menu, where you can change all the configuration properties; use it to change all the properties mentioned in the laboratory guide.

## 2.2 Next steps (and any consequent build)

- If you want to make any changes:  
`make menuconfig`
- If you want to build the image with your changes:  
`make`

## 3 Flashing the needed files

### 3.1 Prerequisites

- Boot your raspberry pi into the rescue system (hold SW4 while powering it up)

### 3.2 Flashing the rootfs [TBD]

(If Initial RAM filesystem was selected during configuration, then this is optional)

### 3.3 Flashing the system image

#### 3.3.1 In your local terminal

- `ip a` - take note of your IP address - `192.168.145.xxx`
- `cd output/images`
- `python3 -m http-server`

#### 3.3.2 On the raspberry

- log into the system
- `mkdir /tmp/d` - create a temporary directory
- `mount /dev/mmcblk0p1 /tmp/d` - mount first partition of SD card on that directory
- `wget 192.168.145.xxx:8000/Image` - copy the Image
- `wget 192.168.145.xxx:8000/.dtb` - copy the DTB

#### 3.3.3 Reboot the raspberry