Princeton University
Department of Operations Research
and Financial Engineering

ORF 201
Computer Methods in Problem Solving

Lab 2: My House, My Home (Page)

Due Sunday, Feb 13, 11:59 pm

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1. INSTRUCTIONS

For this assignment, you will make yourself a home page (assuming you don't already have one). On that page you will put a virtual reality model of your house.

Note: If you have already created a personal web page for yourself then consult with your TA before proceeding with the following steps.

First, copy an existing simple home page (and some related files) from the orf201 account to your `public_html` directory:

```
cd public_html
cp /u/orf201/public_html/lab2/index.html .
cp /u/orf201/public_html/lab2/myhouse.wrl .
cp /u/orf201/public_html/lab2/myface.jpg .
```

Then, edit index.html with xemacs to change the information so that it reflects your life and interests. As you look through index.html you will find "comments" that explain what is going on. If you want to learn more about how to make fancier home pages, check out the hypertext links on HTML that appear on the orf201 home page:

```
http://courseinfo.princeton.edu/courses/ORF201/
```

For this assignment, you are simply asked to modify the information given so that it accurately reflects who you are. More on this later. First, we need to make the home page visible to the world at large.

2. PRIVACY VS PUBLICITY

Those of you who own a PC are familiar with computer viruses and the steps one must take to prevent infection. Viruses are basically nonexistent on Unix machines. The reason is that Unix is by design a multiuser operating system. Therefore, there are built in mechanisms that prevent one user from having access to another user's files without that other user's permission.

File protection works as follows. There are three levels of access to a file. The file's owner has one level of access, the other users in the same work-group as the owner have another level, and then everyone else has yet a third level. By default, the owner has both read and write permission while everyone else has neither. This is great for protecting your files from the eyes of others and from the perils of computer viruses but there are times when you will want others to have at least read permission on some of your files.

For example, consider your home page. What good would it be to create a home page if no one could look at it but you? Your home-page file, index.html, sits in your public_html directory. First you need to give everyone read and "execute" permission on your public_html directory. Read permission allows users to do an ls on the directory to see the list of files it contains. Execute permission allows users to use cd to position themselves inside the directory. To give these permissions, type the following command from your home directory:

```
chmod a+rx public_html
```

Now, if you type

```
ls -l
```

you should see something similar to the following entry for public_html:

```
drwxr-xr-x 11 orf201 user  512 Jan 27 14:47 public_html
```

The first string shows the protection levels. The first letter, "d", indicates that public_html is a directory. The next three letters, "rwx", indicate that you the owner of the directory have read, write, and execute permission. The next three letters, "r-x", indicate that those in your group, which is "user", have read and execute permission but not write permission. The last three letters "r-x" indicate that everyone else also has read and execute but not write permission.

The next step is to make the file index.html public. To do this you type:

```
chmod a+r public_html/index.html
```

Note that we do not generally give execute permission to files. Execute permission on files has a very special meaning, which we probably won't go into in this course. Using chmod to give a file execute permission inappropriately is a no no.

Finally, you need to make sure that your home directory is accessible to others. This is accomplished by typing:

```
chmod a+rx $HOME
```

3. What to Put on Your Home Page.

There are two "fancy" parts of the home page that you copied over:

- A photograph of a face.
- A virtual reality model of a house (well, almost).

In this section we will explain how to customize these two parts.

3.1. **Making Virtual Reality a Reality.** The virtual reality model that appears at the bottom of your home page is described in the file myhouse.wrl. Your TA will explain how to use the controls to view the "world" from different perspectives. The model is supposed to be of a house but instead it is just three polygons; a triangle, a rectangle, and a pentagon. Use xemacs to edit myhouse.wrl. Read the comments which explain how the wrl file describes polygons in space and edit the file appropriately so that it describes a house—your house. As a minimum the house must have four walls, a roof, a window, and a door.

3.2. **Digitizing Images.** You can use the camera on top of the monitor to create a digital image of your choice, for example your smiling face, and use that image in place of the current face. You can create a digital image as follows. In a shell window type

```
capture
```

A new window will pop up. Click on the icon with the woman's face, choose "Snap image from...", and there pick "Indy Cam". Make sure that the camera lens is not covered and you will see an image in the box. Position the camera correctly and strike a pose. Click the record button (the one in the bottom right corner with the red dot). The new image will be called image1.rgb. Unfortunately, rgb files can't be put on home pages. You must convert them to jpg, gif, or tif format. Let's do jpg since these files are quite small. To convert image1.rgb, type in the shell window

```
xv image1.rgb
```

A copy of the still image will now appear on your screen. Move the mouse over the image and press the right mouse button. A control panel will pop up. In the control panel, click on *Save*. Another panel will appear. On this panel click on the pull-down menu next to *Format* and drag the mouse down to choose *JPEG*. Then click *Ok*. A third panel will appear. On this one just click on *Ok*. The last two panels will disappear. To get rid of the original control panel, click on *Quit*. There should be a new file called image1.jpg. You can view it to make sure it looks okay by typing

```
imgview image1.jpg
```

Assuming everything is okay, you can now add this picture to your home page. Of course, you might want to rename the file:

```
mv image1.jpg babyface.jpg
```

You also might want to remove some of the temporary files, in particular image1.rgb since this file is very large.

4. VIEWING IT

After you've created a home page, you will want to view it with a browser. To fire up the netscape browser, type

```
netscape &
```

Then go to the following address:

```
http://www.princeton.edu/~yourname
```

where yourname refers to your login id.

Special Note. When you go to your new home page, if you get a message asking if you want to download the required plug-in, click "Cancel" and then do the following:

(1) go to the "Edit" menu, pick "Preferences";
(2) click on the triangle next to "Navigator",
(3) click on "Applications";
(4) scroll down the list that pops up until you see x-world/x-vrml, click on that,
(5) click on "Edit".
(6) Click on the diamond next to "Plug-In" and
(7) click on "Ok" to the question.
(8) Click on "Ok" twice more, and
(9) finally hit the "Reload" button in Netscape to reload the page.

The VRML 3-D model should then pop up.

5. MINIMUM REQUIREMENTS

At a minimum, you must accomplish four things in this lab:

(1) You must edit index.html so that it reflects your life.
(2) You also must replace the jpg file with an image of your choosing.
(3) You must edit myhouse.wrl so that it defines a house satisfying the requirements stipulated earlier.
(4) You must set all this up so that others, in particular the grader, can view your work with an internet browser.