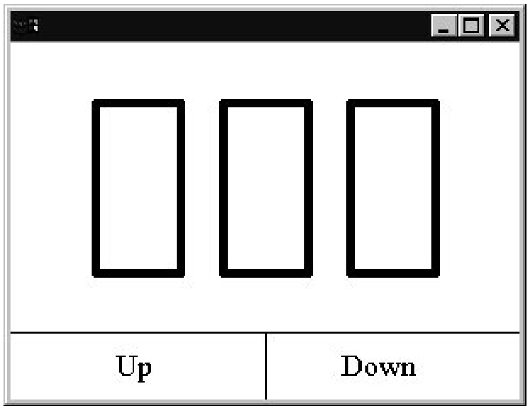
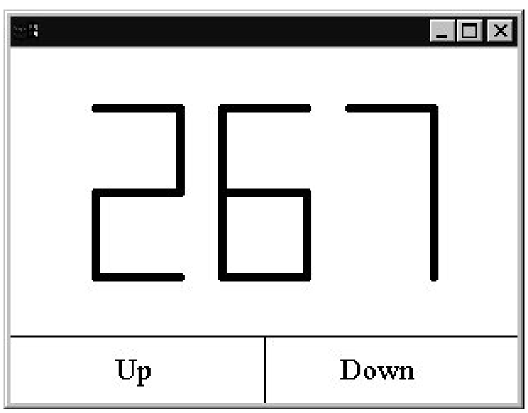
CSc 451, Spring 2003
Assignment 7
Due: Thursday, April 3 at 18:00

Problem 1. (20 points) `counter.icn`

In this problem you are to create a graphical counter. When `counter` is started it looks like this:



If the user left clicks in the lower-left area labeled "Up", the count is incremented. A left click in the lower-right area labeled "Down" decrements the count. After quite a bit of clicking it would look like this:



If the count is 999 another "Up" causes it to wrap around to 000. A "Down" at 000 causes wrap-around to 999. (Just like an odometer or an `unsigned` value in C.)

A right click on "Up" or "Down" starts the counter automatically incrementing or decrementing (respectively) every 200 milliseconds. A click anywhere in the window stops it. The same 0/999 wrap-around occurs in automatic mode as in manual mode.

Typing a "q" at any time causes the program to exit. All other events are ignored.

In sharp contrast to previous assignments, your solution need only approximate the appearance of the reference version. Your solution should:

(1) Have a display of three large 7-segment digits horizontally and vertically centered in the upper portion of the window. The spacing between the digits should be consistent.

(2) Draw the digits with lines rather than text-based output routines. The lines should be relatively thick.

(3) Have a horizontal strip at the bottom of the window that is divided into halves. The text "Up" should be roughly vertically and horizontally centered in the left half. The right half should contain "Down" and be similarly centered. The text should appear in a proportionally spaced 20-point font with serifs. The bounding lines should be relatively thin.

Hints

Use `GotoRC()` and `WWrites()` to produce the Up/Down labels. You won't be able to precisely position the text but that's ok. Don't worry about the result of clicking on the lines that bound the labeled areas. Your version doesn't need to exactly match the various dimensions of the reference version but it may find it useful to know that the reference version creates 300x210 window and uses a line width of 5 for the digits. The segments of the digits are 50 pixels long.

A feature of the graphics system that we'll be covering later but that you may find useful on this assignment is coordinate translation with the `dx` and `dy` window attributes.

Miscellaneous

Aside from code appearing in the class handouts, in the texts, or in messages from the instructor you may not seek, study, refer to, use, incorporate, etc., any existing solutions or portions thereof for any problem.

Reference Version

Both UNIX and Windows reference versions of counter are in `/home/cs451/a7`. Notify the instructor if the behavior of a reference version seems to contradict or extend a problem specification.

Deliverables

Use `turnin` with the tag `451_7` to submit your solution for grading. The deliverable for this assignment is `counter.icn`.