

CS4379B/CS5389
Graphical User Interface
Assignment Interface1 (I1)
Due: June 13, 2016

June 10, 2016

Submission Instructions:

1. Please submit your work directly in TRACS (using the TRACS editor) or as a text/MS-word/PDF attachment by the due date/time.
2. Please use only zip for compression.
3. Please do not submit your assignment via email. If you miss the deadline, then please submit it on TRACS and send me an email notification.
4. Please write your name in the assignment header and as a part of the file name of the attachment.
5. Please submit only the source code of your program in C (C++) + OpenGL / QT library functions. In addition, please submit an image (in JPEG) that shows the scene obtained through running your program. If I have doubts or concerns about your program, I may request that you submit the entire files required to produce a working program under Linux so that I can test your submission.
6. Instructions on how to produce an image of your scene are given below.
7. The code should include remarks that explain any non-trivial part of the code. For example, if you use a spin-box then you do not have to explain what it is. On the other hand, if you connect a spin-box to an LCD, you should have comments to explain what is being done.
8. At this point, I do not care too much about usability and detailed design. The goal is just to exercise using these widgets.

The goal of assignments I1 to I5 is to produce a user interface to an animation display utility. The interface enables generating an animation of a rotating cube. The UI has a component for the control of the parameters of animation such as type of graphs, size, color, etc.

This is a set of guidelines it does not mean that we will implement all of the above.

Assignment Instructions:

Implement at least the following widgets which are part of the animation control component: the controls speed of rotation, image size, image brightness, color, color representation method, and image orientation. Although this is not a good UI practice, for learning purpose, each of these controls and widgets should be a different widget from the Qt widget libraries, e.g., dials, spin-boxes, sliders etc. Each input widget should be connected to an output widget (e.g., an LCD, or text) that shows the status of the controlled setup. All the widgets should be in one window that enables “exit” functionality.

Further elaboration:

- The rotation speed is given in rotations per second
- Image size is a percentage of the original size and can take values between 50% and 150%,
- The image brightness can vary and can get integer values between 0 and 255.
- The color parameter is a color assignment to each of the faces of the cube.
- The color representation can be one of 4 methods, referred to as R, S, T, and U.
- The image orientation can be ‘portrait’ or ‘landscape.’

Producing an Image of your scene

The following are instructions for “screen dump”. That is, how to capture the screen / current window into a file under Windows and under Linux.

Print screen under Windows

(From: <http://www.entity.cc/ICONS/print-screen.php>)

To print the contents of the Screen, you must save an image of what's displayed on-screen to the clipboard and then paste it into a document where it can be printed.

(Windows Help: Print Screen)

To do this, follow this procedure:

1. Maximize the window you'd like to capture.
2. To copy/capture the current window, hold down **ALT + Print Scrn** at the same time. To capture the entire screen, just press **Print Scrn**.
3. Open a new document in MS Word, MS Photo Editor, or Adobe PhotoShop.
4. **Paste** the screen shot by holding down **CTRL** and **V** at the same time.
5. Print the document when you're finished pasting screen shots.

Print screen under Linux

(From: <http://www.sb.fsu.edu/~xray/Manuals/ScreenCapture.html>)

The same location includes more and allegedly better utilities for screen capture)

Using Linux's native utility 'xwd/xwud'

Most Linux and UNIX operating systems have native utilities called xwd (x-window dump) and xwud (x-window un-dump) that allow the user to capture either the whole screen or a specific window. In order for the user to capture specific window, issue the following command,

'xwd >myimage.xwd'.

Then click with the mouse inside the window of choice (if the whole screen needs to captured, simply click anywhere in the screen). The utility will write out an image in the special '.xwd' format. The created image can be viewed either using the related utility 'xwud' or using any number of image processing software utilities such as, display, gimp, or xv. To view using 'xwud' issue the following command,

'xwud -in myimage.xwd<u1:p></u1:'

The image can be converted to .jpg or .png using the convert utility.

'convert myimage.xwd myimage.jpg'