

Week 2 Programming is a Form of Expression

- Day 1: Stories: Broadcast and Receive.....telling a Knock Knock joke
- Day 2: Drive to a location, broadcast to other sprites
- Day 3: Continue to work on the two previous projects, turn in Impact Paper
- Day 4: Video: Bjork & Live Coding, BlueBrain Location Aware App....
- Day 5: Art.

Week 2 Day 1: Programming is a Form of Expression

A. What do you think it means to say that Programming is a form of expression? What kinds of things do programmers express? Please answer in two or more complete sentences.

B. Using Broadcast and Receive. The Broadcast block allows a _____ to send a _____ to all other _____ or to the _____.

To accept a _____ message, use a _____ block.

C. Telling a Knock Knock joke. Think of, or find, a school appropriate Knock Knock joke. Make a Snap project in which two sprites, with their own costumes that you get from images off the Internet, tell each other a knock knock joke.

- use images off the internet for each sprite
- do NOT use any wait..... statements
- use Broadcast and Receive to send control back and forth to the sprites
- add a background image to the Stage
- At each step of the joke, use a different graphical effect block on the sprite talking.
- At the start of the joke, make all the sprites go back to their original appearance. This is the only place you can use a wait block, to allow the user to adjust to the changes you have made.

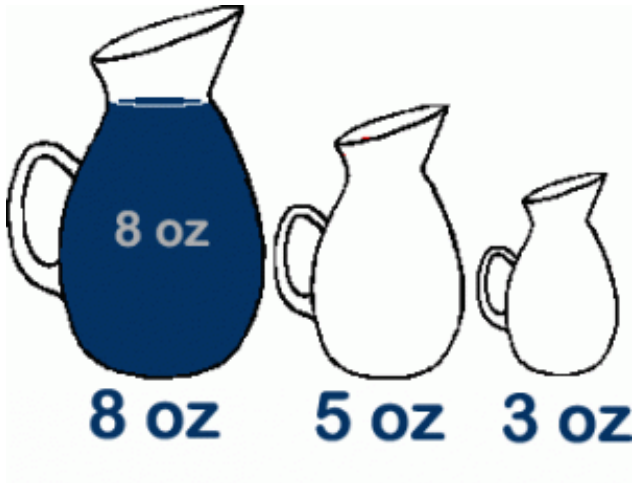
Pouring Milk into a Container.

You have 3 irregularly shaped jars.

Jar "A" has a line measuring off 8 ounces but no other markings.

Jar "B" has a line measuring off 5 ounces, but no other markings.

Jar "C" has a line measuring off 3 ounces, but no other markings.



A

B

C

Write a set of steps to end up with exactly 1 ounce of milk.

Use the syntax "Pour Jar _____ into jar _____. "

Week 2 Day 2: Coordinate System, Driving a Sprite, if/then , Broadcasting to other sprites

A. Driving your Sprite. One way to have a sprite quickly move around the screen is with a move block combined with an if/then block. Try this code, then add a block to allow it to turn left. Test it.

```
go to x: 0 y:0
forever
  move 1 steps
  if key <right arrow> is pressed
    turn ____ degrees
```

B. The Coordinate System. In Snap, every Sprite has an x-coordinate and a y-coordinate. First, click on your Stage. Then under the File menu, choose Backgrounds....xygrid. In the space below, draw the picture of your new background.



C. Doing things when we are at a certain coordinate. Put this code in the sprite that is moving around.

```
forever
  if xcoordinate > 30 and xcoordinate < 60
    broadcast <spin>
  if ycoordinate < 0
    broadcast <hide>
  if x coordinate <0 and ycoordinate < 0
```

Add another sprite that does not move. Give it a different costume. Make the other sprite respond to these messages.

when I receive spin

when I receive hide

D. Add an if statement to the Driving sprite that when it gets to a very specific x and y location, it broadcasts a message to the other sprite to clone itself.

```
if xcoordinate > ____ and ycoordinate > ____
  create clone of _____
```

The receiving sprite should have this block

when I start as a clone

go to x: (random number) y: (random number)

E. Add more features to your driving program using the blocks broadcast , receive, and, or, random.

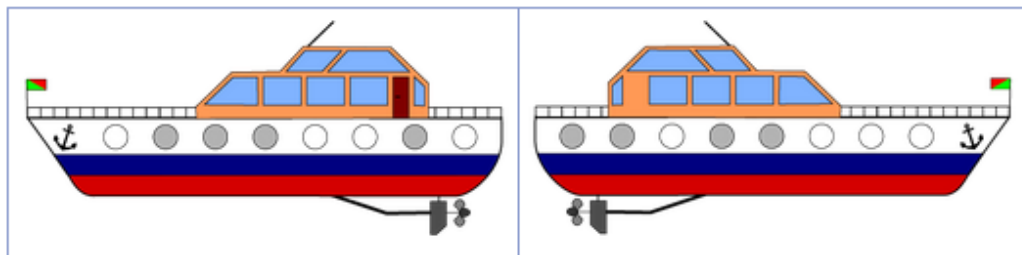
The Boat Windows:

The windows of a boat are either clear or lightly tinted.

Standing beside the boat you can look through two opposite windows at once.
Depending on the colours of both windows they will appear to have a new colour:



Captain Krysta has given you drawings of her boat showing which windows are clear and which are lightly tinted:

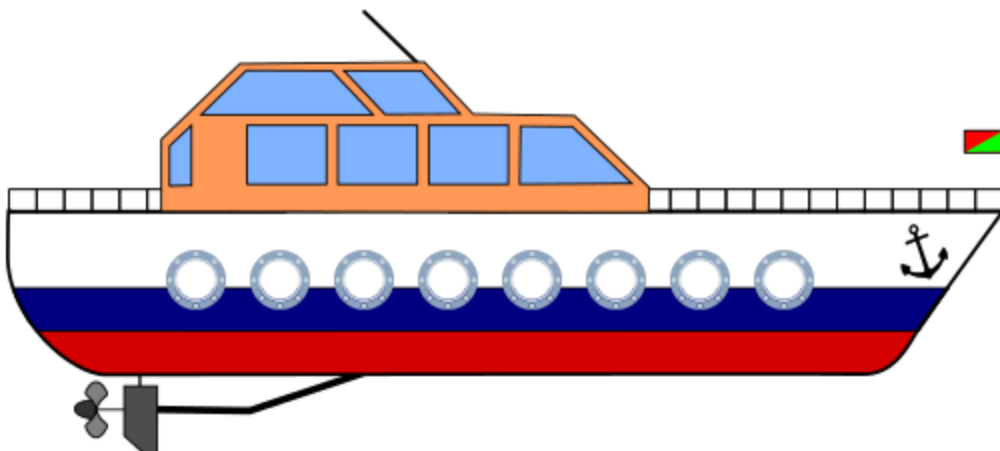


Color in the windows of the boat below to show what you would see if you stood beside it and looked through the windows. Each window will be

-not shaded

-shaded gray

-shaded black



Week 2 Day 3: Complete Day 1 and Day 2 projects

A. Warm-up. How does Music work in Snap?

Make a musical project inspired by either Biophilia, BlueBrain, or Live Coding.

B. Biophilia. Who was the musician who created the Biophilia Solstice app? Watch the [youtube video](#).

What is the theme that the musician is trying to express in this work?

C. BlueBrain. What did this musical group make that was so interesting? Watch [the video](#).

What is the idea behind it?

If you were going to make an app like this, what large public location would you choose?

Name some particular sites in that public place, and what song or artist you would play at that location

Specific spot in that place	Song or Artist that would play

D. . Live Coding. Watch the [Andrew Sorensen Keynote Live Coding](#) Video on YouTube

How would you define Live Coding?

The Clinging Robot

The clinging robot walks along the road, always clinging to one side of the road. The clinging robot knows four commands:

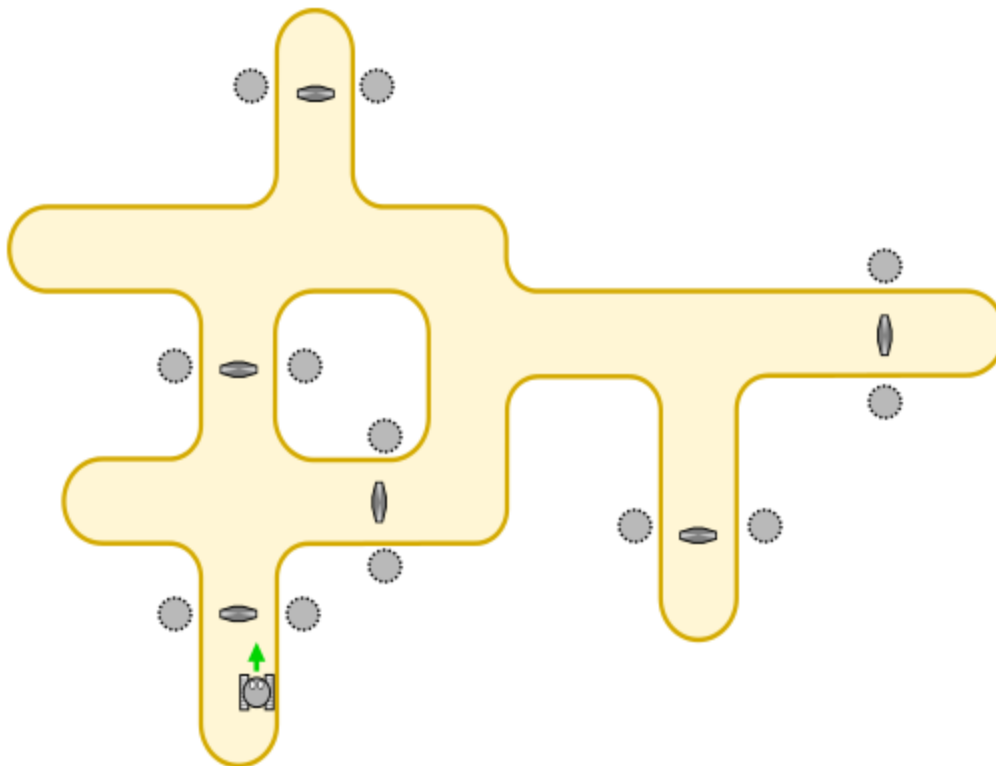
Command	Explanation
START	Start walking along the side where you are standing
CONTINUE	Keep walking along the side where you are walking
SWITCH	Switch to the other side of the road and keep walking
STOP	Stop walking

A command is executed whenever the robot walks across one of the grey magnetic devices on the road. All these devices are indicated on the map.

The clinging robot is given the following instruction set:

START SWITCH CONTINUE CONTINUE CONTINUE STOP

The robot starts as indicated in the picture. Click on the grey spiky circle where the robot stops.



Week 2 Day 5: Computational Art

A. Web Design. Make a [Weave Silk](#) Design.

B. Do an Internet search for computational art. Find an interesting site and write down its title.

C. Make a Kaleidoscope in Snap. Follow these directions.

0. Background. Go to the stage, and set the background to the xy axis.

1. First sprite. Uncheck the box “draggable.” When the green flag is pressed, it clears the screen, sets its direction to 0, sets the pen size to 2, and sets its pen color to Red. Then it enters a forever loop in which it has one block: go to <mousex>, <mousey>. On the left hand side of your screen, check the boxes next to <mousex> and <mousey>.

If <mousedown>	if key<uparrow> pressed
pendown	change pen size by 1
else	wait 0.5 seconds
penup	

Test this sprite to see how it draws.

2. Once your first sprite is working well, right-click on this sprite. Choose “duplicate.” This copies all the code from the first sprite! You will need to change 2 blocks in this sprite.

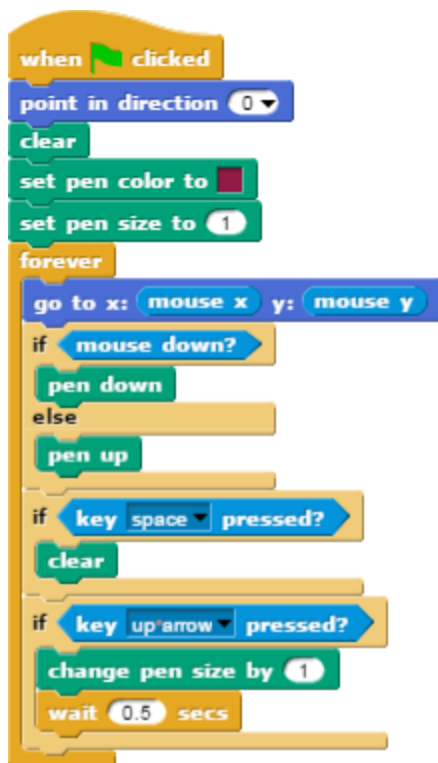
- the color it draws
- in the forever loop, go to mousex, mousey needs to change to be
 go to (-1 * mousex), (-1 * mousey)

Test your program thoroughly.

3. Make a third sprite and fourth sprite by copying the second sprite. You will need to change

- the color it draws
- the go to command in the forever loop (so that there is one sprite in each quadrant)

Test your program carefully.



The Clinging Robot part 2

A clinging robot walks along the road, always clinging to one side. The robot knows 5 commands:

START

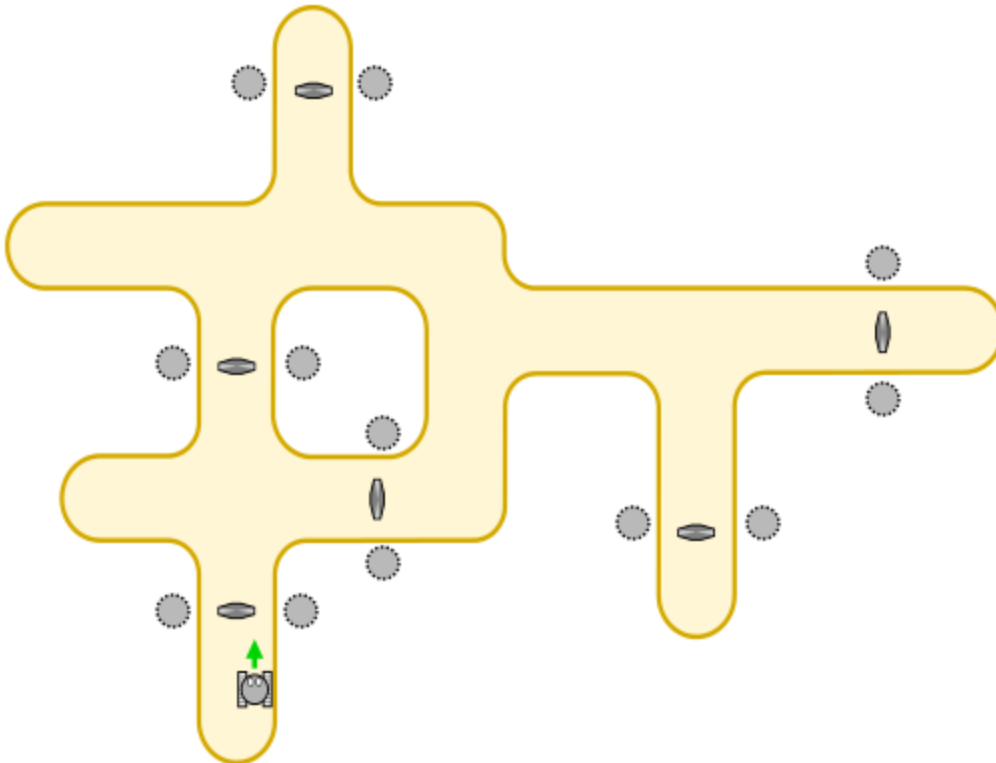
CONTINUE

SWITCH

STOP

REPEAT ____ **TIMES**

A command is executed whenever the robot walks across one of the grey magnetic devices on the road.



The robot has a goal of visiting every circle and returning to the magnetic strip where it started. Write a program that meets this goal.