

Emerging Technologies I

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Step 0: Manage your connection

- Anytime we're using the Raspberry Pi in class, you'll need to connect to it with your computer's WiFi connection
- If you're relying on the WiFi to connect to the Internet, this will disconnect you from the Internet
- Therefore, I recommend dedicating one laptop in your group for connecting to the Raspberry Pi, though you can all simultaneously connect

Step 1: Get your Raspberry Pi

- Power on the raspberry pi (i.e., plug it in to the power cable).
- Note down the wifi name of the Raspberry pi from the side. It should be IOT-MIS-x (Where, x is a number from 2-15)
- Download VNC viewer for your OS:
<https://www.realvnc.com/en/connect/download/viewer/>
- Once the Raspberry pi is powered on, search for a wifi access point named either IOT-MIS-* or MPC* and connect to it
 - Find the password for your Raspberry Pi's network in the inventory sheet:
<https://bit.ly/checkoutIoT>
- Once you're connected, start VNC viewer and enter the ip address 192.168.4.1
- At the connection prompt, the name of the device is 'pi' and the password is 'raspberry'
- Now the connection between the pi and your computer is established at the cost of internet to your computer.

Now Put the Pi Away

Activity 1 (20 minutes)

- Partner with another group (or two). Use the microbit radio module to send a counter back and forth (or in a circle)
- Hints:
 - You can do this in python or in makecode.
 - Check out the documentation for the “radio” module
 - You can test this on the real microbits.
 - You’ll run into a problem of collisions with other groups. How will you solve them?
- When finished, respond to the Acadly discussion about collisions

OK. You can get your
Pi back out...

Activity 2 (20 minutes)

- Connect the microbit to the Raspberry Pi via a serial connection over USB. Send some dummy data to a python program on the Raspberry Pi. Read the received data and print it out.
- There is a lot of guidance for this step within the Milestone 2 document.

Activity 3 (25 minutes)

- This one's totally prep for Milestone 2...
- Send an EddyStone beacon from the microbit to the Raspberry Pi
- Hints:
 - You can put whatever string you want in the URL
 - On the Raspberry Pi side, we're using the aioblescan library

Milestone 2

- Make it possible to transfer your step count from the microbit to the Raspberry Pi over Bluetooth
- This should happen “on demand” (i.e., only when the user wants to sync the step count)
- For bonus points, give some visual feedback on the microbit that the synch was successful
- At this point, you should also start thinking about the user-interface design of the step counter
 - When will the step count “reset”? How will you get a “daily” step count?