Lab 2 Excercise P2.24

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1 Specification

Exercise P2.24.
Make a bar chart to plot a data set of user intput. Prompt the user to type in four names and measurements. Then display a bar graph. Make the bars horizontal for easier labeling.

Name	Longest Span(ft)
Golden Gate	4,200
Brooklyn	1,595
Delaware Memorial	2,150
Mackinaw	3,800

2 Design

Display message describing program

Define variables and setup the coordinate system. Prompt user for highest number in data set to assist setting up coordinate system

Prompt user to type four names and measurements and store in arrays

Display the bar graph

3 Analysis

This exercise uses the authors graphics library ccc_win.h available from [1] To use this graphics library, you must include the header file ccc_win.h into your program. Moreover, you need to supply the function ccc_win_main instead of main as the entry point to your program.

[1] www.wiley.com/college/horstmann

⟨ *Display message describing program* 2a ⟩ ≡

```
cwin << Message(Point(-5, -4), "Frank Mock");
cwin << Message(Point(-5, -5), "Lab 2.24");
cwin << Message(Point(-5, -6), "Graph Values Entered by User");
```

◇

Fragment referenced in 4a.

The first use of cwin is ignored on my machine but the machine I used in class did not do this. To remedy this inconsistency, I prompt the user to see if they are ready. Their answer is not used. I choose to create array data types to store user input. To make setting up the coordinate system easier, I ask the user for the highest value of the data set and use this in cwin's call to coord().

⟨ *Define variables and setup the coordinate system* 2b ⟩ ≡

```
//This prompt is not important and may not display on some machines
string not_used = cwin.get_string("Ready To Begin?(Y or N");
//Define variables
int measurement;
int measurments[4];
string names[4];
//set up coordinate system to be used
int highest = cwin.get_int("What is the highest value of the data set?");
cwin.coord(-10, 5, highest + 10, -10);
```

◇

Fragment referenced in 4a.

I used a for loop to get the four names and measurements. The code performs some validation utilizing a do-while loop and not allowing a number higher than what the user already inputed as the highest value of the data set. This ensures that the coordinate system will not be compromised by the values entered by the user. We can get information from the user using member functions from the GraphicWindow class. We can use get_string for the name of the bridge and `get_int` for it's length.

⟨ *Prompt user for names and measurements and store in arrays* 3a ⟩ ≡

```
//Get Name and Number input from user
for(int count = 0; count <= 3; count++)
{
        string name = cwin.get_string("Please type name");
        names[count] = name;
        do
        {
        measurement = cwin.get_int("Enter measurement:");
        measurments[count] = measurement;
        }while(measurement > highest);
}
```

◇

Fragment referenced in 4a.

I used a for-loop to interate through each array and draw the users inputed data to the screen.

⟨ *Draw bar graph info to screen* 3b ⟩ ≡

```
for(int count = 0; count <=3; count++)
{
        string n = names[count];
        int m = measurments[count];
        Point topleft(0, count);
        Point topright(m, count);
        Point bottomleft(0, count - .5);
        Line horizontal(topleft, topright);
        Line vertical(topleft, bottomleft);
        cwin << horizontal << vertical;
        cwin << Message(Point(0, count), n);
        horizontal.move(0, - .5);
        vertical.move(m, 0);
        cwin << horizontal << vertical;
}
```

◇

Fragment referenced in 4a.

"p2_24.cpp" 4a≡

```
⟨ include files 4b ⟩
int ccc_win_main()
{
        ⟨ Display message describing program 2a ⟩
        ⟨ Define variables and setup the coordinate system 2b ⟩
        ⟨ Prompt user for names and measurements and store in arrays 3a ⟩
        ⟨ Draw bar graph info to screen 3b ⟩
        return 0;
}
◇
```

These are the include files needed for this program

⟨ *include files* 4b ⟩ ≡

```
#include "ccc_win.h"
◇
```

Fragment referenced in 4a.

4 Image of program p2_24.exe running