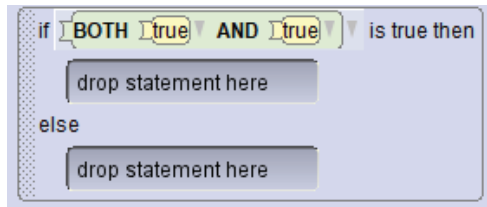


CompSci 94

Logic with Ifs, Nested Ifs

October 7, 2021



Prof. Susan Rodger

Announcements

- Next QZ and Videos due Tuesday when class starts
 - They are up!

Q1. Review Nested IF

- What happens if the diningTable has width 1.7 and depth 1.0?



Q1. Review Nested IF

- What happens if the diningTable has width 1.7 and depth 1.0?
 - diningTable says hello and is resized larger by 1.2



Q2. Logic Review

- What are possible values of A and B
 - if **A and B** is True?
 - if **A or B** is True?
 - if **A or B** is False?

Q2. Logic Review

- What are possible values of A and B
 - if **A and B** is True?
 - A must be True, B must be True
 - if **A or B** is True?
 - A must be True or B must be True
 - if **A or B** is False?
 - A must be False, B must be false

Logic Truth Table

| A | B | not A | A and B | A or B |
|-------|-------|-------|---------|--------|
| True | True | False | True | True |
| True | False | False | False | True |
| False | True | True | False | True |
| False | False | True | False | False |

Logic Truth Table

A AND B is **true** only if both A and B are **true**

| A | B | not A | A and B | A or B |
|-------|-------|-------|---------|--------|
| True | True | False | True | True |
| True | False | False | False | True |
| False | True | True | False | True |
| False | False | True | False | False |

Logic Truth Table

A OR B is **false** only if both A and B are **false**

| A | B | not A | A and B | A or B |
|-------|-------|-------|---------|--------|
| True | True | False | True | True |
| True | False | False | False | True |
| False | True | True | False | True |
| False | False | True | False | False |

Q3. Consider this code – Nested Ifs How would you write it with ONE IF?

```

if (this.diningTable.getOpacity() > 0.99) is true then
  if (this.alien.isBehind(this.diningTable) add detail) is true then
    this.alien.serveFood()
  else
    this.alien.say("No service today") add detail
else
  this.alien.say("No service today") add detail
  
```

Rewrite Code - one IF with AND

```

if BOTH (this.diningTable.getOpacity() > 0.99) AND (this.alien.isBehind(this.diningTable)
  this.alien.serveFood()
else
  this.alien.say("No service today") add detail
  
```

Q4. What does bunny say?

```

if BOTH (this.bunny.getPaint() == RED) AND (this.panda.getHeight() > this.bunny.getHeight())
  this.bunny.say("first") add detail
else
  if (this.panda.getHeight() <= this.bunny.getHeight()) is true then
    this.bunny.say("second") add detail
  else
    if (this.bunny.getPaint() != RED) is true then
      this.bunny.say("third") add detail
    else
      this.bunny.say("fourth") add detail
  
```

Bunny is red to start.



Q4. What does bunny say?

```

if BOTH (this.bunny.getPaint == RED) AND (this.panda.getHeight > this.bunny.getHeight)
  (this.bunny.say first) add detail
else
  if (this.panda.getHeight <= this.bunny.getHeight) is true then
    (this.bunny.say second) add detail
  else
    if (this.bunny.getPaint != RED) is true then
      (this.bunny.say third) add detail
    else
      (this.bunny.say fourth) add detail
  
```

Bunny is red to start.



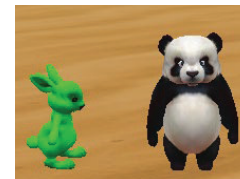
Bunny says: second

Q5. Bunny different. What does bunny say?

```

if BOTH (this.bunny.getPaint == RED) AND (this.panda.getHeight > this.bunny.getHeight)
  (this.bunny.say first) add detail
else
  if (this.panda.getHeight <= this.bunny.getHeight) is true then
    (this.bunny.say second) add detail
  else
    if (this.bunny.getPaint != RED) is true then
      (this.bunny.say third) add detail
    else
      (this.bunny.say fourth) add detail
  
```

Bunny is green to start.

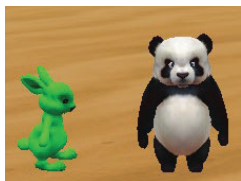


Q5. Bunny different. What does bunny say?

```

if BOTH (this.bunny.getPaint == RED) AND (this.panda.getHeight > this.bunny.getHeight)
  (this.bunny.say first) add detail
else
  if (this.panda.getHeight <= this.bunny.getHeight) is true then
    (this.bunny.say second) add detail
  else
    if (this.bunny.getPaint != RED) is true then
      (this.bunny.say third) add detail
    else
      (this.bunny.say fourth) add detail
  
```

Bunny is green to start.



Bunny says: third

Q6. Give an example to make bunny say fourth

```

if BOTH (this.bunny.getPaint == RED) AND (this.panda.getHeight > this.bunny.getHeight)
  (this.bunny.say first) add detail
else
  if (this.panda.getHeight <= this.bunny.getHeight) is true then
    (this.bunny.say second) add detail
  else
    if (this.bunny.getPaint != RED) is true then
      (this.bunny.say third) add detail
    else
      (this.bunny.say fourth) add detail
  
```

Q6. Give an example to make bunny say fourth

```

if BOTH (this.bunny.getPaint() == RED) AND (this.panda.getHeight() > this.bunny.getHeight())
  (this.bunny.say("first")) add detail
else
  if (this.panda.getHeight() <= this.bunny.getHeight()) is true then
    (this.bunny.say("second")) add detail
  else
    if (this.bunny.getPaint() != RED) is true then
      (this.bunny.say("third")) add detail
    else
      (this.bunny.say("fourth")) add detail
  
```

Bunny is painted red AND
Panda is shorter than bunny

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Give an example to make bunny say fourth

```

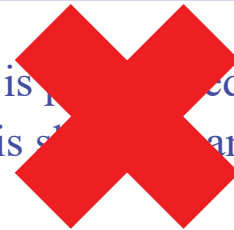
if BOTH (this.bunny.getPaint() == RED) AND (this.panda.getHeight() > this.bunny.getHeight())
  (this.bunny.say("first")) add detail
else
  if (this.panda.getHeight() <= this.bunny.getHeight()) is true then
    (this.bunny.say("second")) add detail
  else
    if (this.bunny.getPaint() != RED) is true then
      (this.bunny.say("third")) add detail
    else
      (this.bunny.say("fourth")) add detail
  
```

Bunny is painted red AND
Panda is shorter than bunny

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NO!!!!!!!!!!!!!!
No way bunny will
ever say fourth!

Class Today

- Nested Ifs, Logic – and/or/not



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