CompSci 94
Writing your own Functions
October 22, 2019

Prof. Susan Rodger
Q1. Function vs Procedure

• What is the difference between a function and a procedure?
Q1. Function vs Procedure

• What is the difference between a function and a procedure?
  – Procedure is something to do – turn, move, dance
  – Function is a calculated value – a number, an object, a direction
  – A function by itself is not very useful, a function has to be used in some way based on the type of value it calculates
Q2. Write a function called tallerHeight to compute the height of the tallest of two objects.

- What type of function should it be? Where do you create it?

- What is the return type?

- Need two parameters, what are their types?
Q2. Write a function called tallerHeight to compute the height of the tallest of two objects

- What type of function should it be? Where do you create it?
  - Scene function
    - Like to be able to use it for any two objects

- What is the return type?
  - DecimalNumber

- Need two parameters, what are their types?
  - SJointedModel
    - Then works for any creatures
Can write your own functions

Function for Scene    OR    Function for character

Use scene function if it involves multiple objects
Create Scene function tallerHeight

• Inputs: two objects
• Output (return value): the height of the taller object
• Return type: decimalNumber
Parameters - SJointedModel

class SJointedModel

procedures
- straightenOutJoints
- say
- think

class SModel (inherit)

procedures
- setVehicle
- setPaint
- setOpacity
- setWidth
- setHeight
- setDepth
- resize
- resizeWidth
- resizeHeight
- resizeDepth

functions
- getPaint
- getOpacity
- getWidth
- getHeight
Q3 What line of code do we have to put in every function?

• Return statement!
  – Must return the same type as the specified return value.
Q3 What line of code do we have to put in every function?

- **Return statement!**
  - Must return the same type as the specified return value.
Q4 What is the code for tallerHeight?
Q4 What is the code for tallerHeight?
Q4 What is the code for tallerHeight?

```plaintext
function tallerHeight
    with parameters: SJointedModel animal1, SJointedModel animal2

do in order
    if animal1 getHeight > animal2 getHeight is true then
        return animal1 getHeight
    else
        return animal2 getHeight
```

CompSci 94 Fall 2019
Q5 Given a bear and a flamingo, how does one use the function tallerHeight?

- Have panda say what the taller height is of the bear and flamingo.
Q5 Given a bear and a flamingo, how does one use the function tallerHeight?

- Have panda say what the taller height is of the bear and flamingo.

```plaintext
declare procedure myFirstMethod

do in order

this.panda say "The taller height of bear and flamingo is "

this.tallerHeight animal1: this.bear, animal2: this.flamingo
```
Q5 Given a bear and a flamingo, how does one use the function tallerHeight?

- Have panda say what the taller height is of the bear and flamingo.

```
declare procedure myFirstMethod

do in order

    this.panda say "The taller height of bear and flamingo is"

    this.tallerHeight animal1: this.bear, animal2: this.flamingo

The taller height of bear and flamingo is 1.647032954975202
```
Q6. Write a function called tallerObject to return the object who is taller of two objects.

• What type of function should it be? Where do you create it?

• What is the return type?

• Need two parameters, what are their types?
Q6. Write a function called tallerObject to return the object who is taller of two objects.

• What type of function should it be? Where do you create it?
  – Scene function
    • Like to be able to use it for any two objects

• What is the return type?
  – SJointedModel

• Need two parameters, what are their types?
  – SJointedModel
    • Then works for any creatures
Q7 What is the code for tallerObject?
Q7 What is the code for tallerObject?
Q7 What is the code for tallerObject?

declare SJointedModel function tallerObject
with parameters: SJointedModel creature1, SJointedModel creature2

do in order
if creature1 getHeight > creature2 getHeight is true then
return creature1
else
return creature2
Q8 How do you get the taller of the bear and flamingo to say they are taller?
Q8 How do you get the taller of the bear and flamingo to say they are taller?
Q9 How do you write code for?

• The taller of the bear and flamingo to turn around once
• The bear to double in size (so it is taller)
• The taller of the bear and flamingo to turn around once.
Q9 How do you write code for?

Use tallerObject function in place of an object.
Q9 When code runs...

1. Flamingo turns
2. Bear gets bigger
3. Bear turns
Q10 What does this code do?
Q10 What does this code do?
Q10 What does this code do?

- The taller animal (flamingo) is stored in variable creature.
- Flamingo turns around, then bear gets bigger.
- Then Flamingo turns around again!
Q10 What does this code do?

- In the last line if we want the taller of the two to turn around, we MUST call the function again to recalculate the taller one, since the bear changed its height.
Announcements

• RQ and videos for Thursday
• Assignment 4 is out and due Oct 31.
Class Today

- Jumping cat calculating how high and how far to jump, and other things…