

Ch.1 Objects & Classes

Introduction to Objects, Classes, and Methods

What is object-orientation

The world around us is made up of many objects. Our actions and interactions in the world are largely based upon the structure, abilities, and limitations of these objects.

Object-orientation, in terms of computer programming, is where we view the elements of our computer program in the same way. A program is made up of objects, and each object has structure, abilities, and limitations.

Object

An object is any model we create to help us solve a particular problem. We often use objects to model items from the real world, as the most important problems to solve are real-world problems.

e.g., To model traffic flow patterns, we need to model automobiles. We might also model roads, traffic lights, pedestrians, weather, etc. All of these items and concepts would be represented as objects.

Class

A class is an *abstraction* of an object. Rather than referring to a specific object, the class represents the concept, or idea, that defines the object.

The term *blueprint* is also used to help understand a class.

e.g., The class for an automobile describes four doors, a steering wheel, gas pedal, and brake pedal. All cars share these conceptual components.

Instance

An instance of a class is a specific representation, or example, of that class. An object is an instance created from the *class*.

e.g., In the parking lot, you may find a silver Honda Civic with four doors and a scratch on the hood. This object is a very specific *instance* of the automobile class.

Method

In order to be useful, we need to be able to interact with our objects in some way. Object interactions are accomplished using methods.

Methods are the actions defined by the class, which can be *invoked*, or called, on the instance.

e.g., An automobile is designed (in the class) to slow down by braking, but to actually slow down a car, you have to press the brakes on a real car (an instance of the object).

Class Exercises

Every student should:

- install Java and BlueJ on your

Working alone or in pairs:

- get a copy of the text
- read through sections 1.1 through 1.5
 - follow the provided instructions for working with BlueJ
 - try the additional exercises