[An Introduction to Programming Using Alice, 2](http://www.course.com/catalog/product.cfm?isbn=1-4188-3625-7&CFID=12378517&CFTOKEN=60633041)[nd](http://www.course.com/catalog/product.cfm?isbn=1-4188-3625-7&CFID=12378517&CFTOKEN=60633041) [Ed.](http://www.course.com/catalog/product.cfm?isbn=1-4188-3625-7&CFID=12378517&CFTOKEN=60633041)   
By Charles W. Herbert

Answers to Chapter 1 Review Questions

1. ***Define the following terms:***

**algorithm**

An algorithm is a step-by-step process.

**class**

A class is a group of objects with the same properties and the same methods

**computer program**

A computer program is a step-by-step set of instructions telling a computer how to perform a specific task. As such, every computer program is an algorithm.

**computer programming language**

A computer programming language is a particular set of instructions for programming a computer, along with the grammar and syntax for using those instructions.

**event**

An event consists of a condition, called an event trigger, and the name of a method, called an event handler. Whenever the event trigger occurs, the event handler is called into action.

**function**

A function is a method that returns a value, such as the distance between two objects.

**IDE**

IDE stands for Integrated Development Environment (IDE). An IDE is a computer program that is used to write other computer programs.

**instance**

Each copy of an object from a particular class is called an instance of the object.

**instantiation**

The act of adding an instance of an object class to an Alice world is called instantiation. Other object–oriented programming languages use similar terminology.

**method**

The programs that manipulate the properties of an object are called the object’s methods.

**method parameter**

A piece of information that you must give to a method whenever you use the method is called a method parameter.

**object**

An object is simply something that can be represented by data in the computer’s memory and manipulated by computer programs. We can think of an object as a collection of properties and the methods that are used to manipulate those properties.

**OOP**

OOP stands for object-oriented programming, which is a modern approach to computer programming focusing on objects as collections of properties and the methods that are used to manipulate those properties.

**property**

The data that represents an object is organized into a set of properties. Each property describes the object in some way.

**state of an object**

The values stored in the properties of the object at any one time are called the state of the object.

1. ***List and describe the five tabs in the Welcome to Alice! dialog box that appear when the Alice software is first started.***

The Welcome to Alice! dialog box has five tabs: Tutorial, Recent Worlds, Templates, Examples, and Open a world.

The Tutorial tab contains several tutorials created by the developers of Alice to help people learn to use Alice.

The Recent Worlds tab contains links to the most recently saved Alice worlds.

The Templates tab has six blank templates for starting a new virtual world: dirt, grass, sand, snow, space, and water. Each template includes a texture for the ground and a background color for the sky.

The Examples tab has several example worlds that are included with the Alice software.

The Open a world tab is used to open Alice worlds, and is very similar to the “Open File” windows seen in other programs, such as Microsoft Word.

1. ***Describe the role of each of the five main areas of the Alice interface: the World window, the Object tree, the Details area, the Editor area, and the Events area.***

The World window contains a view of the current Alice world.

The Object tree shows the objects in the current Alice world organized as a tree of tiles, with a tile for each object.

The Details area of the Alice interface has tabs to show properties, methods, and functions for the currently selected Alice object.

The Editor area is used to assemble Alice methods by clicking and dragging tiles from other parts of the interface. The bottom of the Editor area has a row of logic and control tiles that can be used to put branching, looping, and other logical structures into Alice methods.

The Events area shows Alice existing events and is used to create new events.

1. ***What is the difference between a method and a function?***

A method is a program that manipulates the properties of an object. A function is a method that returns a value.

1. ***Briefly describe how to do each of the following:***
   1. ***Add an object to an Alice world.***

An Object can be added to an Alice world by selecting the object’s tile in one of the object galleries in Scene Editor mode, and clicking the add object button.

* 1. ***Delete an object from an Alice world.***

You can delete an object by dragging and dropping it on the Alice trash can icon. You can also delete an object by right-clicking on the object and selecting delete from the menu that appears.

* 1. ***Change the value of a method parameter.***

The value of a method parameter can be initialized by right-clicking the parameter and selecting a new value from the menu that appears. An instruction to set the value of a parameter can be placed in the currently active method by dragging the parameter tile from the method header into the body of the method.

* 1. ***Capture and store an image of an Alice world while it is playing.***

The Take Picture button captures an image of the currently playing Alice world and saves it in a data file.

* 1. ***Save an Alice world.***

An Alice world can be saved using the Save World and Save World AS commands found on the File menu, similar to save commands for other Windows programs.

* 1. ***Print the code from an Alice world.***

The code for methods and events in Alice worlds can be exported to a Web page, using the Export Code for Printing feature on Alice’s File menu. The resulting Web page can then be viewed and printed using any standard HTML Web browser, such as Internet Explorer, Mozilla Firefox, or Apple Safari.

* 1. ***Save an Alice world as a movie file***

An Alice world can be saved as a movie file by selecting the *Export Video* option found on the *File* menu***.*** When this option is chosen, a recording window will appear, First you must save the world using the window’s *Save* button, then use the *Record* button to start recording, the *Stop Recording* button to finish recording, and the *Export Video* button to export the recorded video.

1. ***What is the difference between the Pause and Stop buttons in the window for a playing Alice world?***

The Pause and Resume buttons work together like the pause and play buttons on a VCR or DVD, pausing and playing a world and then resuming it from the point at which it was paused. The Stop button stops the world that is currently playing and returns you to the standard Alice interface. Once the Stop button is pressed, you will need to click the standard interface’s Play button to replay the world.

1. ***What is the function of the speed slider control in Alice?***

The speed slider is used to change the speed of the world while it is playing.

1. ***What is the difference between the standard Alice interface and Scene Editor mode?***

In the Scene editor mode the the Events area and Editor area from the standard Alice interface are not visible. The World window is larger, with Scene Editor controls appearing to the right of the window, and the Alice object galleries are visible at the bottom of the screen.

1. ***List and describe the function of the following Scene Editor layout tools: the Pointer tool, the Vertical tool, the Turn tool, the Rotate tool, and the Tumble tool.***

Pointer tool

Selects an object and moves the object parallel to the ground. (X-Y plane movement)

Vertical tool

Moves an object up or down. (Z-axis movement)

Turn tool

Turns an object parallel to the ground. (X-Y plane rotate)

Rotate tool

Rotates an object forward or backward (Z-axis rotate).

Tumble tool

Freely turns and rotates an object in any direction.

1. ***Alice methods have full method names, such as robot.dance. Describe the meaning of the two different parts of the full method name.***

There are two parts in the full name of each Alice method, separated by a period. The name of the object with which the method is associated comes before the period, and the specific name of the method comes after the period. In this case, robot is the object and dance is the specific name of the method.