

**ME 534 COMPUTER-BASED MODELING AND SIMULATION**  
**Instructor: Prof. Cagatay Basdogan**

**Reading Assignment:**

1. Visit <http://network.ku.edu.tr/~cbasdogan/courses/ComputerBased/links.htm> and click on the link named [Open Inventor Programming Book](#). Read the following sections in the programming book (Note: you may not be familiar with the terminology, but it is important to understand the structure of Open Inventor)
  - Appendix A: An Introduction to Object-Oriented Programming for C Programmers
  - Chapter 1: Overview
2. Download the INVENTOR Help file from <http://network.ku.edu.tr/~cbasdogan/courses/Computer-Based/utility.html> Use the help index to search for the following Open Inventor classes: SoSphere, SoCube, SoCylinder, SoCoordinate3, SoIndexedFaceSet, and SoSeparator. Study the methods and fields of each class.



**Programming Assignment:**

- a) Using Open Inventor Graphics Toolkit and Visual C++, write a C/C++ program to display a 3D graphical model of a humanoid robot as shown in the image.  
**Hint:** Use 3D shape nodes such as SoSphere, SoCylinder, and SoCube for the body parts of the humanoid robot.  
**Related sections in the [Open Inventor Programming Book](#):** Chapter 3
- b) Using Open Inventor file format, create an IV file (e.g. myCube.iv) to display a 3D model of a cube that is made of an indexed triangular face set.  
**Hint:** You will use SoCoordinate3 and SoIndexedFaceSet nodes and your cube will have 8 vertices (i.e. 3D coordinates) and 12 triangles. To display the cube on the screen,
  1. visit <http://www.cs.unc.edu/~vogel/OpenInventor/>
  2. download [SIGGRAPH 1996 Course Notes #38 and #39](#) (zip)
  3. unzip the file (it will create a folder named “S96CourseNotes”)
  4. find the application program called “SCENEVW.EXE” in the list of files under the directory “C:/ ... /S96CourseNotes/COURSE38/SUPPLMNT” and then double-click on it to execute (this application program can read and display IV files)
  5. open your IV file (e.g. myCube.iv) from File/Open ...

**Related sections in the [Open Inventor Programming Book](#):** Chapter 5