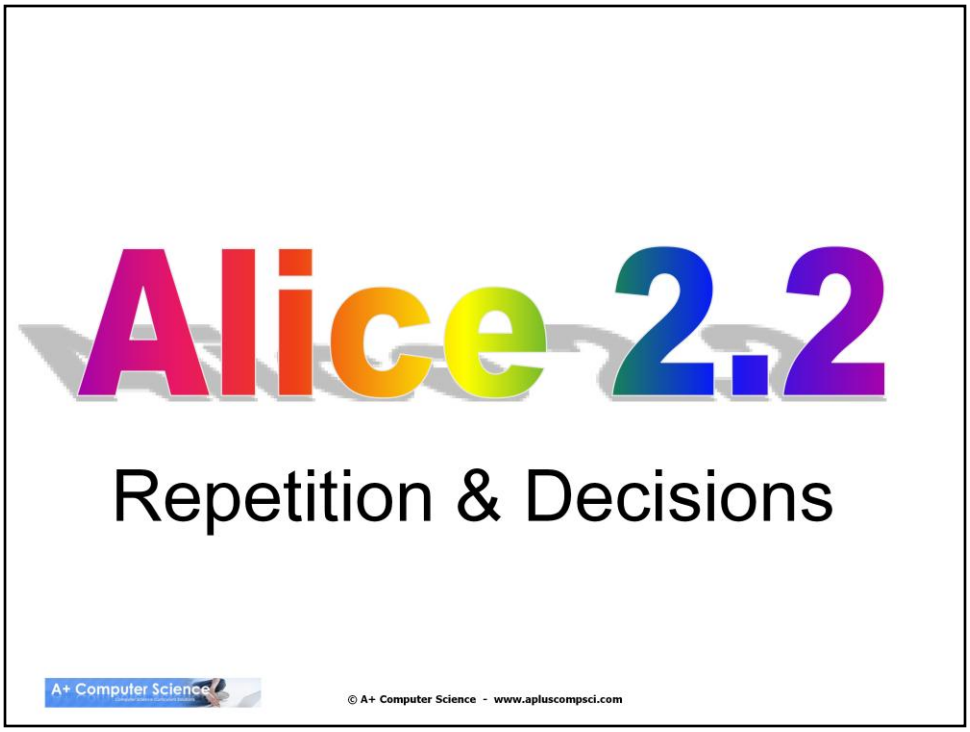
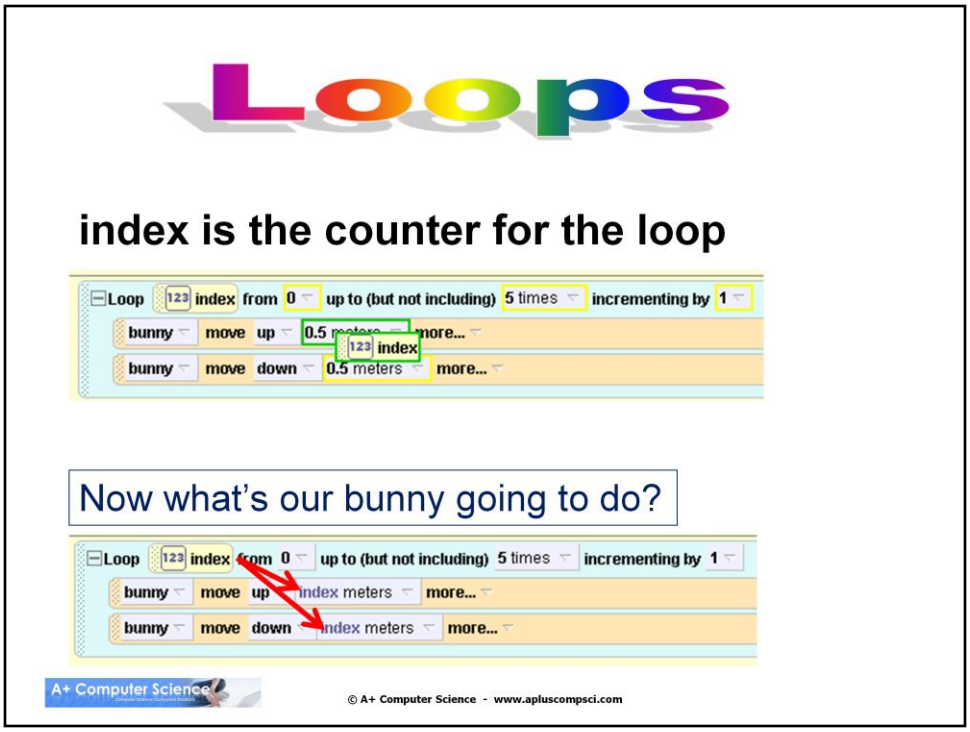


Programs run from top to bottom. If the program wasn't able to repeat or make decisions about which parts of the code to run or what to do with that code then it's going to run exactly the same every time and be more a movie than a program.

Loops

Loops allow us to repeat sections of code.

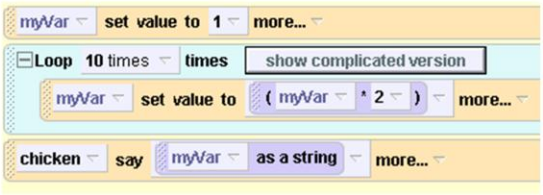
How many times is our bunny going to hop? 5



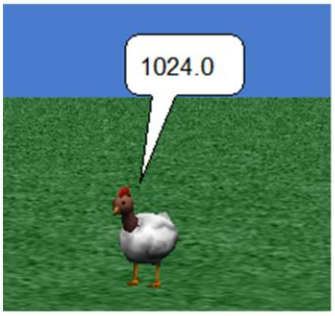
You can drag from the [123]index onto any place inside the loop that will take a number.

Our bunny will still hop 5 times. But instead of going up and down ½ meter each time it'll change. The first time he'll hop 0 meters, the second 1 meter, and so on up to 4 meters. Note that it doesn't actually go to 5.

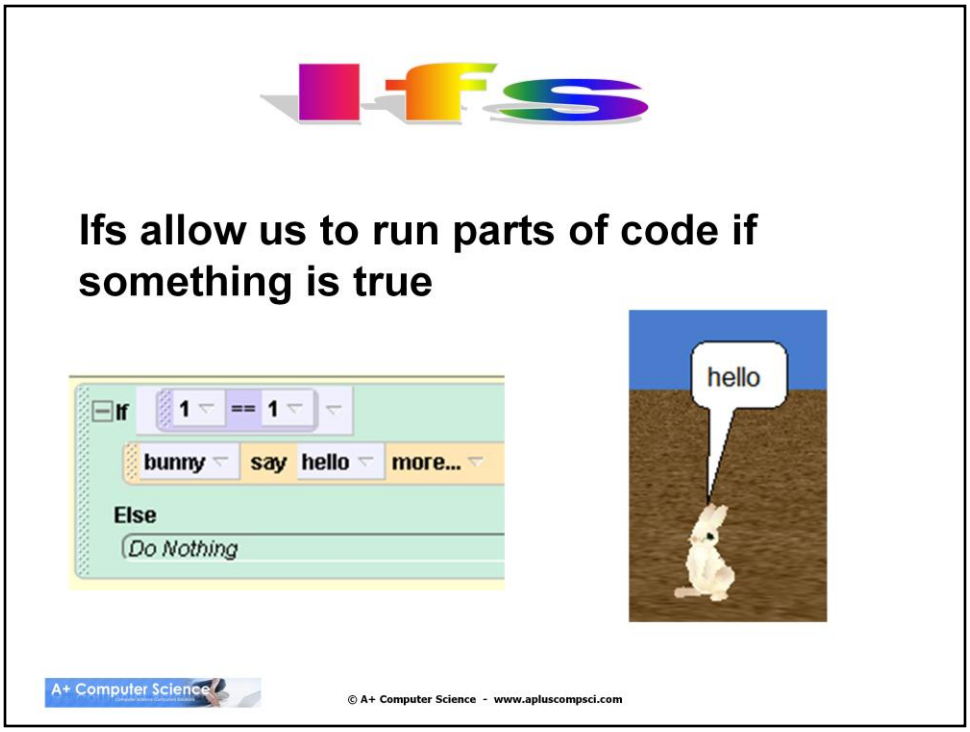
Loops & Variables



What's the chicken say?



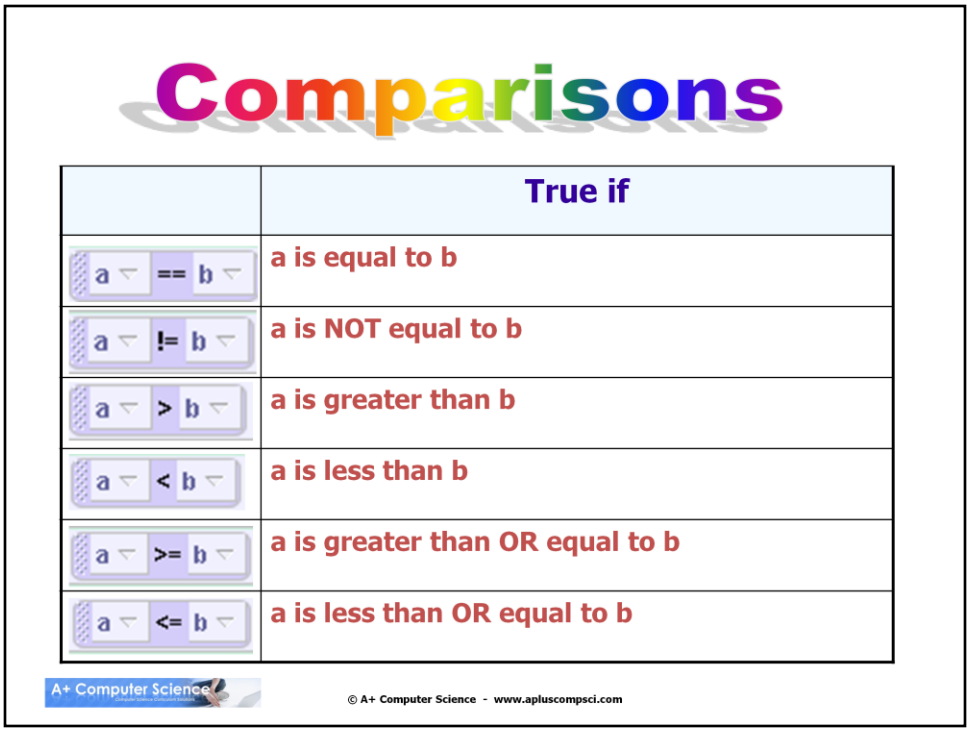
open forLoop.a2w



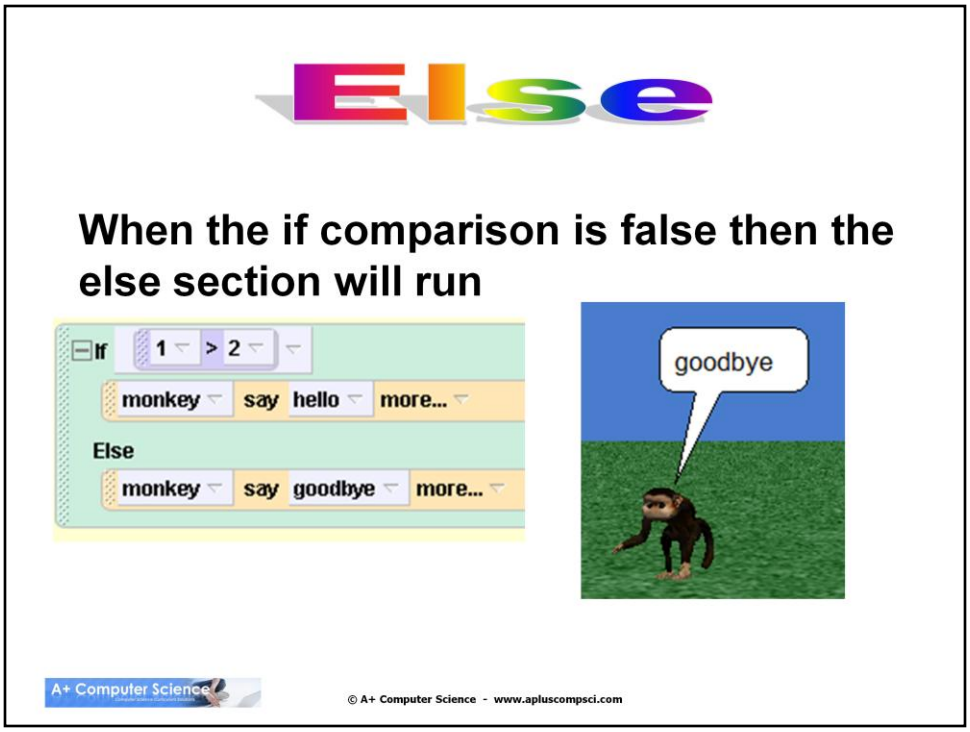
If whatever is next to the if is true then the code within that block will run.

What will our bunny do? Is 1 equal to 1? He'll say "hello".

Most programming languages use a double equals sign when you're checking equality



Add stuff here



What's the monkey going to do? He's going to say goodbye since 1 is not greater than 2. The monkey.say(Hello) gets skipped over.

Nesting Ifs & Elses

You can put if / elses within if / elses

```
if 1 > 2
    if 1 == 1
        monkey say my name is Bob more...
    Else
        monkey say I like tomoatoes more...
Else
    if 1 != 1
        monkey say giraffes are funny more...
    Else
        monkey say my tail itches more...
```

Now what's our monkey going to say?

A+ Computer Science

Because 1>2 is false we skip to the first else. We then compare to see if 1 is not equal to 1. Since that's false we go to the last else and our monkey says "my tail itches". The is 1 equal to 1 comparison never happens.

Ifs, Elses, & Variables

```
myVar set value to 15 more...
If myVar < 5
    If myVar == 15
        cow say The sheep frighten me more...
    Else
        cow say I want a cheeseburger more...
Else
    If myVar > 2
        cow say I don't taste like chicken more...
    Else
        cow say Milk's good for you more...
```

What's our cow going to say?

open ifsElses.a2w

Built in Functions

Every object has built in functions that you can use for comparisons

```
If  bunny  distance to  flamingo  <  10
    bunny  say  I'm close to the flamingo  more...
Else
    bunny  say  I'm far away from the flamingo  more...
```

Loops & Lists

For All In Order loops let us loop through members of a list

How many times will the lemur jump?

Start work on Ifs & Loop Labs