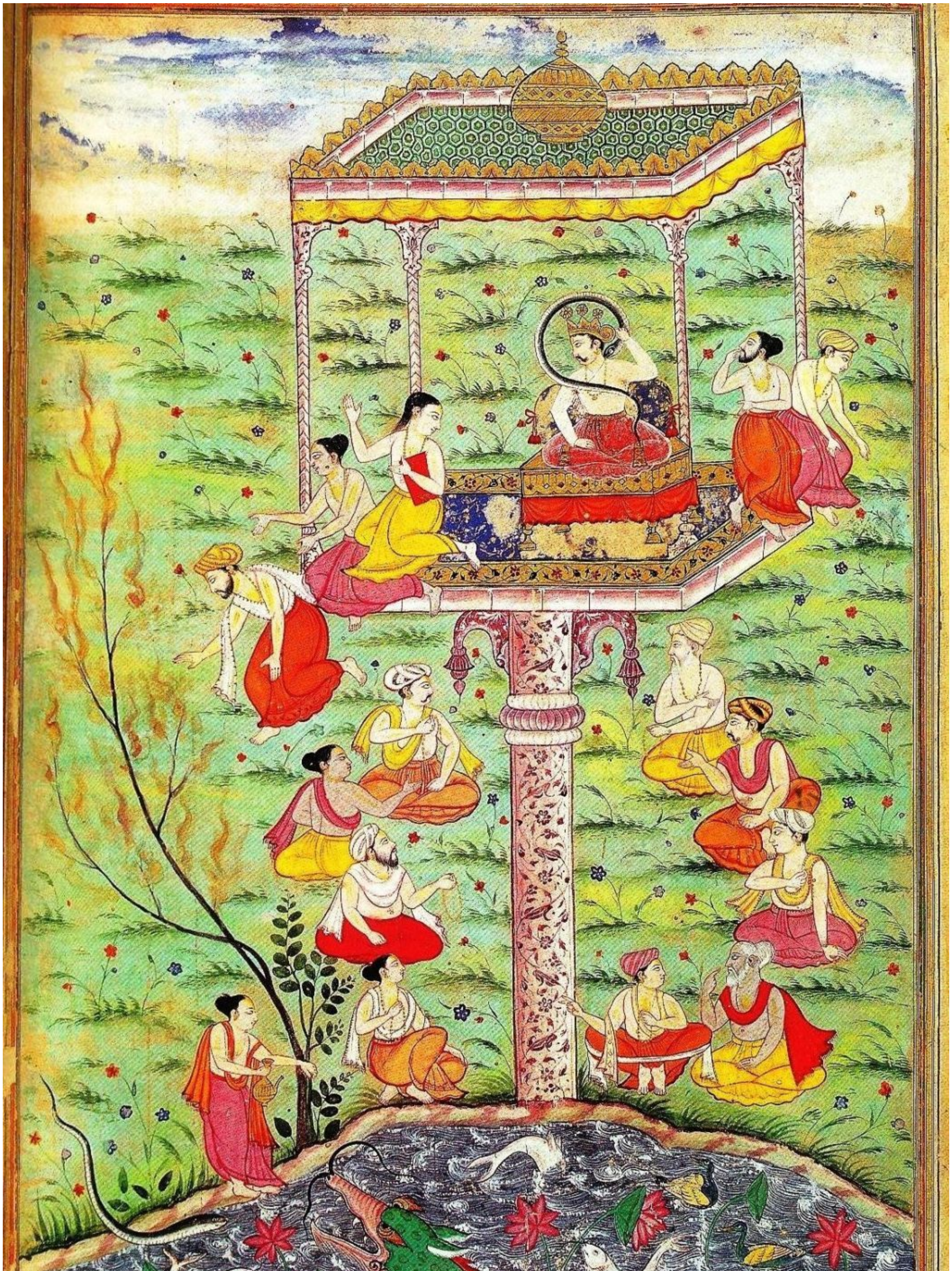
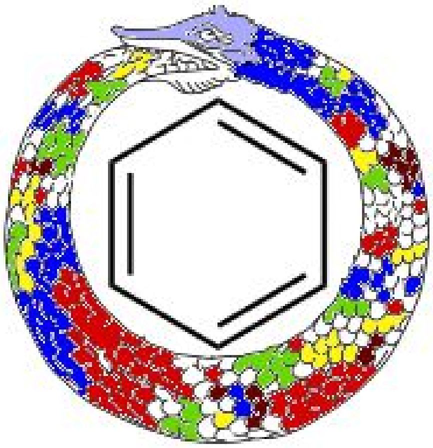


انگاه چتر را از راجه بگشاد و متوجه هوا شده بطرف آسمان روان شد چنانچه تمام مردم میدیدند یکبارگی چرخ و آن همه دیگر چون چنان دیدند فریاد و گریه و زاری

Silly Snake



This should be a fun little quest. You will create a doctor program called Eliza.

Eliza will be able to carry on a simple, albeit contrived, conversation with her patient.

Your first miniquest - Hisspify

I mean lispify.

You must implement:

```
      string lispify(string s);
```

When I invoke this method, I will supply it a string parameter. You must accept this parameter by copy (not reference). Look it up or ask and understand before proceeding.

It must return a string which is identical to the one I gave you except that all s's in the string have been substituted by th's. For example:

```
      lispify("sixty six")
```

should return the string "thixty thix". Yeah, I know there's an s sound in the x, but leave it alone in this quest.

Once you have this working, try to see if you can implement a case-sensitive version. It's identical to the previous version except that upper-case S must get replaced by "Th", not "th".

Useful guide: If your code for this function is over 10 lines including comments, look for signs of over-coding.

Your second miniquest - Rotate Vowels

You must implement:

```
      string rotate_vowels(string& s);
```

This function must accept a string parameter s by reference, and change it directly by replacing each vowel with its alphabetical successor among vowels defined circularly. That is, replace **a** with **e**, **e** with **i**, **i** with **o**, **o** with **u** and **u** with **a**. For example, after executing the following two lines,

```
      string s = "that's really cool";
```

```
rotate_vowels(s);
```

the variable s should contain the string "`thet's rielly cuul`"

In addition to changing the parameter passed in by reference, it must ALSO return this parameter.

See what happens if you implement a case-sensitive version of this function.

Useful guide: If your code for this function is over 15 lines including comments, look for signs of over-coding.

Your third miniquest - Enter

Now you'll weave the previous functions together with a third to create a fun experience.

You must implement:

```
void enter();
```

which should communicate with the user via the console. It has the following very tight script. You need to adhere to it as accurately as possible to score the most points.

1. Immediately upon being invoked, it must curtly greet the user (via `std::cout`) using the string `"What?"` Note that there is no space after the question mark. It must be followed by one newline.
2. Then enter an infinite loop. In each iteration of this loop,
   a. You must read a *whole line of input* from the user and respond to each as below (sequence is important, and responses must end in a newline)
   b. If the user's input is an empty string, you must print the "`What?`" line again and short-circuit back to the top of the loop (skip the rest of the steps below).
   c. Print 4 spaces followed by the user's input and two newlines.
   d. If the user input contains an exclamation mark`(!)`, you must print the line `"OMG! You don't say!! "` followed by the user input and exactly five exclamation marks. Then revert to the top of the loop.
   e. If the user input contains either of the words "why" or "what", you must print the string "I'm sorry, I don't like questions that contain what or why." Then revert to the top of the loop.
   f. If the user input contains the letter s, then you must print two lines as follows and then revert to the top of the loop.
      i. `"Interethting. When did you thtop thtopping your thibilanth?"`

ii. the return value of your `lispify()` function called with user_input as its parameter, followed by the string `"! Sheesh! Now what?"`

g. If the user says bye or quit (or Bye or Quit), print the message `"Ok Bye. Nice being a force of change in your life."` and break out of your loop.

h. If none of the above conditions matches you must do the following:

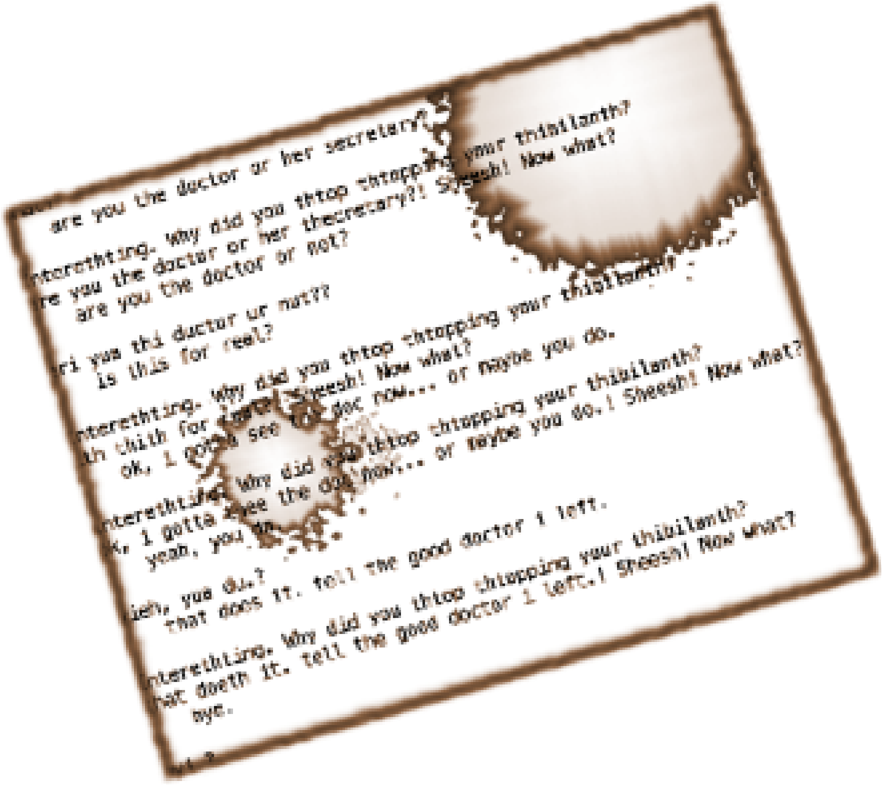
i. 80% of the time print the return value of `rotate_vowels()` invoked using the user input as its parameter, followed by a question mark.

ii. 20% of the time print the string `"Huh? Why do you say: "` followed by the user input and then a question mark.

To do the 80/20 split, here's what you do:

1. Generate a random number (use `rand()`)
2. Calculate the remainder after dividing by 10 (This would be `rand() % 10`)
3. If the remainder is 8 or 9, then follow option (ii). Else follow option (i)
4. Important: Use portions of 10, not 100.

It is important that you don't call `srand()` ANYWHERE in your submitted code. I need to be able to control the seed to test your code.



```
   are you the doctor or her secretary?
nterethting. Why did you thtop thtopping your thibilanth?
re you the doctor or her thecretary?! Sheesh! Now what?
   are you the doctor or not?

ri yuo thi ductor ur nut??
   is this for real?

nterethting. Why did you thtop thtopping your thibilanth?
th thith for real?! Sheesh! Now what?
   ok, i gotta see the doc now... or maybe you do.

nterethting. Why did you thtop thtopping your thibilanth?
k, i gotta thee the doc now... or maybe you do.! Sheesh! Now what?
   yeah, you do.

ieh, yuo du.?
   that does it. tell the good doctor i left.

nterethting. Why did you thtop thtopping your thibilanth?
hat doeth it. tell the good doctor i left.! Sheesh! Now what?
   bye.
```

Starter code

First your header file. You need to place declarations (not definitions) of your three functions in this file.

```
//
//  Eliza.h
//  2a.Lab-05-Eliza
//

#ifndef Eliza_h
#define Eliza_h

// TODO - place your Eliza function declarations here

#endif /* Eliza_h */
```

And then your cpp file:

```
//  Student ID: 12345678
//  TODO - Replace the number above with your actual Student ID

//  Eliza.cpp
//  2a.Lab-05-Eliza
//
//
#include <iostream>
#include <sstream>

using namespace std;

// Return a new string in which the letters (lowercase) a, e, i, o, and u
// have been replaced by the next vowel in the sequence aeiou. Replace u by a.
//
// Note that the string is passed in by reference. So the caller may not
// rely on the result being returned.
// TODO - Your code for rotate_vowels goes here

// Return a string in which all occurrences of s have been replaced by th
// TODO - Your code for lispify goes here

// Enter the user-interaction loop as described earlier
void enter() {
    // TODO - Your code here
}
```

Testing your own code

You should test your functions using your own `main()` method in which you try and call your functions in many different ways and cross-check their return value against your hand-computed results. But when you submit you must NOT submit your main method. I will use my own and invoke your functions in many creative ways. Hopefully you've thought of all of them.

Submission

When you think you're happy with your code and it passes all your own tests, it is time to see if it will also pass mine.

1. Head over to https://quests.nonlinearmedia.org
1. Enter the secret password for this quest in the box.
2. Drag and drop your `Eliza.*` files into the button and press it.
3. Wait for me to complete my tests and report back (usually a minute or less).

Points and Extra Credit Opportunities

I monitor the discussion forums closely and award extra credit points for well-thought out and helpful discussions.

May the best coders win. That may just be all of you.

Happy Hacking,

&