CS 151 – Lab 9

Exception Handling – Histograms

Histograms are an important statistical tool for graphically presenting statistical data. In particular, a histogram is a graph that represents information found in frequency distributions. For example, consider the number of programs completed by cs151 students during a previous offering of the class. For this class, the number of assignments completed by each student is as follows:

1, 1, 2, 2, 5, 3, 4, 5, 5, 4, 5, 4, 3, 5, 5, 5

Counting the number of students who complete a certain number of assignments yields the following frequency distribution:



We can then plot the histogram for this frequency distribution:



For this lab, you will need to write a program where the user inputs numeric values from 1 through 10 and outputs a textual histogram of the values using \*’s to count the number of occurrences of each value.

However, users often enter bad or incorrect data, so you are going to need to use exception handling to catch the errors. If the user enters a value that does not consist of all digits or number outside the range of 1-5 (e.g. 19, A, asdf), then an exception should be thrown and caught.

In order to do this, you should get the value as a string and then scan through the string and then check to see if it contains all digits. You can use the isdigit(char) function from <cctype> to help with this.

To convert a string to an integer, use the following code:

atoi(stringname.c\_str());

You will need to use at least two exception handlers for this program. One exception handler should deal with the case where the user enters invalid data such as characters while the other should deal with the case where the user enters a value that is too large.

Turn in your completed program using the link on Laulima.