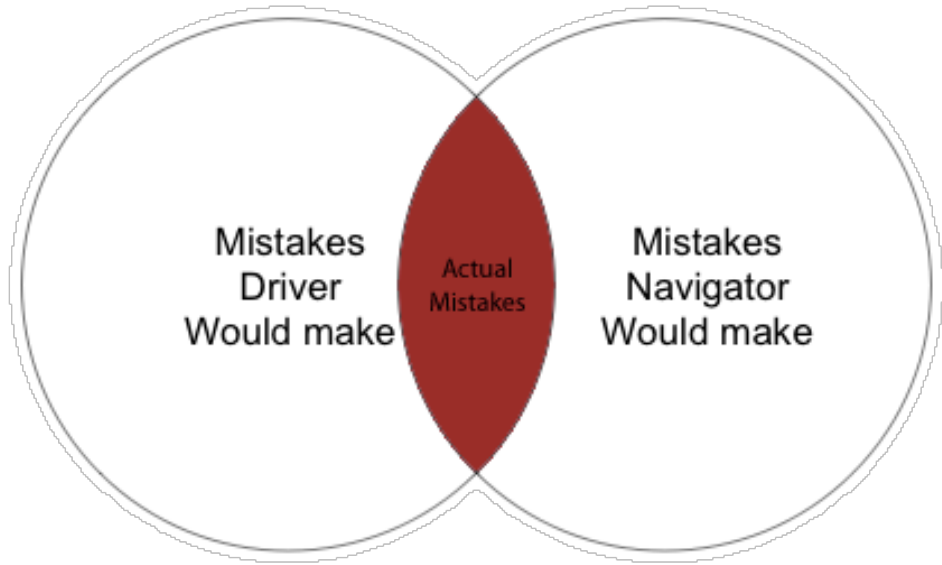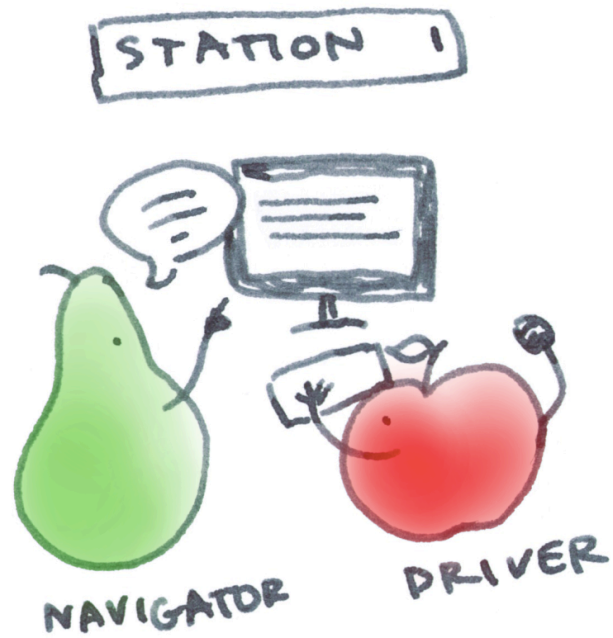# Input and Output

By Crystal Hess

Learning Goals

- How pair programming can make you a more effective developer

- How to use a button

- How to use an RGB LED

- How to use a speaker

- Vocab: variable, value, method, RGB,

Pair Programming

Be a good pair partner

DO: BE RESPECTFUL

DO: TALK TO ONE ANOTHER ABOUT THE WORK

DO: EXPLAIN WHAT YOU ARE DOING

DO: THINK AHEAD AND MAKE SUGGESTIONS

DO: SWITCH ROLES OFTEN

DON'T: BE A BOSSY NAVIGATOR

DON'T: GRAB THE DRIVER'S MOUSE/KEYBOARD

Buttons (Digital Input)

1. Get the Button Example (arduino.cc/en/Tutorial/Button) to work. (change buttonPin to 4)

2. Change the code so that the LED turns OFF when you push the button and ON by default (opposite what it does now).

3. Make a second LED be controlled by the same button. (you will need to use a NeoPixel with CircuitPlayground library)

4. Make the other button control the second LED. (Each button controls a separate LED).

Added Fun

• Open the Basics → Debounce Example and load it on your board. See what it does and play around with it.

• Can you make your second button toggle the same way?

Speakers (Output)

1. Load the the [ToneMelody Example](https://create.arduino.cc/editor/robotuw/649a080e-22f0-454f-8e20-f8d5ff33419e/preview) (https://create.arduino.cc/editor/robotuw/649a080e-22f0-454f-8e20-f8d5ff33419e/preview) and get it to work.

2. What is line 35 with "for" doing?

3. Using the image of notes on the next slide, change the code to play the first two lines of Jingle Bells.

4. Add a push button and trigger the tones when the button is pushed instead of at setup.

Added Fun

- Light up a NeoPixel in sync with the music.

Jingle Bells

James Pierpont
Arranged by Julie A. Lind

Right hand only

E   E   E   -   E   E   E   -   E   G   C   D   E - - -

Jin- gle bells,   jin - gle bells,   jin - gle   all the way.

F   F   F   F   F   E   E   EE

Oh what fun   it   is   to   ride in a

E   D   D   E   D - G -

one horse op - en   sleigh

E   E   E   -   E   E   E   -   E   G   C   D   E - - -

Jin- gle bells,   jin - gle bells,   jin - gle   all the way.

F   F   F   F   F   E   E   EE

Oh what fun   it   is   to   ride in a

G   G   F   D   C

one horse op - en   sleigh!