Forever Loops and Making an Interrupt.

Introduction

Last exercise we made a program that will rotate towards the greatest distance of all of its readings. We're going to improve upon this today and make the robot keep doing this, always trying to find the greatest distance.

Step 1: Interrupts

✅ Activity Checklist

- [ ] We're going to use a new type of loop today, the new loop runs forever.

- [ ] Before we learn that it's extremely important that we implement our own interrupt key, so that we can stop the robot by pressing a button on the keyboard.

- [ ] We've seen keyboard control before!

- [ ] Now whatever we put under here will happen when we press the space button, a nice big button that we all know the location of.

- [ ] Scratch offers a Stop block, that will stop everything from running.

- [ ] This is all we need, it will come in handy.
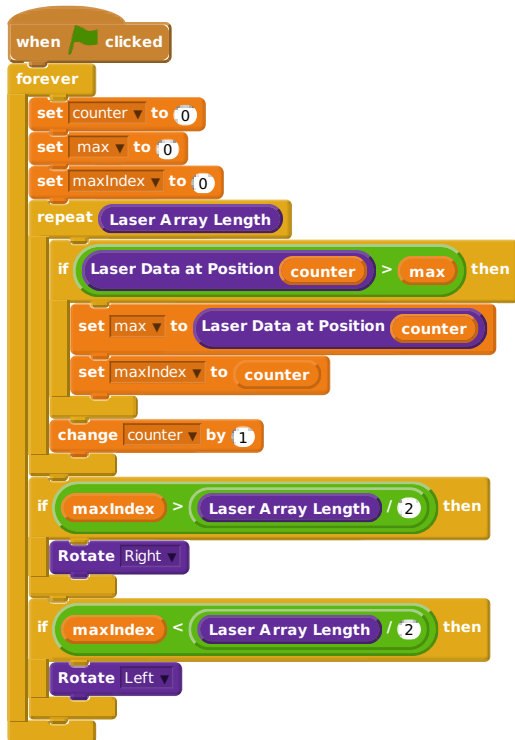
Step 2: More loops

✅ Activity Checklist

- [ ] So we're getting really close, we want it to keep rotating towards the greatest distance now.

- [ ] We've seen loops that end after some amount of steps so far, I'm going to introduce you to a loop that only stops if you stop the Scratch program.

- [ ] You have to be careful with these loops. Anything you put inside of them will carry on forever, until you can press the red stop button.

- [ ] If the robot is moving, it can be very difficult to press that!

- [ ] Make sure you've got your code from the last session loaded, and the Stop button from above implemented.

- [ ] If we put the code we have so far into a forever loop (apart from the when flag clicked of course) it will keep performing it.

- [ ] This means it will keep checking for the greatest distance, and keep roating towards it.

```
when [flag] clicked
forever
    set counter to 0
    set max to 0
    set maxIndex to 0
    repeat (Laser Array Length)
        if <(Laser Data at Position (counter)) > (max)> then
            set max to (Laser Data at Position (counter))
            set maxIndex to (counter)
        change counter by 1
        if <(maxIndex) > ((Laser Array Length) / 2)> then
            Rotate Right
        if <(maxIndex) < ((Laser Array Length) / 2)> then
            Rotate Left
```

- [ ] Do you know why it's important that setting the variables to 0 is also in the loop?

- [ ] This is because otherwise it'll start by using the old values! They need to be reset every time we perform the loops contents.

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⚑ Test your project

✓ Activity Checklist

- [ ] First we want to that it keeps rotating towards the greatest distance as we expect.

- [ ] Hit the green flag and watch it go.

- [ ] We also want to test our interrupt.

- [ ] Make sure you've got your code to interrupt the code in this project.

```
when space key pressed
stop all
```

☐ Whilst it's running, hit space and check that it stops like you'd expect it to!

⏏ Save your project