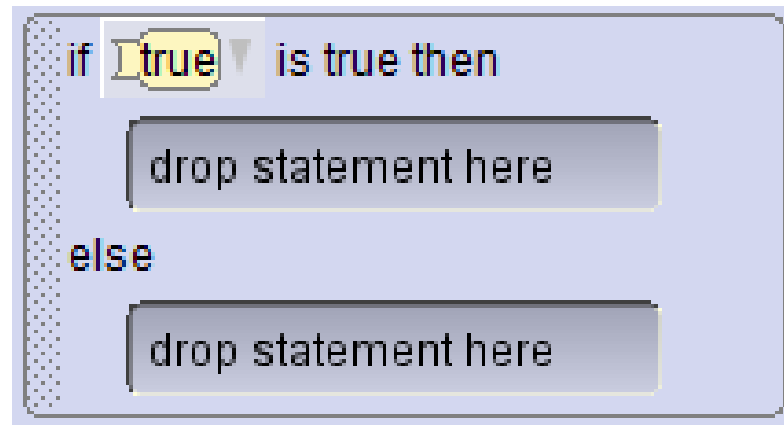


CompSci 94

Making Decisions with If statements

September 30, 2021



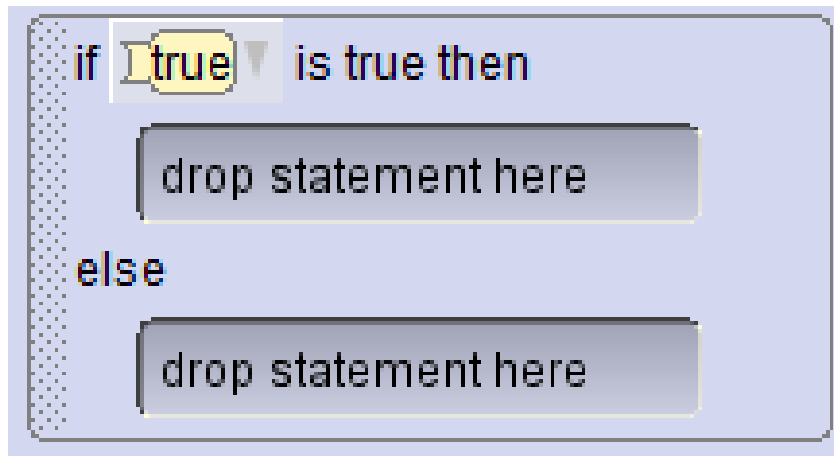
Prof. Susan Rodger

Announcements

- Assignment 3 due tonight!
 - Don't forget the reflect form
- Videos and QZ10 due Thursday, Oct 7 when class starts
- Don't get behind, be sure to check your grades on Sakai for Classwork

If statements

- What types can you compare in an if statement?



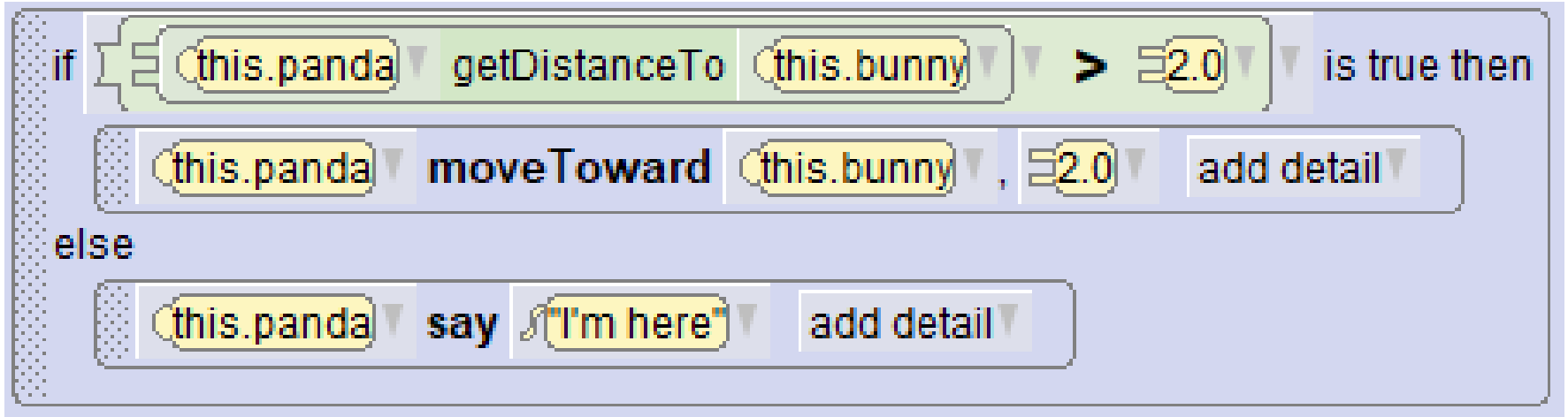
If statements

- What types can you compare in an if statement?
 - Numbers
 - Directions
 - Paints
 - TextStrings
 - Objects
 - etc

Relational (DecimalNumber) { ==, !=, <, <=, >=, > }	▶
Relational (WholeNumber) { ==, !=, <, <=, >=, > }	▶
Relational (SThing) { ==, != }	▶
Relational (MoveDirection) { ==, != }	▶
Relational (TurnDirection) { ==, != }	▶
Relational (RollDirection) { ==, != }	▶
Relational (Key) { ==, != }	▶
Relational (Color) { ==, != }	▶
Relational (Paint) { ==, != }	▶
TextString Comparison	▶

Q1 Panda distanceTo

- What does this code do when it executes?

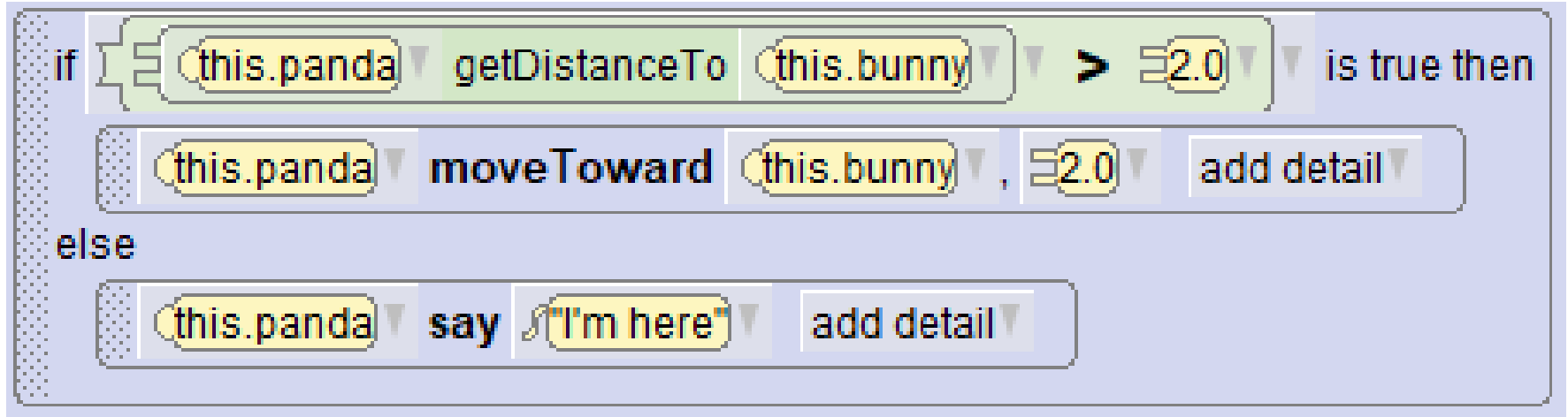


```
if (this.panda > getDistanceTo (this.bunny) > 2.0) is true then
  this.panda moveToward (this.bunny) , 2.0 add detail
else
  this.panda say "I'm here" add detail
```

The image shows a Scratch script for a panda object. It starts with an 'if' block that checks if the distance between 'this.panda' and 'this.bunny' is greater than 2.0. If true, the panda moves toward the bunny by 2.0 units and adds a detail. If false, the panda says 'I'm here' and adds a detail.

Q1 Panda distanceTo

- What does this code do when it executes?

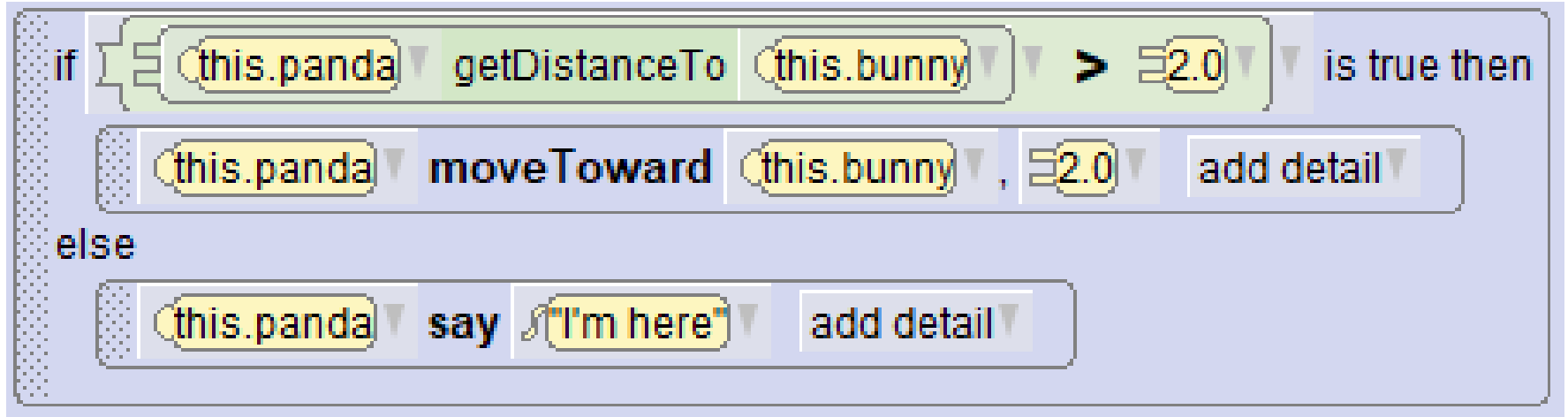


- If the panda is more than two units from the bunny, the panda moves two units towards the bunny
- Otherwise the panda says “I’m here”
- If the panda is 3 units from the bunny, can both the panda move and say “I’m here” happen?

9/30/21 – NO! only one happens

Q2. Create line w/ Panda distanceTo

- How does one create **first line** of this code?



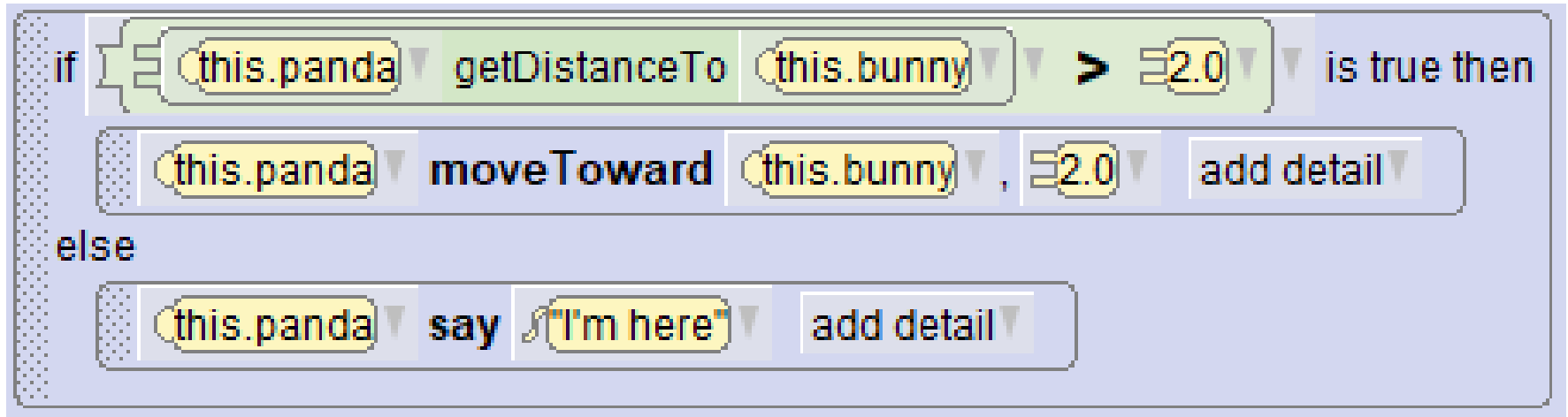
The image shows a Scratch code editor with the following blocks:

```
if (this.panda > getDistanceTo (this.bunny) > 2.0) is true then  
  this.panda moveToward (this.bunny) 2.0 add detail  
else  
  this.panda say "I'm here" add detail
```

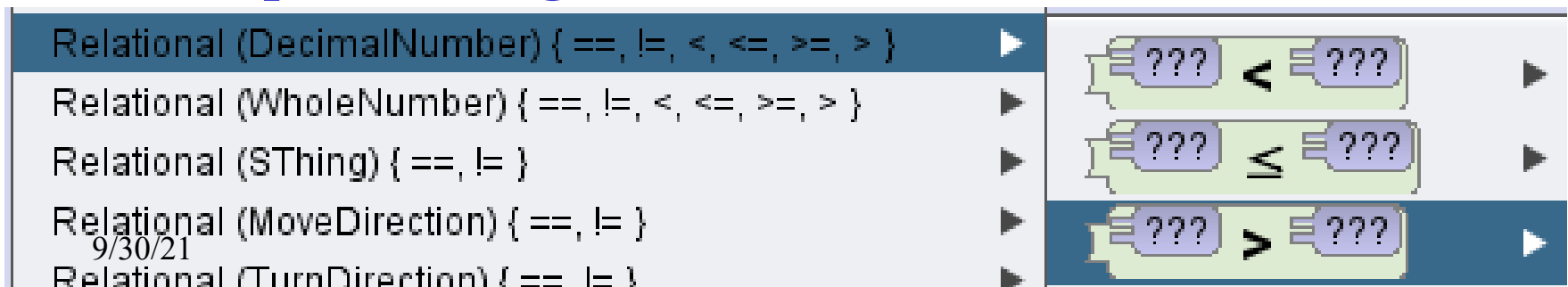
The first line of the code is highlighted in green, indicating it is the current selection. The code blocks are: an 'if' block with a condition 'this.panda > getDistanceTo (this.bunny) > 2.0', an 'is true then' block, a 'this.panda moveToward (this.bunny) 2.0 add detail' block, an 'else' block, and a 'this.panda say "I'm here" add detail' block.

Q2 Create line w/ Panda distanceTo

- How does one create **first line** of this code?

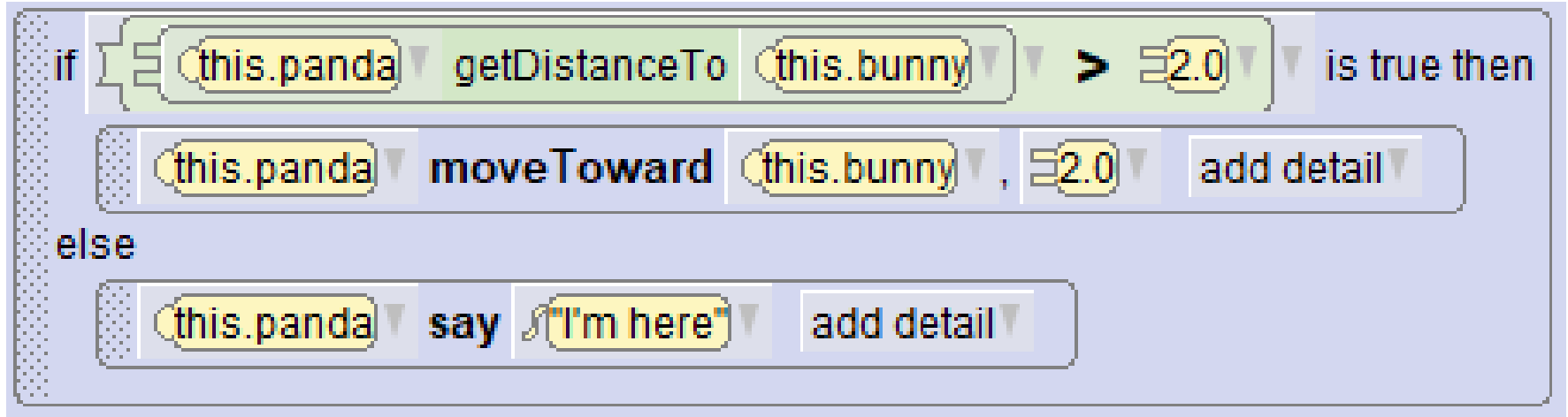


- First drag in an IF tile and select True
- Then click on True and select *decimal number compare with greater than*



Q2 Create line w/ Panda distanceTo

- How does one create **first line** of this code?

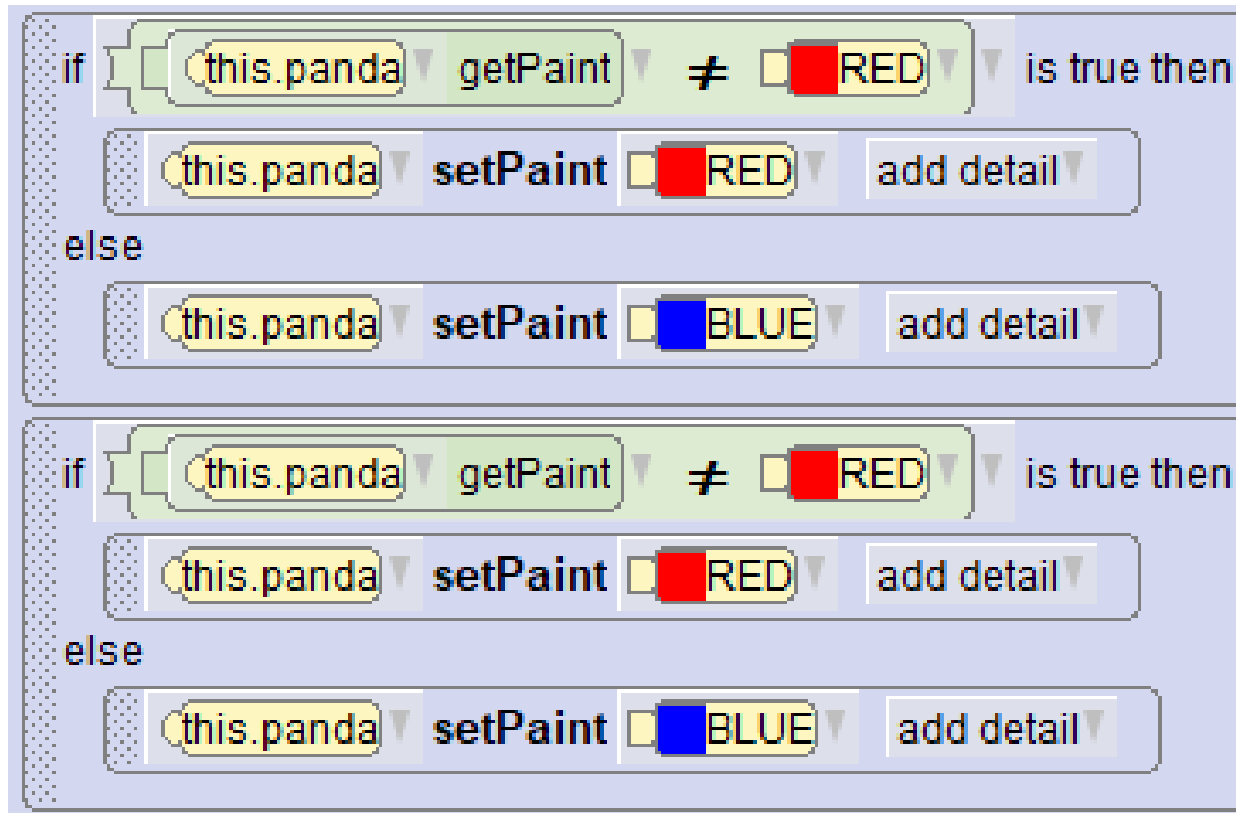


- First drag in an IF tile and select True
- Then click on True and select *decimal number compare with greater than*
- Select numbers 1.0 and 2.0
- Replace the 1.0 by dragging the function over it



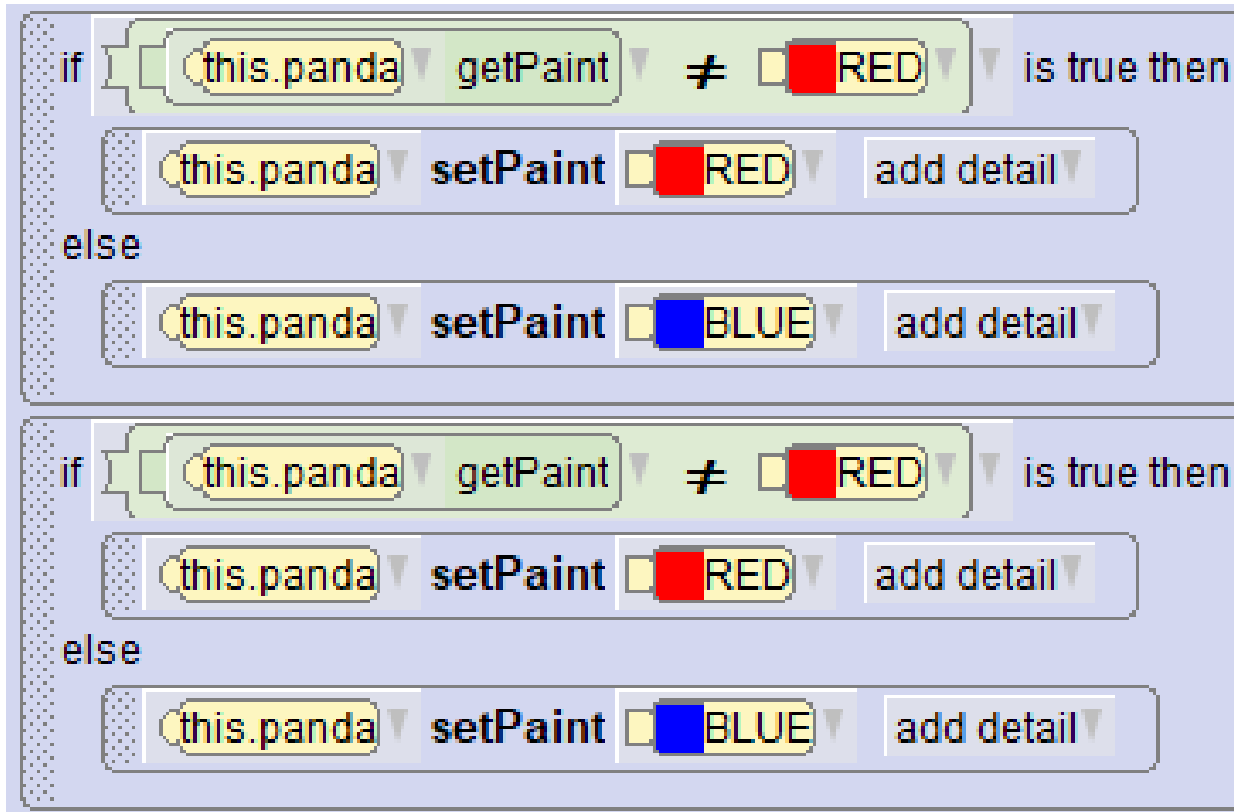
Q3 Making decisions - If statement

- What happens when this code runs?



Q3 Making decisions - If statement

- What happens when this code runs?



– Panda turns red and then panda turns blue

Q4 What happens when this If executes?

```
if this.bunny isBehind this.panda add detail is true then
  this.bunny turn RIGHT, 0.5, asSeenBy this.panda
else
  this.panda turn RIGHT, 0.5, asSeenBy this.bunny
```



Q4 What happens when this If executes?

```
if this.bunny isBehind this.panda add detail is true then
  this.bunny turn RIGHT, 0.5, asSeenBy this.panda
else
  this.panda turn RIGHT, 0.5, asSeenBy this.bunny
```



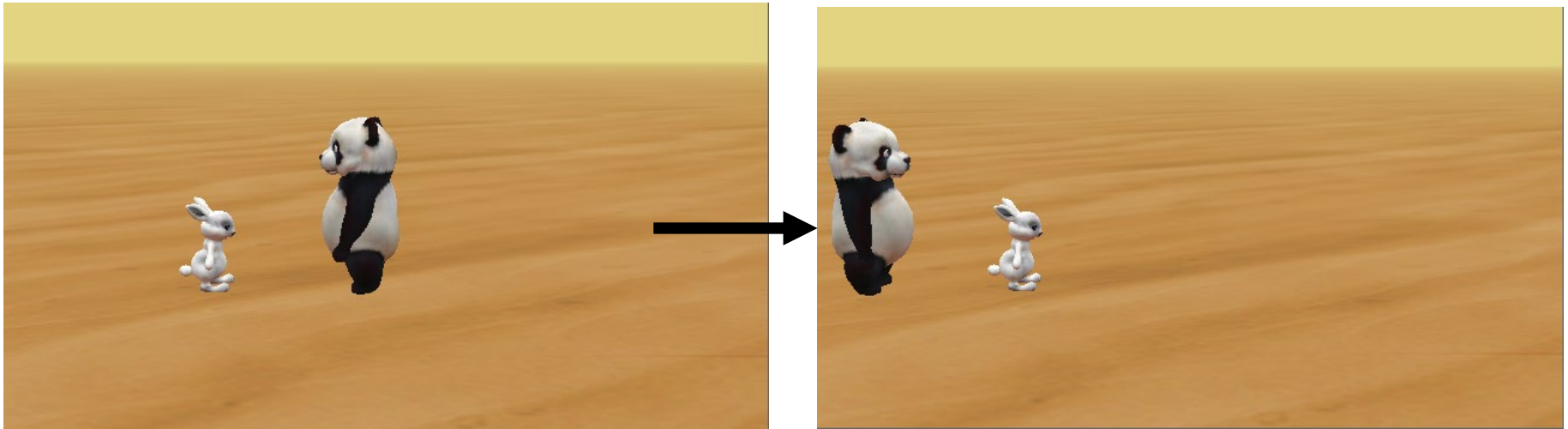
Q5 Execute a copy of the if again? (execute the same code a second time)

The image shows a Scratch code block for an if-else statement. The 'if' block contains the condition 'this.bunny isBehind this.panda add detail is true then'. The 'then' block contains the code 'this.bunny turn RIGHT, 0.5, asSeenBy this.panda'. The 'else' block contains the code 'this.panda turn RIGHT, 0.5, asSeenBy this.bunny'.

```
if this.bunny isBehind this.panda add detail is true then  
  this.bunny turn RIGHT, 0.5, asSeenBy this.panda  
else  
  this.panda turn RIGHT, 0.5, asSeenBy this.bunny
```

Q5 Execute a copy of the if again?

```
if this.bunny isBehind this.panda add detail is true then
  this.bunny turn RIGHT, 0.5, asSeenBy this.panda
else
  this.panda turn RIGHT, 0.5, asSeenBy this.bunny
```



Q6 Execute a third copy of the if?

The image shows a Scratch code editor with the following blocks:

- if** block: `this.bunny` isBehind `this.panda` add detail is true then
- then** block: `this.bunny` turn `RIGHT` `0.5` degrees, asSeenBy `this.panda`
- else** block: `this.panda` turn `RIGHT` `0.5` degrees, asSeenBy `this.bunny`

Q6 Execute a third copy of the if?

```
if this.bunny isBehind this.panda add detail is true then
  this.bunny turn RIGHT, 0.5, asSeenBy this.panda
else
  this.panda turn RIGHT, 0.5, asSeenBy this.bunny
```



Class Today

- Working with making decisions

