



Computer Graphics Programming Java 3D

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Adapted from W. Shoaff's Course notes



Getting Started With Java 3D

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Java 3D Overview

- Java 3D is:
 - A high-level API for building interactive 3D applications and applets
 - A cross-platform API for developing 3D graphics applications: Write once, render anywhere in 3D
- Java 3D enables:
 - Quick development of complex 3D applications
 - Fast and efficient implementation on a variety of platforms, from embedded systems to PCs to high-end workstations



Java 3D Overview

- Using Java 3D, we can build applications that build 3D scenes:
 - Programmatically
 - Via 3D content loading from external files (VRML, OBJ, or others)
- The Java 3D API includes a rich and extensible feature set for
 - Building shapes
 - Composing behaviors
 - Interacting with the environment and the user
 - Controlling rendering details



Advantage and Disadvantage

- Advantage

- Fast Development, developers do not need to manipulate rendering details, they can focus on visual contents
- Scenes can be imported from external resources

- Disadvantage

- Less flexibility, limited shading models
- Relatively lower speed



Java 3D Books

- **Java 3D Programming** by Daniel Selman
- **Java 3D API Jump-Start** by Aaron E. Walsh, Doug Gehringer
- **Essential Java3D Fast: Developing 3D Applications in Java**; Ian Palmer; Essential Series: Springer- Verlag
- **Core Java 3D**: A. Walsh



More Java 3D Books

- **3D User Interfaces with Java 3D:** J. Barrilleaux; Aug. 2000
- **Java 3D API Specification**, 2nd Edition, H. Sowizral; Jun. 2000
- **Ready-to-Run Java 3D:** K. Brown, D. Petersen; Apr. 1999
- **Reality Architecture: Building 3D Worlds In Java and VRML**
M. McCarthy; A. Descartes; Feb. 1998
- **The Java 3D API Specification:** K. Sowizral, K. Rushforth,
M. Deering; Addison-Wesley; Dec. 1997



Java 3D Resources on the Web

- Java 3D Tutorial (Strongly Recommended)
 - <http://java.sun.com/products/java-media/3D/collateral/>
- Java 3D API Pages
 - <http://java.sun.com/products/java-media/3D>
- Java 3D FAQ
 - <http://java.sun.com/products/java-media/3D/forDevelopers/java3dfaq.html>



Java 3D Resources on the Web

- Other Links

- Java 3D Community Site: <http://www.j3d.org/>
- NCSA Java 3D Resource: <http://www.ncsa.uiuc.edu/~srp/Java3D/>
- Java 3D External FAQ: <http://www.j3d.org/faq>
- Java 3D Info. Centre (UK): <http://www.scs.leeds.ac.uk/web3d/>



Installing the Java 3D Kit

- To use the examples in these notes you will need:
 1. An HTML Web browser
 2. Java JDK 1.2 (Java 2 Platform) or later
 3. Java 3D 1.1 or later
- Information on Java JDKs and Java 3D is available at:
<http://www.javasoft.com>



Compiling the Examples

- To compile the Java examples, you will need:
 1. The Java 3D API 1.1 class files (or later)
 2. The Java JDK 1.2 (Java 2 Platform) class files (or later)
 3. A Java compiler
- The JDK 1.2 files are available for download from JavaSoft at:
<http://www.javasoft.com>
- The Java 3D files are available for download from Sun Microsystems at: <http://java.sun.com/products/java-media/3D/>



Running the Java 3D Examples

- To run a Java application, you must run the Java interpreter and give it the Java class file as an argument.

Example: `java My3D`

- The Java interpreter looks for the file `My3D.class` in the current directory and loads it, and any additional files needed by that class.