CSCI1101-Lab 4 (Tuesday)

February 4

Exercises with loops

In this lab you will write a bunch of short functions using \texttt{while} loops and \texttt{for} loops. I've provided the function headers and parameter lists in the accompanying code file. Do not change these! For now the body of the function consists of just a single return or print statement---you will replace these with the appropriate function code. None of the solutions requires more than 6 lines of code, usually less.

You can test your solutions by choosing the \texttt{Run Module} menu option and then typing the name of the function in the shell together with any required arguments. So, for example, typing

\begin{center}
\texttt{cuberoots1()}
\end{center}

should display the table of cube roots

1. Using \texttt{while}

All the problems in this section are meant to be done with a single \texttt{while} statement. The functions here all either print something, or carry on a dialogue with the user.

1. Write a function that prints the cube roots of the integers from 1 to 20, with one number on each line.
2. Write a function that prints the cube roots of the integers from 1 to 20. Now the output should have two columns, with the cube roots in the right hand column and the integers 1 through 20 themselves in the left-hand column.
3. Write a function that carries on a dialogue with the user: It will repeatedly prompt for input until the user enters something whose first character is either lower- or upper-case \texttt{A}. The function should behave properly if the input is the empty string.
4. Write a function that carries on a dialogue with the user: It will repeatedly prompt for input until the user enters something whose first character is a vowel. The function should behave properly if the input is the empty string. For purposes of this problem and two of the problems below, a vowel is one of the letters \texttt{A,E,I,O,U} either lower- or upper-case.
5. This one is a little tricky: Write a function that repeatedly prompts the user for input until two successive inputs are identical. For example, if the user types

```
fun
bun
nun
son
sun
fun
pun
bun
done
done
```

then the program will prompt for more input after every entry except the last, when it will terminate.

2. Using `for`

All the problems in this section are meant to be done with a single `for` statement that traverses a string. The functions here all return a value, either an `int` or a string. None of them should contain a `print` or an `input` statement.

1. Write a function that returns the number of occurrences of a lower-case letter 'a' in the argument.
2. Write a function with two arguments, a character and a string, that returns the number of occurrences of that character in the string.
3. Write a function that returns the number of vowels in a string, where the string is passed as an argument.
4. Write a function that takes a string `s` as an argument and returns a string in which every vowel in `s` is replaced by the symbol `#`. For example, if the argument is the string

```
Kansas City won the Super Bowl this year.
```

then the function will return the string

```
K#ns#s C#ty w#n th# S#p#r B#wl th#s y##r.
```