Ch 13: 3D Basics
Ch 14: 3D Scenes

Quiz # 3
Discussion
Scene Graph
Scene Graphs

Scene graphs are ways of organizing your space and models
Scene Graph

- **World**: Top-level node containing the whole scene.
- **Background**: Background defines the backdrop against which the 3D scene is rendered.
- **Group**: Groups allow the application to treat multiple nodes as a single unit. Groups can be nested inside other Groups.
- **Sprite3D**: 2D image with a 3D position.
- **User Object**: An arbitrary user object can be associated with any scene object.
- **Camera**: Defines a viewpoint.
- **Light**: Defines a light source in the scene.
- **Mesh**: Defines the 3D geometry of a visible object.
- **Morphing Mesh**: Morphing and skinned meshes are animated geometry objects.
Scene Graph: Model and Mesh

- An example is Model representation
Scene Graph: Model and Mesh

- An example of a Group
- Apply transformation on all children nodes
Scene Graph

- SceneNode:
  - Transforms
  - * Parent
  - Properties/effects
  - <list> or <array> children
  - Methods
    - Toworld
    - Fromworld
    - Update
    - Render
    - Addchild
Object vs. World Space

- You will need to transform all objects to world space to render the scene.
- You may need to transform objects to object coordinate in some cases: e.g., collisions.
Scene Graph

- **SceneManager:**
  - * camera
  - * root scene graph

- **Methods**
  - SetCamera
  - SetSceneGraphRoot
  - Find object

//different from the book, XNA handles a lot of the rendering and their structure for Meshes and Effects are different from DirectX
Next Week

- Camera object
- Lighting and Effects
- Skyboxes
Class Assignment

✧ Construct a scene graph for your scene from last class

✧ Add a simple camera class

✧ Display list of names of objects that are displayed on the scene at any given point in time (see Materials on dropbox for a hint on how to do this)

✧ Submit this to your dropbox