CompSci 94
Writing your own Functions
October 21, 2021

Prof. Susan Rodger
Announcements

• Sakai QZ and videos for Tuesday
• Assignment 4 due Oct 28
Function vs Procedure

• What is the difference between a function and a procedure?
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
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?
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

Assignable From:
- Contains

Selectable from the lowest common ancestor assignable from the items below:
- myScene
- ground
- camera
- eagle
- flamingo
- bear
- panda

Available Procedures, Functions, and Properties:

**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
Q1. What line of code do we have to put in every function?
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• Return statement!
  – Must return the same type as the specified return value.
Q2 What is the code for tallerHeight?
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```
declare DecimalNumber function tallerHeight

with parameters: SJointedModel animal1, SJointedModel animal2
```
Q2 What is the code for tallerHeight?

```
declare DecimalNumber function tallerHeight
with parameters: SJointedModel, animal1, SJointedModel, animal2

do in order
    if animal1 getHeight > animal2 getHeight
        return animal1 getHeight
    else
        return animal2 getHeight
```
Q3 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.
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- Have panda say what the taller height is of the bear and flamingo.

The taller height of bear and flamingo is 1.647032954975202
Q4. 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?
Q4. 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
Q5 What is the code for tallerObject?
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Q5 What is the code for tallerObject?
Q6 How do you get the taller of the bear and flamingo to say they are taller?
Q6 How do you get the taller of the bear and flamingo to say they are taller?
Q7 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.
Q7 How do you write code for?

Use tallerObject function in place of an object.
Q7 When code runs...

1. Flamingo turns
2. Bear gets bigger
3. Bear turns
One more Question
What does this code do?
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!
• 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.
Class Today

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