Code@TACC: Connected Reference Sheet

Connected Camp Website

URL:
https://jeaimehp.github.io/codeattacc-connected/

Site Contains:
- Schedule
- RPi Development Environment
- Programming Examples
- References/Guides

Raspberry Pi (RPi) 400 Initial Setup Information

How to Manually Set the Date on RPi (Chrome Security Issue)

1. Within Raspbian open a Terminal window
2. Type `sudo date --set "10 JUL 2023 10:00:00"`
   - Use the correct time in 24-hour format hour:minute:second
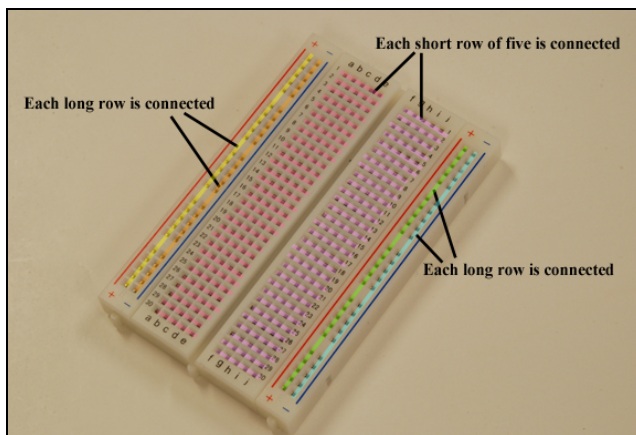3. Press [Enter]

RPi Development Environment Setup

To load all needed software:

1. Within Raspbian open a Terminal window
2. Type
   `git clone https://github.com/jeaimehp/codeattacc-connected.git`
3. Type `cd codeattacc-connected`
4. Type `./rpi-setup.bash`
5. Press `y` and press [Enter] at any prompts. Note: The final one will restart your RPi
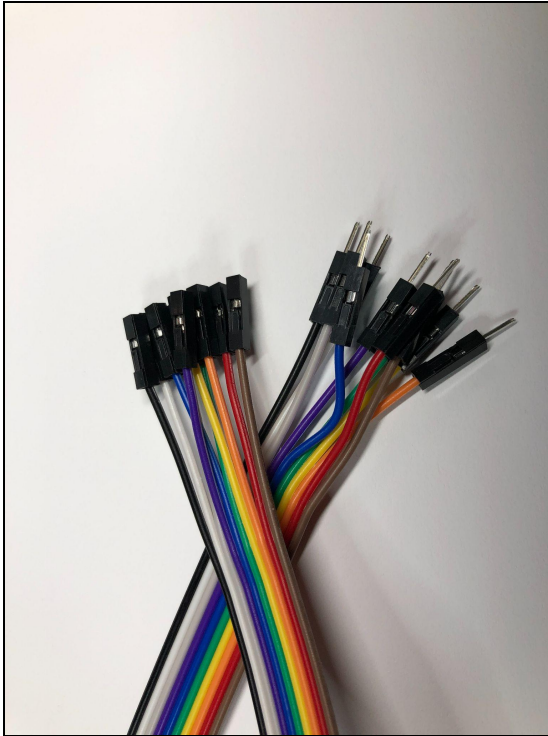
Terminology

- *Science Question* - a question to define a problem or issue you wish to solve
- *Sensor* - a device that detects or measures a physical property like temperature, light, or pressure
- *Diorama* - a model representing a scene with three-dimensional figures, either in miniature or as a large-scale museum exhibit.
- *Circuit* - a closed loop of some type of conductive material (wire,cable copper tape), including components that provide a path for electrical current.
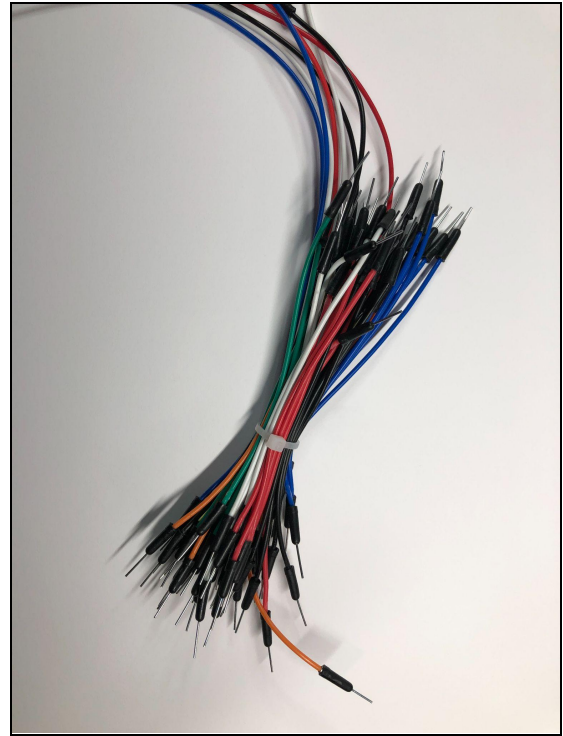- *Breadboard* - a board for making an experimental model of an electric circuit

- *Alligator Clips* - a sprung metal clip with long, serrated jaws, used attached to an electric cable for making a temporary connection to a battery or other component.

- *Dupont Connectors (male/female) -* Dupont is also called **Jumper Wire cables**. They are low-cost and used to connect hardware such as sensors, Arduino boards and breadboards together. The connectors are available in male and female with a 2.54mm (100mill) pitch.

Male and Female Dupont Cables

Male-Male Jumper Wire Cables

- *VCC = Positive = + = (This could also be your GPIO pin on the Raspberry PI)*
- *GND (Ground) = Negative = -*
- *Jupyter Notebooks* - A software package that allows you to program through a webpage. This is also known as a type of "Science Gateway".

Project Outline

Outputs

- Diorama
  - Graphs of related sensor data
  - Suggested Images
    - Sensor in field
    - Area sensor located
    - Team flag
  - Pop-Ups (at least 1 item of interest)
- Diorama Circuit
  - LEDs
  - Copper tape layout
- Code to used to control LEDs
  - Jupyter Notebook
  - Python code to operate the LEDs

Presentation /Science Story

- Question(s) that your pair is trying to answer
- Steps used to answer the question
- Sensors and data used to answer the question
- Surprises/Challenges/Solutions
- How did you design your diorama to tell the science story about answering your question?

RapberryPi (RPi) 400 Ports