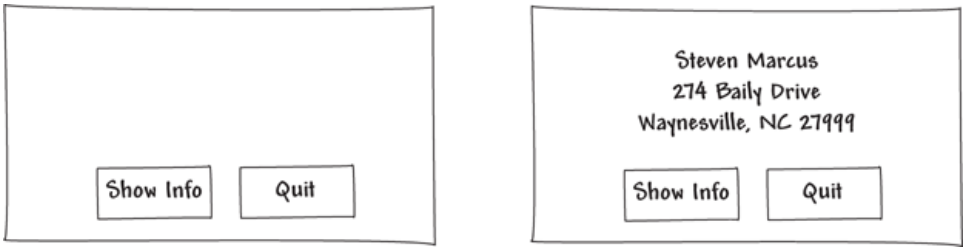
Session 11: Programming Exercises

1. **Name and Address**

   The Name and Address Problem

   Write a GUI program that displays your name and address when a button is clicked. The program's window should appear as the sketch on the left side of **Figure 13-42** when it runs. When the user clicks the *Show Info* button, the program should display your name and address, as shown in the sketch on the right of the figure.

   Figure 13-42 Name and address program



2. **Latin Translator**

   Look at the following list of Latin words and their meanings:

Latin	English
sinister	left
dexter	right
medium	center

   Write a GUI program that translates the Latin words to English. The window should have three buttons, one for each Latin word. When the user clicks a button, the program displays the English translation in a label.

3. **Miles Per Gallon Calculator**

   Write a GUI program that calculates a car's gas mileage. The program's window should have Entry widgets that let the user enter the number of gallons of gas the car holds, and the number of miles it can be driven on a full tank. When a *Calculate MPG* button is clicked, the program should display the number of miles that the car may be driven per gallon of gas. Use the following formula to calculate miles-per-gallon:

   $$MPG = \frac{miles}{gallons}$$

4. **Celsius to Fahrenheit**

   Write a GUI program that converts Celsius temperatures to Fahrenheit temperatures. The user should be able to enter a Celsius temperature, click a button, then see the equivalent Fahrenheit temperature. Use the following formula to make the conversion:

   $$F=95C+32$$

   F is the Fahrenheit temperature, and *C* is the Celsius temperature.

5. **Property Tax**

   A county collects property taxes on the assessment value of property, which is 60 percent of the property's actual value. If an acre of land is valued at $10,000, its assessment value is $6,000. The property tax is then $0.75 for each $100 of the assessment value. The tax for the acre assessed at $6,000 will be $45.00. Write a GUI program that displays the assessment value and property tax when a user enters the actual value of a property.

6. **Joe's Automotive**

   Joe's Automotive performs the following routine maintenance services:

   - Oil change—$30.00
   - Lube job—$20.00
   - Radiator flush—$40.00
   - Transmission flush—$100.00
   - Inspection—$35.00
   - Muffler replacement—$200.00
   - Tire rotation—$20.00

   Write a GUI program with check buttons that allow the user to select any or all of these services. When the user clicks a button, the total charges should be displayed.

7. **Long-Distance Calls**

   A long-distance provider charges the following rates for telephone calls:

Rate Category	Rate per Minute
Daytime (6:00 A.M. through 5:59 P.M.)	$0.07
Evening (6:00 P.M. through 11:59 P.M.)	$0.12
Off-Peak (midnight through 5:59 A.M.)	$0.05

   Write a GUI application that allows the user to select a rate category (from a set of radio buttons), and enter the number of minutes of the call into an Entry widget. An info dialog box should display the charge for the call.

8. **This Old House**

   Use the Canvas widget that you learned in this chapter to draw a house. Be sure to include at least two windows and a door. Feel free to draw other objects as well, such as the sky, sun, and even clouds.

9. **Tree Age**

   Counting the growth rings of a tree is a good way to tell the age of a tree. Each growth ring counts as one year. Use a Canvas widget to draw how the growth rings of a 5-year-old tree might look. Then, using the create_text method, number each growth ring starting from the center and working outward with the age in years associated with that ring.

10. **Hollywood Star**

    Make your own star on the Hollywood Walk of Fame. Write a program that displays a star similar to the one shown in **Figure 13-43**, with your name displayed in the star.

Figure 13-43 Hollywood star

11. Vehicle Outline

Using the shapes you learned about in this chapter, draw the outline of the vehicle of your choice (car, truck, airplane, and so forth).

12. Solar System

Use a Canvas widget to draw each of the planets of our solar system. Draw the sun first, then each planet according to distance from the sun (Mercury, Venus, Earth, Mars, Jupiter Saturn, Uranus, Neptune, and the dwarf planet, Pluto). Label each planet using the create_text method.