

Micro:bit Magic

Wires, Data, & Wireless

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Washington University in St. Louis

Outline

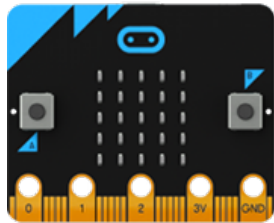
- Intros: Me, You, Micro:bit
- ★ Firmware Upgrade
- ★ USB Programming
 - ★ vs. File & File Management
- ★ Console Communications
- ★ CSV File & Google Sheets
- ★ Bluetooth Basics: Micro:bit to PC or App
- Conclusions

Intros: Me & You

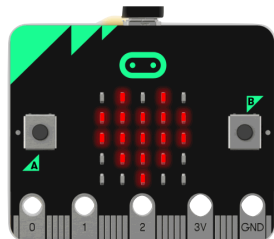
- Me
- You: Intros
 - Grade School, Middle School, Older, Admin/IT, other?
 - Pair programming —pair up!

Intros: the micro:bit

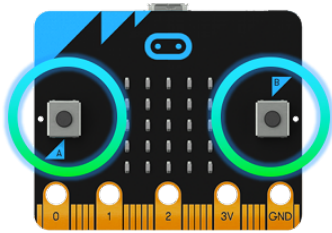
Small



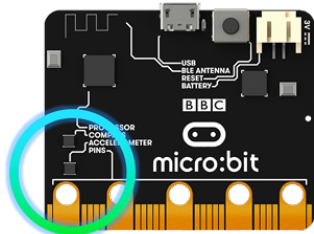
LED Grid



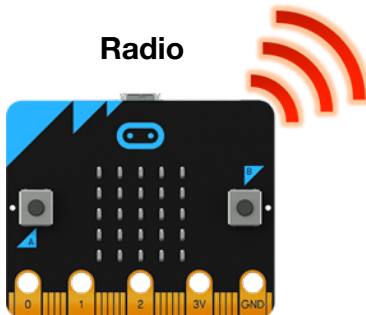
Buttons



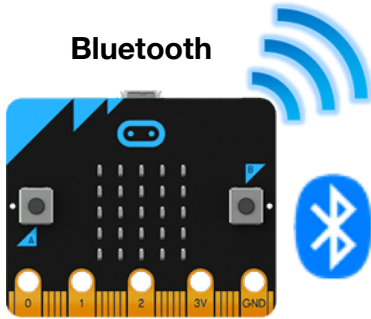
Accelerometer



Radio



Bluetooth

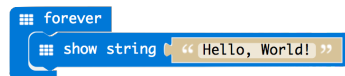


Setup

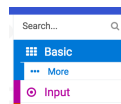
- Hardware Handout
 1. Pull out the micro:bit box / open
 2. Connect via USB cable
- Browser
 1. Open microbit.org
 2. Select "Let's Code"
 3. Click "Let's Code" button

"Hello, World!": First Program

- Block-based editor
- Built-in simulator
- Deployment to Micro:bit



Block Color Indicates Palette



Firmware Upgrade

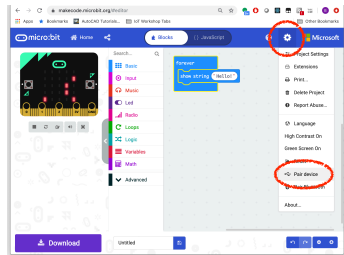
- Google “microbit firmware”
 - Follow first link
- OR: <https://microbit.org/guide/firmware/>
- Probably a one-time (per micro:bit) activity

USB Programming

- Currently only works with **Google Chrome**

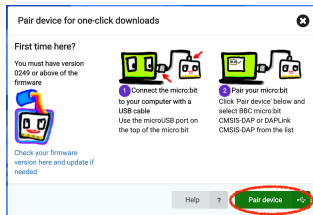
USB Programming

- 1 Gear Icon
- 2 Pair Device
(not Pair Bluetooth)



USB Programming

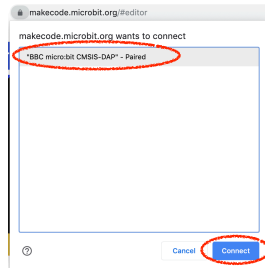
3 Select "Pair Device"



USB Programming

4 Select the device listed

5 Connect



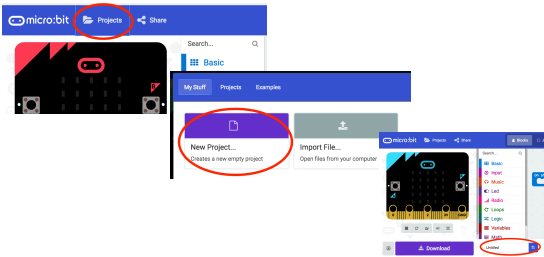
USB Programming

- Update your program
- Click Download - No more files!

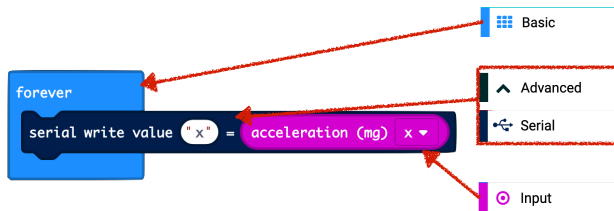
Files vs. USB: Pros & Cons

- Files: Can save local copy / can share file
- USB: Faster; No proliferation of files
 - Must occasionally “re - pair”

New Project: Projects > New Project...



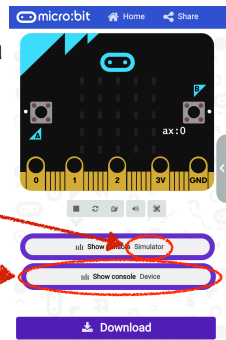
USB & Acceleration



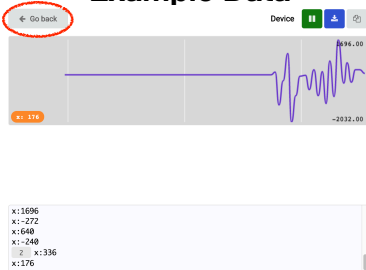
Viewing Data

• Data from Simulator
(Not too interesting)

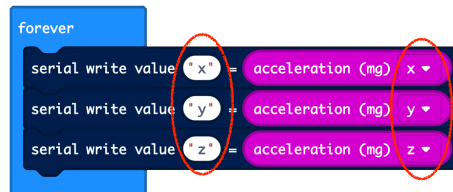
• REAL Data



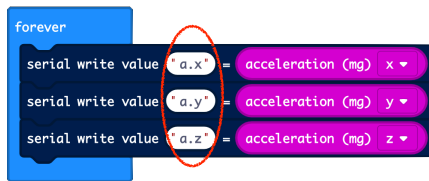
Example Data



Three Axis



Three In One

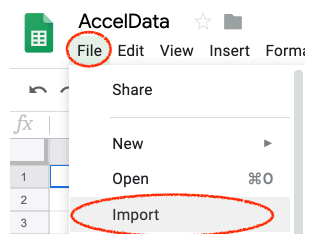


Exporting Data

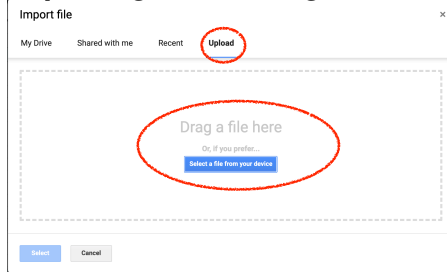
- Export Buttons in Top Right of Console
- Downloads a “CSV” file Great for import spreadsheet



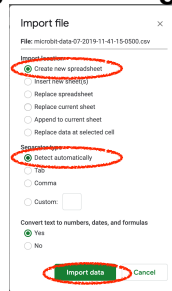
Importing Data: Google Sheets



Importing Data: Google Sheets

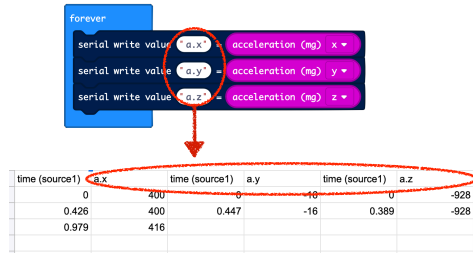


Importing Data: Google Sheets



Importing Data: Google Sheets

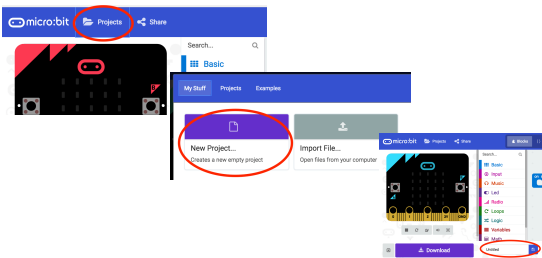
Importing Data: Google Sheets



Why Accelerometer?

- Tech is part of daily lives: Phones & Fitness Trackers
- Rapid feedback
- Other sensors too: Built-ins (temperature, compass)+ “extras”

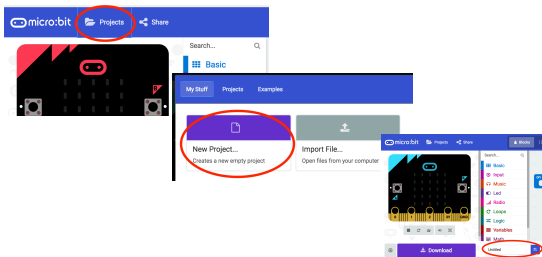
New Project: Projects > New Project...



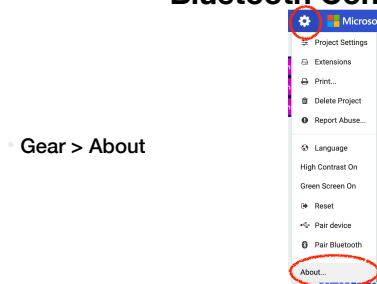
Getting Bluetooth Name



New Project: Projects > New Project...

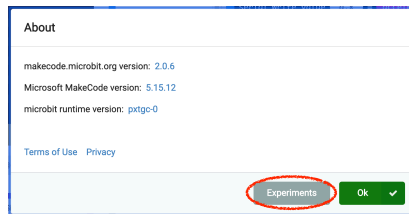


Bluetooth Config



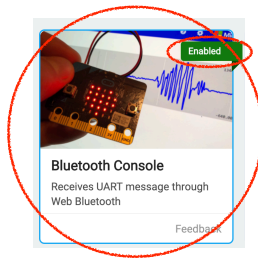
Bluetooth Config

- Experiments



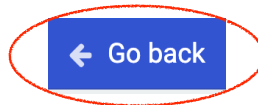
Bluetooth Config

- Bluetooth Console



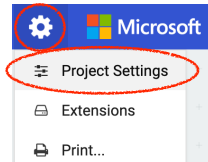
Bluetooth Config

- Persistent across project on computer (browser)
- Back to Main Window (Upper Left)



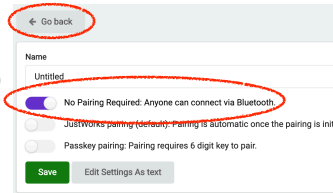
Bluetooth Config

- Gear > Project Settings



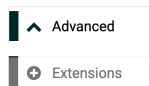
Bluetooth Config

- Check No Pairing
(May automatically go back)
- Needs to be done on *each project*



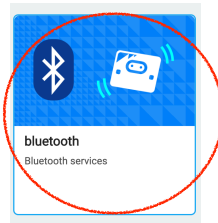
Bluetooth Code

- Bluetooth Blocks
 1. Select Advanced
 2. Select Extensions



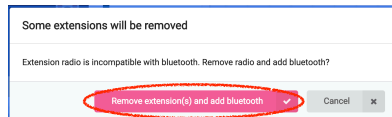
Bluetooth Code

3. Select Bluetooth

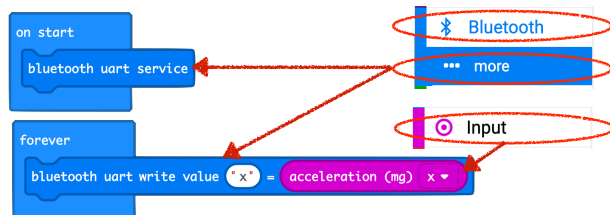


Bluetooth Code

4. Select "Remove Extensions"



Bluetooth Code



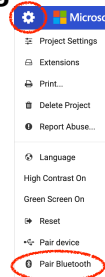
Bluetooth Code

- Download It!
- Plug in Battery Pack

Bluetooth Pairing

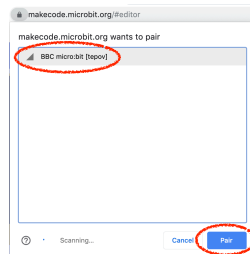
Must be running Bluetooth Code first!

- 1 Select Gear
- 2 Pick Pair Bluetooth



Bluetooth Pairing

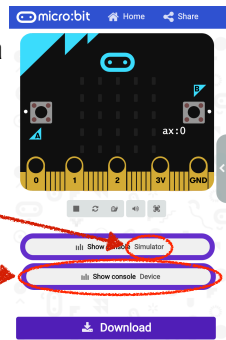
- 3 Select *your* Micro:bit
- 4 Pair



Viewing Data

- Data from Simulator (Not too interesting)

- REAL Data



Bluetooth

- Unplug USB and go wireless!

Wireless: Bluetooth vs. Radio

- Bluetooth Blocks
 - micro:bit ↔ computer or mobile apps
- Radio Blocks
 - micro:bit ↔ (many) micro:bits
- One or the other

Questions?

Awesome (?) Audio