CPSC203 – Introduction to Problem Solving and Using Application Software

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Introduction

- Object Oriented Programming
- Classes
- Objects
- Methods
- World-Level Methods
- Class-Level Methods

Object Oriented Programming

- Programs can easily become long and complicated.
- The longer a program becomes, the more difficult it becomes to debug and modify, not to mention understanding it.
- This is why a paradigm known as object-oriented programming (OOP) is commonly used.

Object Oriented Programming

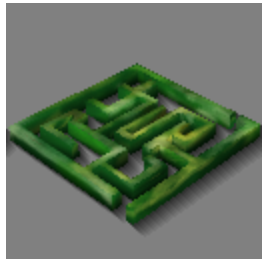
- OOP allows large programs to be broken down into smaller, more manageable pieces.
- The main components of OOP are *classes, objects* and *methods.*

Classes

- All of the types of models that can be added into the world are known as classes.
- For example, car, truck, and chicken are three classes in Alice.
- Classes have properties and methods.







Objects

- Once an instance of a class is added to the world, it is known as an object.
- Objects of the same class share the same methods and properties.
- Objects of the same class have different names and can have different values for their properties.

Methods

- A method is a sequence of instructions that can be called upon when needed.

- There are two types of methods: world-level and class-level.

World-Level Methods

- World-level methods are ones which give instructions to more than one object.

- For instance, a world method called makeConversation, could ask the skater and snowman to discuss the weather with each another.

Class-Level Methods

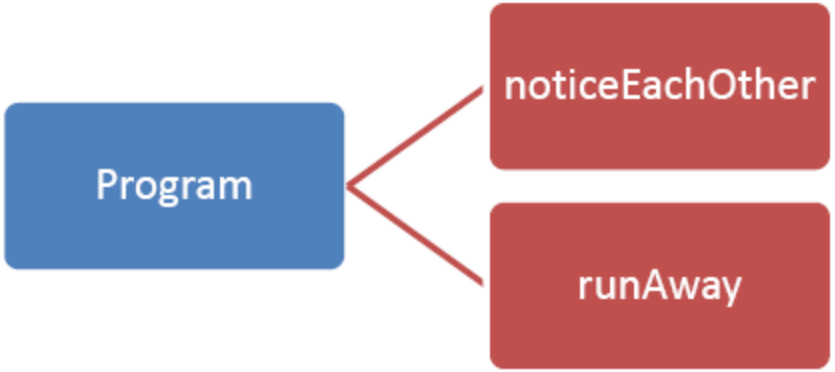
- Class-level methods only give instructions for a single object.

- For instance, we may write a skate method for the iceskater and a hop method for the bunny.

Adding World-Level Methods

- Grab the following file from:
  http://pages.cpsc.ucalgary.ca/~kawash/peeking/tutorials/lab4egypt.a2w

- The program is broken down into two world-level methods.



Adding World-Level Methods

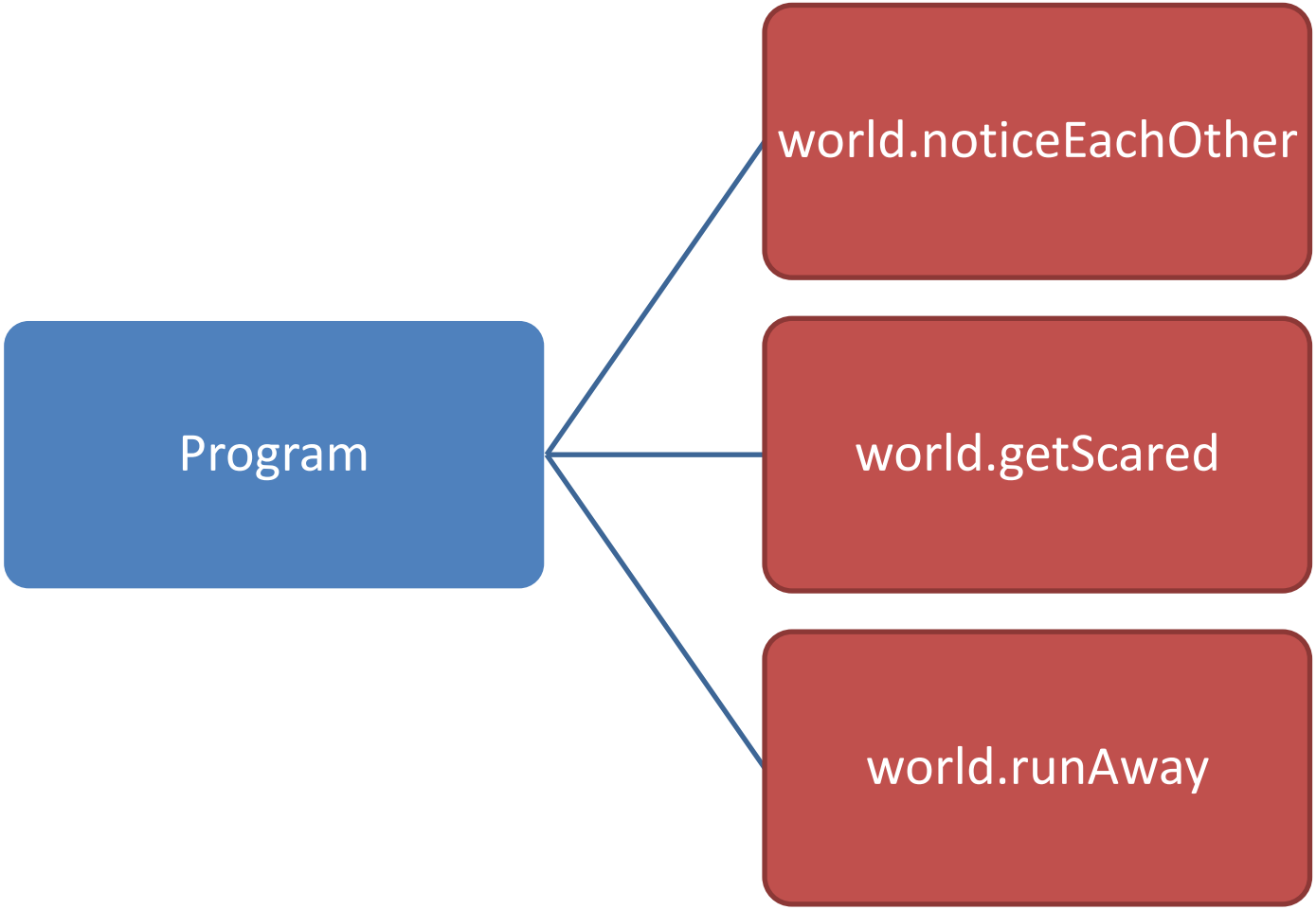
- First, the mummy and the pharaoh are oblivious to one another.
- They then notice each other (*noticeEachOther*), and the pharaoh runs away (*runAway*).

Adding World-Level Methods

- Let us add another world-level method called *getScared*, in between *noticeEachOther* and *runAway*.

- In this method, we want the camera to focus on the mummy, then show him/her scared. The same should then happen to the pharaoh.

Adding World-Level Methods



Exercise

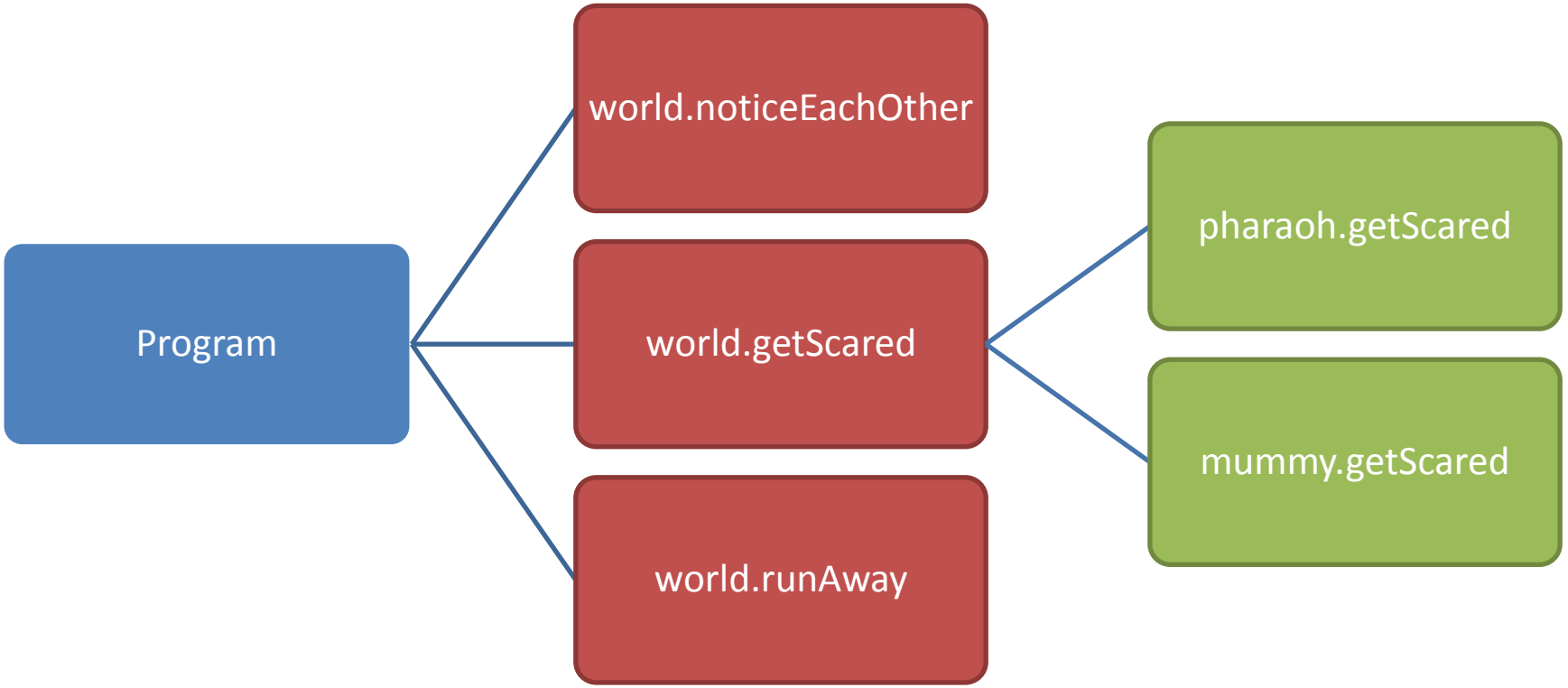
- Write *getScared* method so that after the camera is set to show the pharaoh more closely.
- Note: Use camera's method "set point of view to " and set the point of view to mummy's neck.

- Get the pharaoh's beard and nose to grow by 1.2, and at the same time, for his hat to spin 1 full revolution. This should happen while the pharaoh yells "Aaaaah!".

Adding Class-Level Methods

- It would be much neater if all of the code we just added for the pharaoh was in its own method.
- Since these instructions are specific to the pharaoh, we can create a class-level method.
- Let's create the *getScared* code for the *pharaoh* and copy and paste the code from the *world.getScared* to *pharaoh.getScared*.

Adding Class-Level Methods



Exercise

- In the *world.getScared* method, set the camera point of view to the *pharaoh*'s head.
- After that, implement and call a *getScared* method for the *mummy* where his head grows by 1.2 then shrinks by 0.83 (1/1.2).
- At the same time, the mummy yells "Oooooh!"