

Assignment #8

Due: Thursday, June 6 by 5:00pm

This assignment will be programmed in Tcl/Tk. Check the links page of the course website for a bunch of new information and links to help you get started with Tcl/Tk.

The assignment is modeled after a similar assignment for CS108. If you've already taken CS108, it should be an interesting compare/contrast experience to see how a similar program can be more easily created in a prototyping environment like Tcl/Tk.

The program you are asked to create is a histogram-creator. In completing this assignment, you will learn how to create a toplevel window, and use the canvas, scale, entry and button widgets. In addition, you will learn how to use one of the geometry managers.

The idea of the histogram-creator is that it reads in a list of scores, and plots their histogram on a canvas. The interface should have the following elements:

- **Histogram canvas:** This is where the actual histogram gets plotted. The canvas supports drawing of text and rectangles, which should be all you need.
- **Buckets scale (slider):** This slider allows you to set the number of buckets used to count the values. Each bucket has a lower "bound" value. The bounds divide up the [min..max] range into equal sized buckets. Each bucket counts values that are \geq its bound and $<$ the bound of the next bucket. The numeric "width" of each bucket is $(\text{max}-\text{min}) / \text{buckets}$. The first and last buckets are different however. The first and last buckets also count the values that are outside the min..max range. – values less than min are added to the first bucket, and values greater than max are added to the last bucket.
- **Buckets scale (entry):** This text entry widget allows the user to type in a value rather than using the aforementioned slider. The result should be the same as if the slider had been used.
- **Load file button:** This button allows the user to load in another data file (use `tk_getOpenFile`), and the histogram should then re-plot itself.
- **Save Histogram button:** This button allows the user to save out a postscript file of the current histogram. It should bring up a save file dialog (`tk_getSaveFile`) and save to the name provided by the user. Don't worry – saving a postscript file is a one-line command in Tcl/Tk – the postscript creation capability is a feature of the canvas widget.

You can plot the heights of the histogram bars assuming a 0-100 scale. Some starter code has been provided for you – check the materials page in the course webspace.

This is the last assignment for CS377A – so enjoy! If you need any help, David is the Tcl/Tk guru, so don't hesitate to ask.

Submission: As you did last time, make a directory in the class submission directory with your username (or your usernames, hyphenated together if you are working in a group). The submission directory for this assignment is at:

`/afs/ir/class/cs377a/submit/assn8/`

You can then FTP your files into that directory.