Programming Assignment 5
Clocks

10-point assignment

The classic hotel reception desk is decorated with clocks that show the current time from major cities around the world. This program will display something similar.

When your program begins it must display three analog clock images across a ThreeButtonFrame as shown in the image to the right. Note that each clock is displayed in an Oval. The left clock is red, located near the upper left corner of the window and displays Eastern daylight time, as indicated with an "EDT" label. The middle clock (roughly centered in the window) is magenta in color and displays Central Daylight time. The third (blue) clock is located approximately in the window’s upper right corner and displays the time in Nepal. (Yes, Nepalese time is 9 hours and 45 minutes ahead of EDT.) Initially, the three clocks should display the precise times shown in hours, minutes and seconds. The buttons on this window must behave as follows:

LEFT
Clicking the LEFT button causes all three clocks to advance by one second. Please notice that seconds are displayed in the range from 0 through 59 and advancing a second value of 59 causes the seconds to become 0 and the minutes to increment by one.

MID
Clicking the MID button causes all three clocks to advance by one minute. Please notice that minutes are displayed in the range from 0 through 59 and advancing a minute value of 59 causes the minutes to become 0 and the hours to increment by one.

RIGHT
Clicking the RIGHT button causes all three clocks to advance by one hour. Please notice that hours are displayed in the range from 1 through 12. This button click also causes two more actions. The EDT clock must be relocated downward by 50 pixels for seven RIGHT clicks, then on the eighth click it relocates to its original position, repeating this pattern in subsequent clicks. The Nepal clock changes color randomly with each button click. The Color class includes a Color constructor with three int parameters for the amount of redness, greenness and blueness. You can generate your own color by using this constructor with arguments in the range from 0 (minimum amount of color) through 255 (maximum color).

The purpose of this assignment is to learn about separate classes. Therefore, your program MUST use a Clock class that you design in order to store all of the things relevant for a single clock. (Note: do not create a Clock class that contains three clocks, nor should you create three classes.) A proper Driver class should declare and instantiate three different objects of type Clock. The only instance variables permitted in Driver are three Clock variables and a variable for the ThreeButtonFrame.

for three additional points...
Add to your program the code to display an analog clock face with just an hour hand. The hour hand must be automatically updated to accurately represent the time shown on the digital clock display portion of the same clock. You will need to use some trigonometry to determine the endpoints for the hour hand.

to submit your solution...
Email your solution in the form of an attachment to riley@cs.uwlax.edu. Please compress the entire folder into a single zip file and attach this zip file to the email.

Due date: Oct. 25, 2010