

# CIS 410/510: User Interface Programming

## Programming Exercise #3

Due February 8, 2007 8:30 am

Purpose: The goal of this assignment is to understand the basics of interactive programming software through Tcl/Tk. In this first programming assignment you will add some features to a bare-bones sketching program called (appropriately) *sketch*. Sketch calls several other programs (*dialog*, *clrdial*, *clrmenu*, and *balloon*). The Tcl/Tk source for these programs and four necessary image files and a Readme are available to download from our class Web page under the Assignments link. I suggest you print out the code, read it carefully, and try to understand the basic outline of the program before diving into this assignment.

There are TWO Parts to this assignment.

### **PART I - 70 Points**

Do **all** seven problems. Each problem is worth 10 points.

1. *Add an "About Sketch...." (or whatever name you give to your program) item to the File or some other menu that brings up a description of the program. Include your name and anything else you think is useful. If you get really ambitious you can add a picture of yourself.*
2. *Replace the balloon help with a Help menu. You should also change any of the messages or instructions you feel are necessary to improve usability. This includes adding more help or rewriting the wording of existing help.*
3. *Make the add more colors functionality work. The code you have does not execute the additional colors function correctly. Can you make it work?*
4. *Change menu items to improve usability. This includes better names, deleting functions or changing the location of items. Why are yours better?*
5. *Add command-key equivalents for the options in the File and Edit menu. Briefly justify the letters that you choose for the command-keys. How will the user know what they are?*
6. *Defeat the tear-off menus for File and Edit. It is actually possible to get multiple copies of these menus. Can you make it so that you can only get one tear-off menu? Should you have a tear-off menu at all?*
7. *Defeat the multiple tear-off menus for brush color. The tear-off menu is useful. (Why?) But we certainly don't need more than one. Can you make it so that you can only get one tear-off menu? Should you have a tear-off menu at all?*

## **PART II - 30 Points**

1. Draw a tree diagram that shows the classes of widgets available in Tk.
2. What are the user interface events that are supported in Tk?
3. Describe how Tcl/Tk handles the "main event loop". Compare this to the descriptions of other systems described in your text and in the lecture on January 23.

Turn-in your written answers to Questions 1-3, the path to your Tcl/Tk source programs and executables on the CIS computers, and the version of Tcl/Tk you are using. All of your Tcl/Tkcode (.tcl) must be world-readable, and the directory that contains your java code must be world-executable. (You can set this the day you hand it in to me.) Please be sure your program will run on the CIS system (Tcl/Tk version 8.)