Chapter 1: Objects

Programming with Alice and Java
First Edition

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Objectives

- Be introduced to Alice and Java and how they're used in this book.
- Create virtual worlds in Alice.
- Call methods on objects to make them behave in particular ways.
- Explore the set of methods that are available to all Alice objects.
- Set and modify the properties of an object.
- Creating new objects from predefined classes.
- Cause multiple animation actions to occur at the same time.
- Explore composite objects and interact with a composite's individual parts.

Computer Programming

- Object-oriented programming (OOP) – create and manage objects.
- Objects: a character in animation, a scoreboard in the game, friends, etc.
- Programmers create objects they need and tell them how they should behave

Alice and Java

- Alice is a computer environment in which you create virtual worlds containing three-dimensional characters and objects that move and interact.

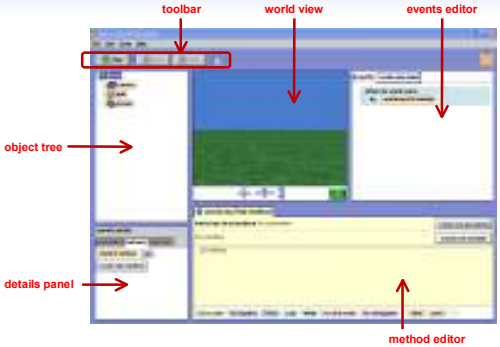
- Both Alice and Java use an object-oriented approach.
- Java is a general-purpose programming language.

The Alice Environment

- Alice is an *integrated development environment* (IDE) – a program used to create and run another program.
- Versions for Windows and Mac OS are available from the Alice website: *www.alice.org*.

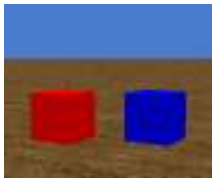
- run a tutorial;
- open a world that has been opened recently;
- start a new world;
- explore several example worlds;
- open a world that has been stored.

The Alice Environment (continued)



Objects

- All objects contained in the Alice world are listed in the object tree.
- All Alice worlds have objects that represent camera and light source.
- Most worlds have a ground surface.
- There is a collection of templates and collections of objects.
- Camera controls set the initial point of view.



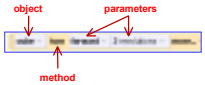
The object tree 

The camera controls 

Methods

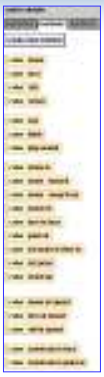
- A *method* is a set of statements that can be *called.*
- Methods define every object's behavior.
- The world object in every animation has a method called my first method.
- There are several *control statements* available in Alice.

- Calling a method – *sending a message* to an object.
- Methods can accept parameters.



Methods (continued)

- Built-in methods exist for almost all objects in Alice
- Other methods can be developed and added.
- Some useful methods are:
  - say
  - think
  - sound
- Special methods—*functions* are used to get some information about an object



Properties

- *Properties* describe an object's state at any point in time.
- The value of the property can be changed directly or during animation, using method call.
- There are hidden properties for the objects.

Classes

- An object is created from a *class*.
- Class determines the methods and properties the object has.
- Classes are organized into *galleries*.
- There are built-in galleries; they are also available through the Web.

Do Together Statement

- The Do Together statement allows several things to be done simultaneously.

Do In Order Statement

- The Do In Order statement forces the statements it contains to be executed in order.

Composite Objects

- A *composite object* is an object that contains other objects.
- It is possible to control the whole object or any of its parts.

Summary

- Programming no longer has to be a complex, arcane experience.
- In object-oriented programming, objects and their behavior are created.
- Alice and Java use an object-oriented approach.
- A development environment is a program used to create and run another program.
- To get an object to do something, we call one of its methods.
- A method's parameters provide additional information that tailors its behavior.
- All Alice objects have a set of built-in methods. We can add more.
- An object's properties describe its current state.
- An object is created from a class. In Alice, classes are organized into galleries.
- A composite object is made up of other objects. We can control both the whole object and its parts.