OOP and Classes

Info 206

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Today's Quiz: http://bit.ly/2frVOHD

Today's Outline

1. Object-oriented Programming

2. Classes

3. Group Exercise

Object-Oriented Programming

Rule of Thumb

Objects are collections of data and the methods that operate on that data

"Programming is about managing complexity in a way that facilitates change."

~ John V. Guttag

Decomposition & Abstraction

Decomposition - creates structure in a program

Abstraction - suppresses details of a program

Object-Oriented Programming

A way of conceptualizing an entire program as a set of objects that interact with each other

- Modularity

- Polymorphism

- Encapsulation

- Inheritance

Classes

Classes

Allow us to build new object types that have common:

- Method attributes

- Data attributes

Method attributes

- functions within classes are called method attributes

- defined in a class definition as

- Class attributes apply to all objects in that class

- Class attributes are inherited by subclasses

- initializer method instantiates the class object so that it is ready to operate

- refers to the formal parameter to which the attribute is bound

- when instatiated, instance attributes are created

Data attributes

- class variables - associated with a class

- instance variables - associated with an instance if the class

Abstract data types

Abstraction is kind of a big deal.

Programming with design in mind.

Data abstraction encourages us to focus on data objects rather than functions.

Programming as a process of composing abstractions

Non programming examples of abstraction

- Finance: Stocks & Bonds

- Agriculture: Inputs & Yields

Group Exercise

Group Exercise

- Instructions are in bCourses
- Everyone was assigned at random to a group.
- Work with your group member to complete ONE assignment submission.
- Due at the end of today...Hopefully you can get through it in this class session

End of Meeting #11

For next meeting

- Videos:

    1. Class Inheritance (4 mins)
    2. Inheritance (21 mins)
    3. More Class Inheritance (17 mins)
    4. Using Polymorphism (15 mins)

- Readings:

    ○ Lutz Chapter 28: A More Realistic Example
    ○ Lutz Chapter 29: Class Coding Details