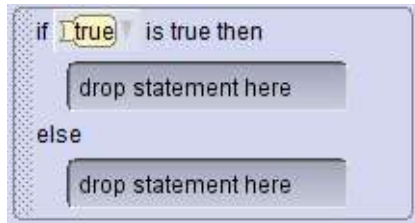# CompSci 94
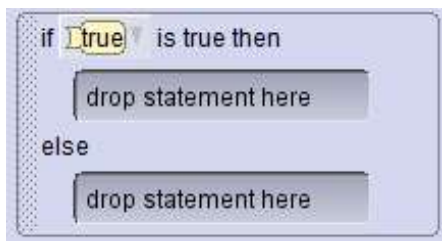# Making Decisions with If statements
October 1, 2024

Prof. Susan Rodger

Announcements

- Assignment 3 due Oct 8!
  - Don't forget the reflect form
- Videos and QZ10 due Thursday, Oct 3 when class starts

- Don't get behind, be sure to check your grades on Canvas 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
```

Q1 Panda distanceTo

- What does this code do when it executes?

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else
    (this.panda) say "I'm here" add detail
```

   – 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?

   – NO! only one happens

Q2. Create line w/ Panda distanceTo
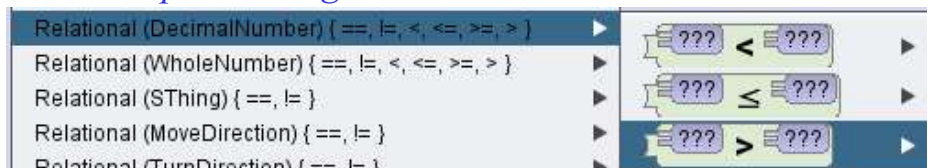
- How does one create **first line** of this code?

```
if [ (this.panda) getDistanceTo (this.bunny) > 2.0 ] is true then
    (this.panda) moveToward (this.bunny) , 2.0 add detail
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    (this.panda) say "I'm here" add detail
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Q2. Create line w/ Panda distanceTo

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```

   – First drag in an IF tile and select True

   – Then click on True and select *decimal number compare with greater than*

```
Relational (DecimalNumber) { ==, !=, <, <=, >=, > }        ???  <  ???
Relational (WholeNumber) { ==, !=, <, <=, >=, > }          ???  ≤  ???
Relational (SThing) { ==, != }
Relational (MoveDirection) { ==, != }                      ???  >  ???
Relational (TurnDirection) { ==, != }
```

Q2. Create line w/ Panda distanceTo

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

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

- First drag in an IF tile and select True
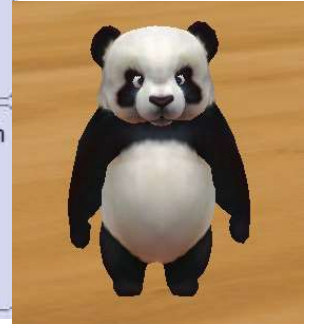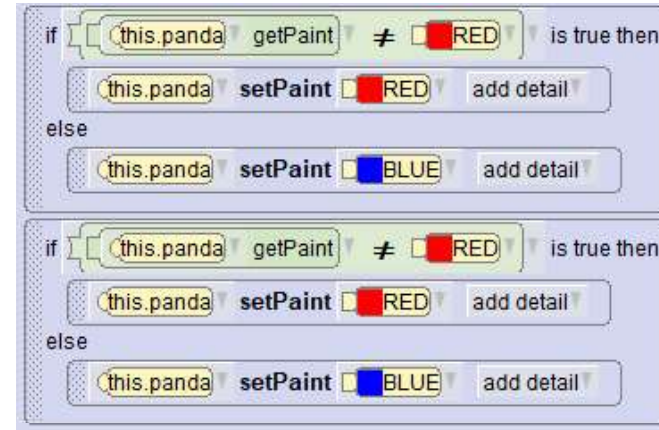- Then click on True and select *decimal number compare with greater than*
- Select numbers 1.0 and 2.0

```
if [ 1.0 > 2.0 ] is true the
```

- Replace the 1.0 by dragging the function over it

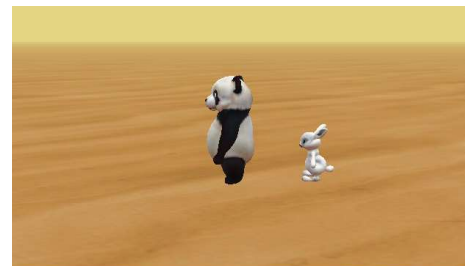# Q3 Making decisions - If statement

- What happens when this code runs?

```
if [ (this.panda) getPaint ≠ RED ] is true then
    (this.panda) setPaint RED   add detail
else
    (this.panda) setPaint BLUE   add detail

if [ (this.panda) getPaint ≠ RED ] is true then
    (this.panda) setPaint RED   add detail
else
    (this.panda) setPaint BLUE   add detail
```

Q3 Making decisions - If statement

- What happens when this code runs?

```
if [ (this.panda) getPaint ≠ RED ] is true then
    (this.panda) setPaint RED   add detail
else
    (this.panda) setPaint BLUE   add detail

if [ (this.panda) getPaint ≠ RED ] is true then
    (this.panda) setPaint RED   add detail
else
    (this.panda) setPaint BLUE   add detail
```

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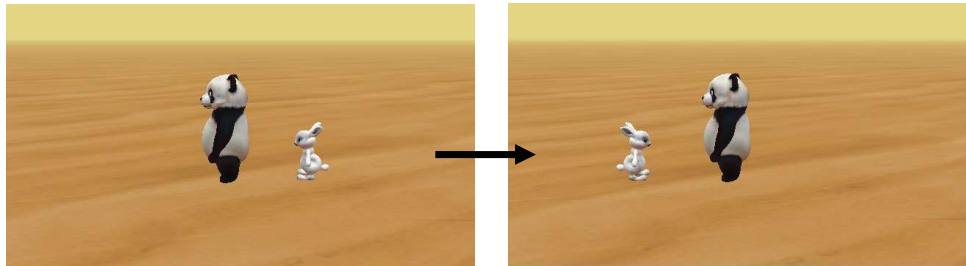
Q5 Execute a copy of the if again?
(execute the same code a second time)

```
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?

```
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?
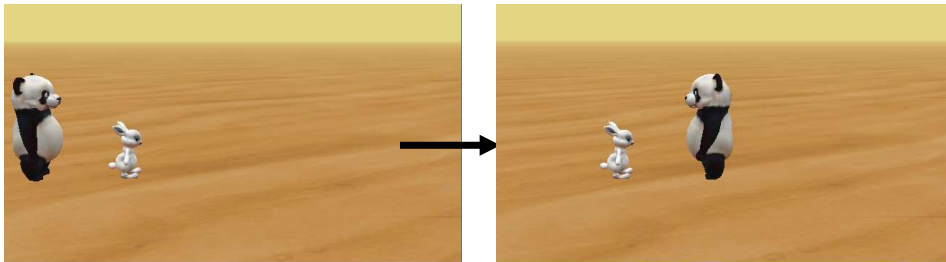
Class Today

- Working with making decisions

I'm taller