Getting Started with Java Using Alice

Prepare for this Course

Objectives

This lesson covers the following objectives:

- Describe the purpose for using Alice 3 to learn Java
- Check system requirements needed for the course
- Install necessary software for the course

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What is Java?

Have you ever wanted to build a video game or make an animated movie? Are you interested in making your own smartphone application?

Many of today's video games, movies, and smartphone applications are created using the Java programming language.

Java is a programming language and computing platform developed by Sun Microsystems in 1995. Java runs on more than 850 million personal computers worldwide, and on billions of devices worldwide, including mobile and TV devices.

Learn More about Java

Java allows you to play online games, chat with people around the world, use interactive maps, and view three-dimensional images.

- Visit this link to see videos of Java in action: http://www.java.com/en/java_in_action/
- Watch this video to learn more about Java technology: http://www.java.com/en/download/whatis_java.jsp

What is Alice 3?

Alice 3 is an integrated development environment (IDE) that helps you quickly and easily learn the basics of computer programming using characters that interact in a virtual 3D world. It was created by Carnegie Mellon University.

The best part about Alice 3 is that you learn to program without even realizing it, and it's fun!
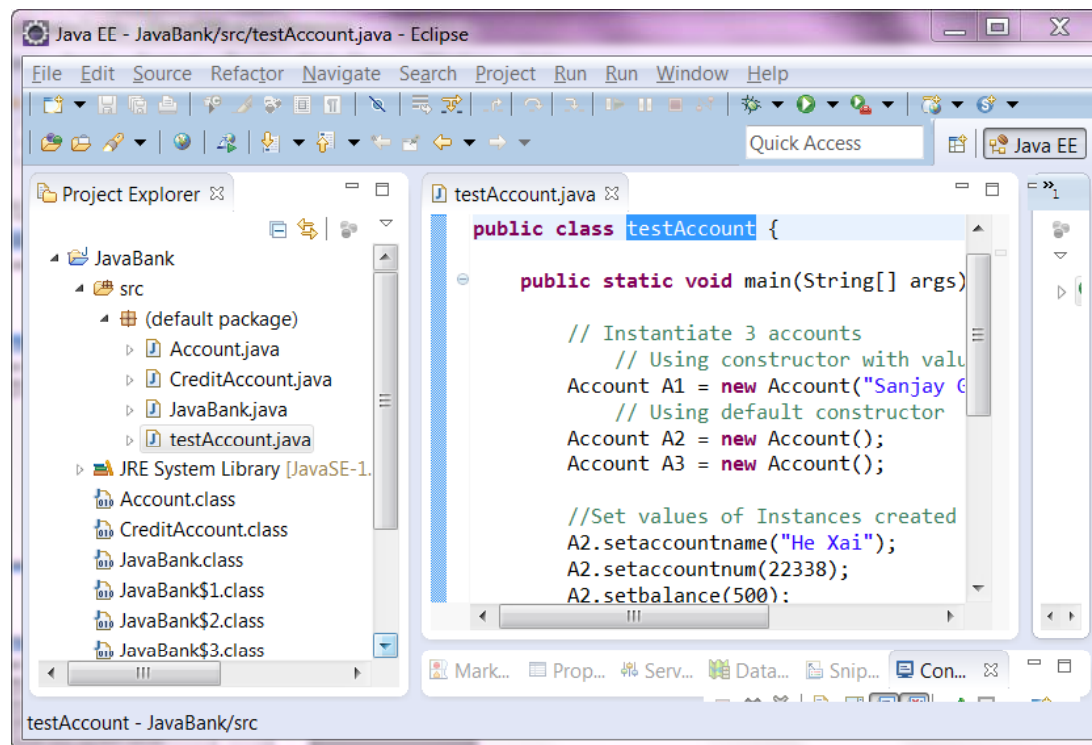
Java is Designed for Production Systems

Java is a programming language that is designed to run in production systems like Amazon.com, Facebook, and Instagram.

The language and syntax can be difficult for beginners to understand at first, but Java is a powerful programming language that is rewarding to learn.

Sample Java Code

Below are several Java statements as viewed from within an open source IDE called Eclipse.
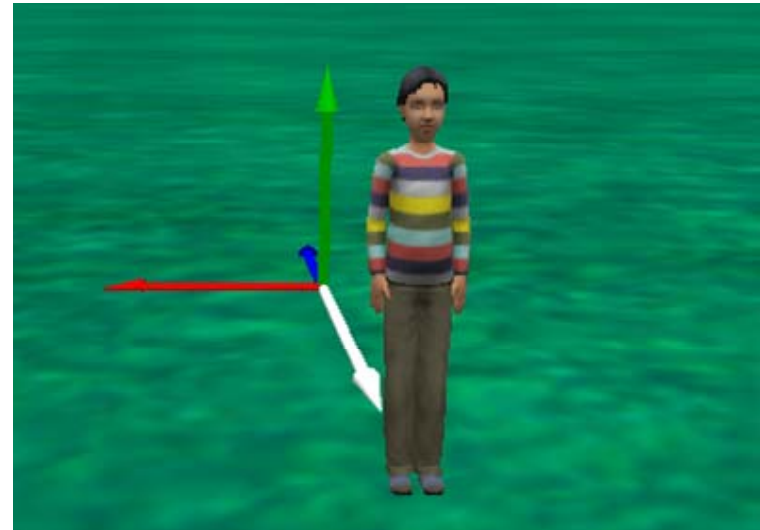
Alice Teaches Programming Theory

Alice is designed to teach solid programming theory minus the intimidation that typically accompanies the complex syntax and structural rules associated with most production languages.

Using Alice, you simply drag-and-drop objects from a gallery into a virtual world, and then link together programming statements that animate the objects in a fun and engaging way.

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Three-Dimensional Objects

Alice 3 uses three-dimensional ("3D") objects that programmers can drag-and-drop into a scene to create a virtual world.

A 3D object is one with width, depth, and height.

Virtual World

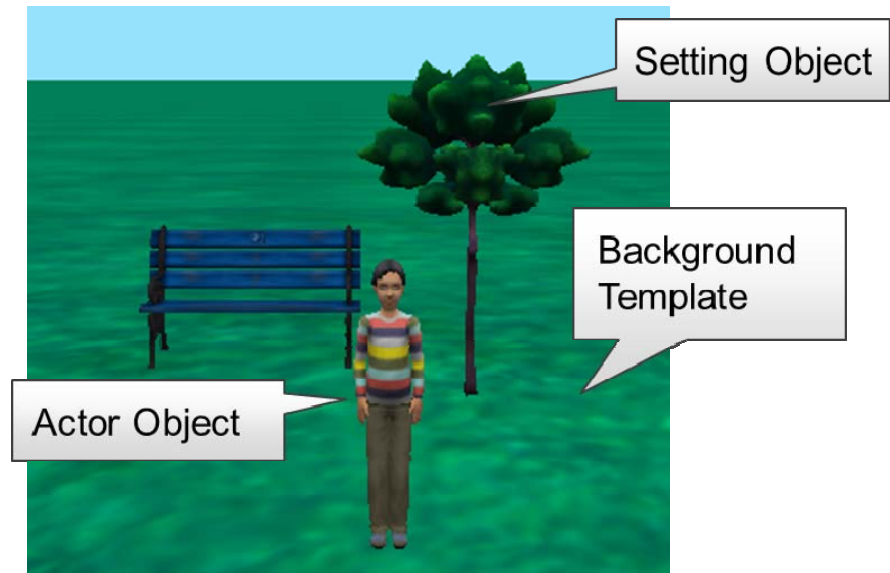You will use Alice 3 and your imagination to create a virtual world.

Your virtual world will contain the following 3D objects:

- The Setting: stationary objects (trees, rocks, or buildings).
- Actors: objects that move (people, animals, or vehicles).
- The Background: a template onto which you place both setting and actor objects.

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Virtual World Example

Here is an example of a 3D world or "virtual world". This virtual world has setting and actor objects, as well as a background template.
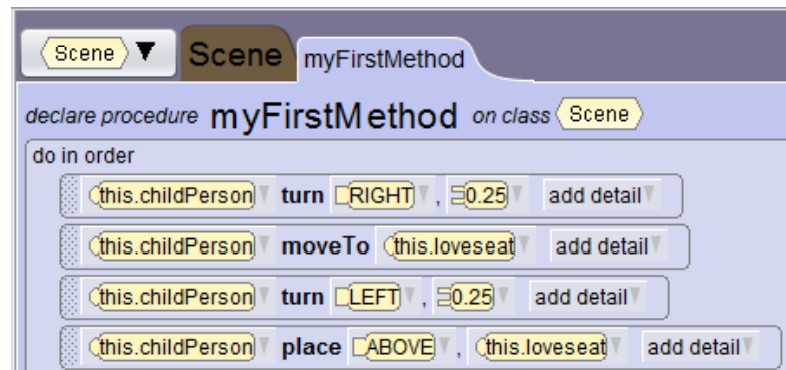
A virtual world contains 3D objects and simulates a real or imaginary physical environment.

Setting Object

Background Template

Actor Object

Programming Objects in an Animation

You can "program" the objects in the virtual world by dragging and sequencing tiles that represent logical programming structures.

These logical structures are programming instructions that correspond to standard statements in a production programming language such as Java.

Alice 3 Animations

The programming instructions in an Alice 3 project can be run to create an animation.

An animation is a series of independent still images that, when viewed rapidly one-after-another, creates the illusion of movement.

Rendering the Animation

As an animation creator, you will program the animation instructions in Alice 3, and Alice 3 will render the animation for you.

Rendering is the process whereby the system converts the still image frames into a seamless animation. Alice 3 does all of the work necessary to render the animation based on the instructions you provide for each object.

Summary

Alice is a programming environment that makes it easy and fun to create an animation for telling a story, playing an interactive game, or sharing a video on the web.

Students who have never learned a programming language enjoy using Alice because the interactive development environment is fun and engaging.

By learning Alice, you are actually learning how to program. Alice is also used at many colleges and universities in introductory programming courses.

Learn More About Alice 3

Visit the Alice 3 website to learn more:

http://www.alice.org/index.php?page=what_is_alice/what_is_alice

Check System Requirements

This course includes practice exercises that you can work on to reinforce the concepts being taught.

You need to have Flash, the Java Development Kit (JDK), and Alice 3 installed on your machine.

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System Requirements

Ensure that your system meets the minimum system requirements for running Alice 3.

System Component	Minimum Requirement
Processor	Pentium 4 or higher
Operating System	One of the following: •Windows XP and up •Apple OS X and up
Browsers	Any modern browser that supports Java: •Internet Explorer 6 and up •Firefox 3 and up •Chrome •Safari •Opera 4.x and up
Memory	1 GB
Free Disk Space	Free disk space: •Required: 1.5 GB •Recommended: 8 GB

System Requirements   **(continued)**

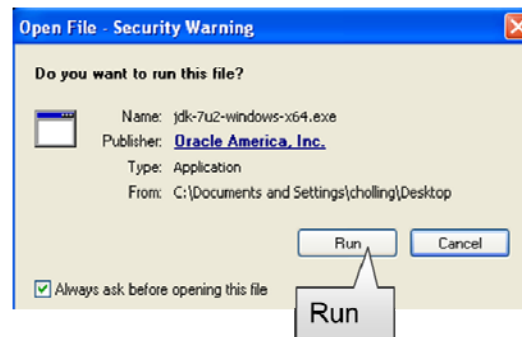| System Component	Minimum Requirement
Graphics	• Capable of high (16-bit) color and 1024 X 768 resolution • 3D video card recommended
Sound Card	Required
Software	• Adobe Flash Player (latest) • JDK 7 (see JDK download instructions) • Alice 3 (see Alice 3 download instructions)

Steps to Download the Java Development Kit

1. Open any Internet Browser and type the following URL : http://www.oracle.com/technetwork/java/javase/downloads

2. From the Java SE Downloads page, click the Download button for the Java Development Kit (JDK).

3. Review and accept the License Agreement.

4. Locate the JDK for your computer's operating system and click the download link.

5. If prompted, save the file to a location on your hard drive that you can easily remember, and click OK.

Steps to Launch the JDK Executable File

1. Locate and double-click the executable file to launch the installation.

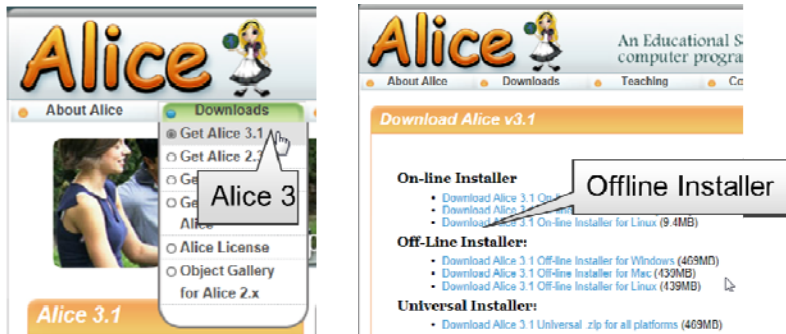2. When prompted to run the executable file, click Run.

Steps to Run the JDK Wizard

1. From the Installation Wizard, click the Next button.

2. To accept the default settings, click Next.

3. When prompted for installation location, click Next. If prompted, close the internet browser window.

4. Click Continue to acknowledge the successful installation.

5. You will be prompted to set-up the Software Developer Kit (SDK). Click Next.

6. When prompted for the installation location, click Next.

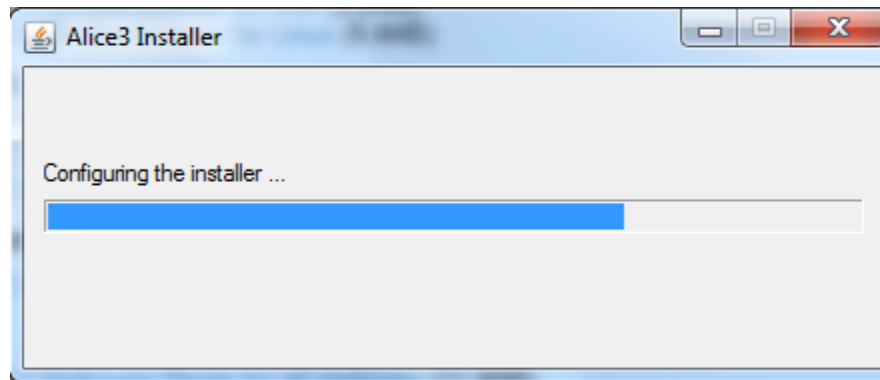7. When the set-up is complete, click Close.

Steps to Download Alice 3

1. Open any Internet Browser and enter the following URL: http://www.alice.org

2. From the Downloads list, select the Alice 3 link.

3. Locate and select the Alice 3 Offline Installer option for your computer platform.

4. When prompted, Save the Alice 3 Installer file.

Steps to Launch the Alice Installer Wizard

1. Locate the saved installer file.
2. Double-click the executable file. A progress window will appear.

3. Once the installer is downloaded, the Alice 3 Installer Wizard appears. Click Next to begin the installation.

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Steps to Install Alice 3

1. From the Installer Wizard, select the Install option.

2. To accept the default installation option, click Next.

3. Review the License Agreement.

4. If you agree, select the box next to "I accept the terms in the license agreement." Click Next to continue.

5. To accept the default setting that installs a desktop shortcut, click Next.

6. To begin the installation, click Install. A progress window will display during the Alice 3 installation.

7. To complete the installation, click Finish.

Steps to Launch Alice 3

1. After Alice 3 is installed, the Alice 3 icon will appear on your desktop.

2. Double-click the icon to launch Alice 3.

Universal Zip File

Vista, Windows 7, and Windows 8 all have a strong malware protection scheme that may resist installing non-standard software directly on the hard drive. Also, some Macintosh machines may resist the offline installer.

To reduce the likelihood of installation problems, download the Universal ZIP file for Alice 3 (instead of the Offline Installer file) if you are using one of these operating systems.

Steps to Download the Universal ZIP File

1. Go to the Alice website at: http://www.alice.org.
2. From the Downloads list, select the Alice 3 link.
3. Locate and select the Alice 3 Universal Installer option.
4. Download the zipped file to your desktop.

Steps to Install Alice 3 Using the Universal ZIP File

1. Unzip the file on the desktop.

2. Move the unzipped folder (containing all of Alice 3) to the Program Files (X86) folder on the C:\ drive.

3. Create a shortcut on the desktop to Alice3.bat.

4. Click the shortcut to launch Alice.

Alice 3 Download and Support Links

- Join the forum to get help from other users:
  - http://alice.org/community/
- Alice FAQs:
  - http://alice.org/index.php?page=faq
- Contact the Alice team:
  - http://alice.org/index.php?page=contact/contact

Summary

In this lesson, you should have learned how to:

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