Comp Sci 2017-2018



Figure 1: The recommended Raspberry Pi 3 base kit

Material needed

We want to have a hands on experience with setting up a computer, connecting components to it and specially putting them in use by controlling external devices or simply measuring data from them.

For this a full blown computer turns out to be rather a nuisance as it has a high cost both in actual money, but also in resetting drastic changes that may render it unusable.

Instead we need a hardware that is both cheap and flexible enough to let us experiment with any settings. One such a *micro*-computer is the RaspberryPi. In addition the Raspberry Pi allows us to connect it to external devices and sensors to say control lights, motors or e.g. temperature & pressure sensors and build a weather station, or a robot car.

The material listed below can be purchased from different distributors. The suggestions listed below are not endorsed by Dragon School nor its teachers in any particular way and you may as well get the parts needed from any other source of your choice. Just make sure it has the same functionality as the options listed here.

The distributors listed below are:

- Online:
 - Amazon
 - Canakit.
- Physical Stores in Toronto Downtown:
 - Creatron, 349 College St. Here one may buy individual components as resistors, LED's or sensors among others.
 - CanadaComputers

The menu of articles on the Creatron page may help you get some ideas for some projects to develop during the course.

Recommended Raspberry Pi Kit

1. The **Raspberry Pi 3 Ultimate Starter Kit** (CAN \$120): It comes with the latest flagship model as of August 2017, the one that comes with Wifi capabilities.

The easiest is probably to buy it from Amazon (here the link)

Another option may be to buy it directly from the canadian distributor that Amazon delivers it from, Canakit.

- 2. An additional 32GB micro SD card (Class 10 at least): This will hold a backup copy of our system. In case we mess up the settings or simply we want to try an alternative OS (operating system) we will always have the backup one allowing us to reset things to a stable state at any time. Possible buying options:
 - Canakit CAN \$26
 - CanadaComputers
 - Amazon (Too expensive!)

3. A 50-100cm-long Ethernet cable in order to connect and setup locally your Raspberry Pi. See for instance this one on CanadaComputers. Approx. CAN \$4

Minimum Starter Setup

1. Raspberry Pi 2 Model A+ or 3 Model A : The RP3 Model B is the latest flagship model as of August 2017. It's the one that comes with Wifi capabilities. For details see for instance the Amazon offer and costs approx. CAN \$58.

But if you already have a Raspberry Pi (other than Pi 1 Models A or B) then you do not need to buy a new one. Many of the thing you'll be able to do the same way. What we want is the large GPIO connector with 40pins! It will be easier for everyone, though, if yours is also a RPi 3 Model B.

- 2. A case for your Raspberry Pi: As a reference, here the Amazon offer. Approx. CAN \$14.
- 3. A 50-100cm-long Ethernet cable in order to connect and setup locally your Raspberry Pi. See for instance this one on CanadaComputers. Approx. CAN \$4
- 4. A micro-USB to USB-A cable as the ones used for charging a smartphone (other than IPhones). As a reference, see here the two connectors of such a cable