GUI Final Project

The design of this program is based on the example project idea given by the professor. Following the example project requirements, I made a GUI that had a figure with five edit boxes, six text boxes, three radio buttons, an empty plot, and two push buttons. Two text boxes and edit boxes were placed in the upper left corner. The text boxes are there for the user to understand that the edit boxes are for the x and y coordinates. These two edit boxes take in a string and turn it into numbers that can be plotted on the plot that was also created in the figure. The three radio buttons were created to give the user options in how they wanted the data points displayed on the plot. A text box was created above the radio buttons to describe that they would give the color and type of data points. The user could choose either red circles, blue asterisks, or a green dashed line. Under the radio buttons there are three more text boxes that describe what the inputs of three edit boxes should be. The user is given the option to input the title, x label, and y label for the plot; these just add to the customization possibilities of the GUI. To complete my GUI I added one push button and one reset button at the top which lets the user either develop the graph or erase all of the inputs so they could put new inputs in. In addition to the different uicontrol elements that add to the design of the GUI, I also added a modal error message that would pop up and inform a user if they had different length inputs for the x and y values. This error message reads “ERROR! X and Y values are not the same length” which allows the user to change their input to something that will be the same length. The design should fit all the expectations for the example project.

The coding process started by creating my main function, guiFinalProject. This function is where I created all the uicontrol elements. This is one of the most time consuming and challenging parts of the code because I had to place them in the desired locations on the figure which entailed a lot of guess and check to see if it was aesthetically pleasing and did not overlap another uicontrol element. The next two functions I made were my callback functions. These functions are what make my uicontrol elements work. The first callback function, buttonCallback, is for the push button. When the user pushes the push button the buttonCallback function turns the strings in the x and y coordinate edit boxes into numbers. It also contains if statements so a user can change the radio buttons and it makes the radio buttons related to different colors and types that can be graphed. The numbers for x and y and the type chosen for the radio button is plotted on the plot. There are three more if statements in the code in this function that make the title, x label, and y label show up on the graph. It can be left empty but it will also show if something is written in those edit boxes. The last thing in this function is the modal error message which will pop up if both the string lengths for the x coordinates and y coordinates do not match. The last callback function is for when the reset button is clicked by the user. This callbackfunction, resetCallback, makes the plot go back to its empty state and deletes anything in the edit boxes by making them blank. At first I struggled with how to do this but once I figured it out it was very simple. I bet there is more simple ways to write this function that requires less lines of code, but this is the way that made most sense to me. This completes all the code for this project.

GUIs are very helpful because they present code in a more understandable way, especially for people who do not know how to use programming languages. Instead of having to write things into the command line using various variable names, a user can type it into the GUI and get the information without seeing any of the code behind it. GUIs are also helpful when a person wants to reuse code from a long time ago. If it is a GUI the user does not have to remember variable names or really anything that is within the actual code. GUIs are very helpful in the future because they can be used over and over and are very easy to use.

\*Mac Ozanne told me that I did not have to have my project approved because I was doing the example project idea.