Recommended Hardware

You can do whatever you want at a hackathon. We're trying to focus on using Arduino microcontrollers to interface with some code you write on your laptop to give you the full hackathon experience and to learn as much as possible. If you don't have any of the hardware below and you don't want to buy any, that's fine! You can do a purely software based hack. With that said, we're encouraging everyone to bring some hardware since the workshops will be geared towards those who do (there will also be software workshops, but later into the night).

Generally starter packs are the best value. If you google "Arduino Starter Pack" you will find a ton of them out there. The problem is most feature an "Arduino Uno R3" microcontroller. There's nothing wrong with that controller, but the "Arduino Leonardo" microcontroller allows you to emulate keyboard and mouse input to your computer which will make interacting with your code much, much easier. It also has a microUSB port (same as your cellphone) instead of the USB B port on the Uno (larger, squarish USB generally used for printers) so you don't have to buy another cable. If you already bought the Arduino Uno in a starter pack, I would recommend just buying the Arduino Leonardo (item 1 below), but that's up to you.

Hackathons are not restrictive; you can bring in any hardware you want. If you already have the Uno and you bought a Leonardo, bring them both! You want to bring a raspberry Pi? Why not? Got some crazy sensors that you'd like to experiment with? Go for it! The only limitation is you can't start on your hack until we say "go". If you come in with a breadboard all wired up, I'll ask you to take everything off before the hackathon starts. Same goes for code; you must be starting from scratch.

After a fair bit of research, here are some options. You don't have to get what you see here, just make sure you have the Arduino (preferably Leonardo), a breadboard, some jumper wires, LEDs, and buttons. Also make sure you can get everything you find shipped to Waterloo before October 27th and it's in stock.

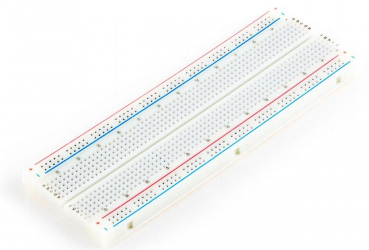
A. Create your own kit from Robotshop.com/ca/

- Robotshop generally has low prices on everything and it ships from Toronto. I buy a lot from Robotshop because they're quick, affordable and reliable.
- I put this kit together to be as affordable as possible (cheapest in stock components I could find). You can upgrade any component you see here, but this will be more than sufficient for the hackathin

1. Arduino Leonardo Microcontroller (With Headers) - $28.15

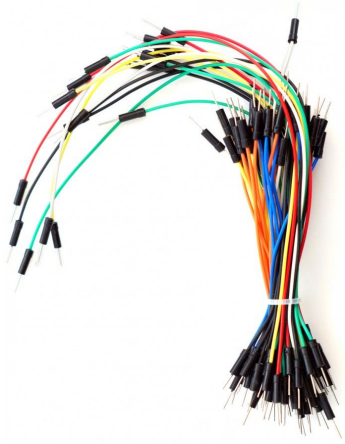
   - Legitimate arduino product (better quality than knock offs)

2. 830 Tie Point Breadboard - $6.99



   - Any breadboard works, this is the cheapest in stock breadboard I could find. There are half sizes available which I find too small.

3. 22 Gauge Assorted Jumper Wires - $5.06



   - You may need more than 20 if you use a bunch of buttons and LEDs so this 65 pack will be more than enough

4. Push Buttons - $0.45

   - Plug straight into a breadboard
   - I would buy at least 4 of these

5. Resistor Kit A - $2.56

   - Should be sufficient for LEDs and buttons

6. 5mm Coloured LED Pack - $4.58

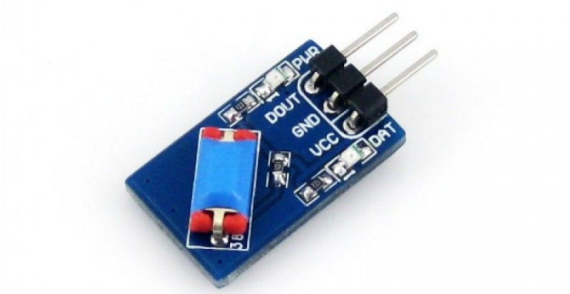
   - Just a cheap set of LEDs

TOTAL COST OF STARTER PACK WITH KEY COMPONENTS: $49.14 + $8ish shipping

7. OPTIONAL: Triple Output LED RGB - $2.50

- A LED with 4 pins? Heck Ya!
- You can change the colour by sending different signals to it
- No necessary, but pretty cheap and quite a bit of fun

8. OPTIONAL: Tilt Sensor Module - $4.22



- Output varies with angle - can turn breadboard into a game controller
- Not necessary. I've never used this kind before.

B. Buy a starter pack from SainSmart - $32.99 USD

- I know I said starter packs are the best value, but this does not have an Arduino Leonardo board, it has a SainSmart Leonardo board
- Arduino puts out open source schematics of their boards, and any company can use them to make similar boards
- Sometimes the cheaper 'knock-off' boards (not made by the Arduino company) use cheaper, lower quality components and break easier. *Always read the reviews*. There are none on the SainSmart site but there are on the Amazon site (see **C**) that mention faulty components and poor soldering on the board.
- Shipping would be another $25 USD to be here in time. With conversion, we're talking roughly $75 for this kit
- You'd get a lot of cool stuff with this kit, I'm just skeptical of the quality. Your call.

C. Buy a starter pack from Amazon.ca - $103.74 CDN

- Exact same kit as above, just in Canadian dollars and from a Canadian store
- Shipping date is Oct. 24 to Nov 3. Probably won't get it in time:(
- Really only included the link so you can read the reviews.

D. Find a different starter pack or build your own starter pack

- If you find a starter pack with an Arduino Leonardo, let me know. I couldn't find one.
- Even if you find a starter pack with a 'knock off' Leonardo other than the SainSmart kit, let me know. It may be worth it.
- Whatever you get, make sure your Arduino has headers (wire receptacles along both sides of the board) so that you can use male to male jumper wires

Final Remarks

- If you're bringing an Arduino Leonardo to the hackathin, make sure you have a USB A to MicoUSB cable (pretty much every phone charger).

- If you're bringing an Arduino Uno, make sure you have a USB A to USB B cable (probably came with the Uno). If not, you might have one on your printer/scanner.

- If you have a pair of tweezers, they're useful for plugging things into breadboards and bending leads back into shape.
- If you have a digital multimeter, bring it along. It may come in useful. If not, don't worry about it. They're mostly for finding problems and Will and I will have ours.