

11 Interactive Programs

Using decisions, we can make our programs interactive. Let's see a simple example, that will change the background based on the mouse position.

Mouse On Left

Let's start by building a program to detect **if** the mouse is over a certain part of the screen.

In our case, let's start by drawing a screen with a line down the center. The drawing could be in `setup` or in `draw`, but I'll put it in `draw` in case we want to add more elements later.

```
void setup() {
  size(600, 600);
}

void draw() {
  background(0);
  stroke(255);
  line(width/2, 0, width/2, height);
}
```

Great! Now let's add some detection. If the mouse is on the left side, make the screen red. Otherwise, keep it black. To do this, we need an **if statement** to check the **mouseX** variable.

```
void setup() {
  size(600, 600);
}

void draw() {

  if (mouseX < width/2) {
    background(255, 0, 0); // red
  } else {
    background(0); // black
  }

  stroke(255); // white line
  line(width/2, 0, width/2, height);
}
```

Notice that we added the **if statement** *before* drawing the line. Otherwise, the line would be covered by the background.

Things to Try

1. Draw a horizontal line halfway up the screen, so that the screen is divided into four equal parts.
2. Add to the **if statement** so that the screen only turns red if the mouse is over the upper left quadrant, but remains black for the other three.

Challenge Yourself!

Sharpen your coding skills by completing these missions!

Missions One: Colored Quadrants

Modify your code so that the background changes to a different color for each of the four quadrants (such as red, blue, green, and yellow).

Mission Two: Smaller Targets

Modify your code to have a square near the middle of the screen. Change the background color only when the mouse is over the square.

Mission Three: Refactor

Let's refactor our code! Make your mouse detection code into its own method called `mouseOver()`. Have this method take an `x`, `y`, `width`, and `height` and return `true` or `false`, so that your `draw` method looks like this:

```
void draw() {
  if (mouseOver(x, y, w, h)) {
    background(255, 0, 0);
  } else {
    background(0);
  }
}
```

After this method is complete, you will have something that you can use over and over for any buttons you create in your projects!