Computer Animation I

Assignment 1: The Camera

In this assignment, you are to build a montage of images that suggests a narrative of your choosing. To make each image in your montage, you will position a virtual camera within an existing virtual set, configure it to match your visual goals, and then render the camera view into a digital image file. Repeat this process until you have a montage consisting of between 3 and 6 total images.

This assignment is intended to give you experience with:
- running Maya and loading an existing scene file,
- tumbling the camera around the set to "location scout,"
- setting the camera position, orientation, and focal length to achieve a particular composition,
- rendering the camera view using the Maya Software renderer,
- stringing together multiple rendered images to communicate a story, and
- handing in homework.

Maya comes with a lot of online documentation which you will find helpful throughout the term. For this assignment, see the following:
- Once you've got Maya running, go to Help->Learning Movies on the menu bar. Watch the navigation essentials movie and the move/rotate/scale movie.
- In the "handouts" folder on the shared disk (see below on how to access the networked course storage disk), there is a folder with Maya pdf documentation. Double-click the contents file to access all of the documents. The "Basics" file alone is 474 pages long! I recommend reading chapter 1 and chapter 3 of "Basics" for this assignment, though you should feel free to read as much as you want/can of these materials.

Step 0: find a classroom machine and get ready to run Maya
- If the machine isn't sitting at the login screen, go to the Apple menu and log out. Then re-login as Public User, which shouldn't have a password.

Step 1: mount the networked course storage disk and copy the homework project folder to the desktop
- Under the "Go" menu in the Finder, find "Connect to server…" and type in "urza"
- Use **cs174** as the name, and **174cs** as the password of a registered user.
- Choose "cs174" and hit OK. After a few moments our class disk should appear on the desktop. There are three folders: handin, handout, and shared.
- In the "handout" folder you should see the "Maya8Manual" folder and a folder named "assignment1".
- Copy both folders onto the desktop of your current machine by selecting them and dragging them to desktop. I'm having you copy the manual for faster access--you will throw it away when you're done working on the machine.
- Rename the assignment1 folder to **a1_yourLastName** (e.g. **a1_perry**).

Step 2: run Maya and set the current project
- In the dock you should find the rectangular, red Maya logo. Click on it to run it. Be patient – it takes a while to start. You may see two windows at startup: the main Maya window and a Learning Movies window. Feel free to check out the movies, particularly the ones I mentioned above, then close the movies window.
- On the Maya toolbar go to **File->Project->Set...** Navigate your way to the RENAMED COPY of the assignment1 folder that you made on the desktop. When you have the folder highlighted in the file selection window, hit **Choose**.

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Step 3: load the assignment scene file
- Go to File->Open Scene. This will pop up a dialog box. Select the file named **assignment1.mb** from the **scenes** folder within **your copy** of the assignment 01 project folder. Then click on **Open**.
- If it loads correctly, you should be looking at an indoor scene. There is a big man studying a pitcher in an oddly-shaped office.

Step 4: "location scout" and come up with some ideas
- Looking through the "main_camera" camera (that's the name that you should see at the bottom of the viewing window), tumble around the scene a little using Apple-left, Apple-right, and Apple-middle. See what's there. See what compositions you find interesting. Try to determine what story you'd like to tell within this set.
- You may get lost (for instance, you may end up with the camera outside the office). Looking through the camera while you are moving it can be difficult. It may help to switch to a different view of the scene, find your camera icon, then move or rotate it. See the next step for details about multiple views on the scene.
- Note you can switch between "wireframe" and "shaded" view by hitting the 4 and 5 keys.

Step 5: select and move the camera to where you want it
- On the left side of the Maya interface, click on the window layout button for **Persp/Outliner**. Watch the status window on the bottom as you move the pointer over the different icons to discover which is the proper icon.
- When you click "persp/outliner" the view will change to that through the general camera named "persp." It's just another camera, providing you another view on the scene.
- For this assignment, **you're only going to render views from a camera named main_camera.** There are 5 objects in the scene that have the camera icon next to them in the outliner window: the 3 orthographic cameras, the 1 default perspective viewing camera ("persp"), and the camera named **main_camera**.
- Select **main_camera** by clicking on its name in the outliner. In the persp viewing window hit "f" to move the persp view so the selected object is visible (f = "focus" on selected object). What's likely is that this will position persp outside of the office, so you'll have to Apple-right drag around until you get back inside the walls. Now you should be able to see the MainCamera as its current place in the 3D virtual world.
- Pick the **Four View** window layout (just above the Persp/Outliner icon). Now you are looking through the four default cameras at the scene. Try to find the highlighted main_camera in each view by Apple-dragging with the middle and right mouse buttons. Can you find it?
- Now it's time to look through main_camera again. Find the smaller menu bar above the orthographic view in the "front" window. Find **Panels->Perspective->main_cameraShape**. This changes the camera through which you're viewing the scene to main_camera.
- Select the **move** (w) or **rotate** (e) tool (on the left side of the interface above the window layout icons), and experiment with clicking and dragging on the red, green, and blue manipulators that appear around the camera. If you click on something else and select an object other than main_camera, you can go back to the outliner view and select it again (or try and left-click it in one of the viewing windows).
- When you have the camera selected, you can (and should!) change its **focal length**. In the upper right corner of the interface there are three icons, the leftmost of which is named "show/hide the attribute editor." Turn on the attribute editor with the camera selected and you

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will see focal length as a parameter. It should be set to 35mm to start. Another way to get to the attribute editor is by right-clicking over the camera in one of the views, holding it down and selecting the "main_camera…" option from the menu that appears.

Step 6: render your image(s)
- When you have a view you like through main_camera, middle-click on the main_camera view to make it the active view, then click on the slate icon in the top of the interface (the "Render the current frame" icon). The render should occur in a new "renderView" window.
- If you still like your view as rendered, go to **File->Save Image…** on the renderView window and **save** the image to disk as a **TIFF** file. NOT AN **IFF** file but a **TIFF** file! Be sure to name it appropriately, using your last name and the number of the shot in your montage, followed by the suffix .tif. For example: **perry1.tif**.
- PLEASE FOLLOW STRICT NAMING CONVENTIONS OR ELSE WE WON'T LOOK AT YOUR WORK.
- Repeat this process until you have built your montage.

Step 7: hand in your images and clean up
- After you confirm that your files are named uniquely and numbered properly, drop them into the handin folder on the course storage disk. Yes it's okay that you aren't allowed to see them so just click OK when asked. If you are in danger of writing over someone else's images then you haven't named your images uniquely. Rename them and try again.
- Throw away your local copy of the Maya manual and the project folder by dragging them into the trash.

PLEASE NOTE: This may be difficult assignment for many of you, especially those new to 3D graphics. There are many resources available to you to use for help: the online Maya manual, your fellow classmates, Adam the TA, and the class email list. Good luck!