Writeup 3

CS 444
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Contents

I. Setup

A. Downloading Raspberry Pi Linux Kernel

The following steps were performed to setup Raspberry Pi Linux kernel, on `OS2`:

```
cd /scratch/fall2018/group1
git clone git@github.com:raspberrypi/linux.git
cd linux
# checkout v4.14.y
git checkout tags/raspberrypi-kernel_1.20180417-1
```

B. Preparing SD Card

We chose Raspbian Stretch Lite image for our Raspberry Pi kernel. The following was done to setup Raspbian on SD card:

1) Download and extract `2018-10-09-raspbian-stretch-lite.zip` from https://www.raspberrypi.org/downloads/raspbian/.
2) Download and install Etcher from https://www.balena.io/etcher/.
3) Insert SD card into laptop.
4) Start Etcher and do the following:
   a) Set image to `2018-10-09-raspbian-stretch-lite.img`
   b) Set drive to the SD Card
   c) Click “Flash¡‘
5) Once the setup is complete, navigate to the SD Card drive and use text editor to append the following to `config.txt`:

```
kernel=kernel8.img
enable_uart=1
```

C. Testing Raspbian

The following steps, heavily based on adafruit guide, were taken to initiate a Raspbian serial console session:

Install Prolific Chipset and driver [1].

Connect black, white, and green wires to the outer pins 3, 4, and 5 respectively [1].

Leave red wire unpinned, as the a separate power adapter is used [1]. It is important that only one power source is used as the board can get damaged [1].

Insert the Micro SD Card into Raspberry Pi.

Insert TTL Serial Cable USB into Laptop.

Insert the power adapter into Raspberry Pi.

Start Putty and do the following:

Set *Connection type* to serial mode.

Set *Serial line* to `COM6`; COM6 here refers to our, particular cable, which on Windows version we determined by accessing *Device Manager* [1].

Set *Speed* to 115200 [1].

Click *Open*.

Within the serial console, press the *RETURN* key to activate communications [1].

D. Verifying Build Environment

II. Morse Code LED Blinking

III. Concurrency

References

[1] S. Monk, "Adafruit's raspberry pi lesson 5. using a console cable," https://learn.adafruit.com/adafruits-raspberry-pi-lesson-5-using-a-console-cable/o Nov 2018.