Lab 2: Beat the Disease!

What you will need to know before you start this lab:

Input, Processing and Output, Modules and Functions, Decision Structures with Compound Conditions, Loops

Requirements:

Use modules and functions as much as possible, but don't create 1 line modules or functions. Create generalized functions whenever possible. All medicine numbers and descriptions must be global constants. There should be no hardcoded rounds 1, 2, or 3 outside of main.

Review the sample program output shown below. Create a through test plan showing all possible types of input values. Then, write the program in java and test ALL the conditions in your test plan.

How the program will work:

The player is a Doctor battling a disease. The program will use a random number generator to identify the medicine that will work to defeat the disease. The doctor will choose a medicine. If the doctor picks the correct medicine, the patient is saved. If the doctor does not choose the correct medicine after 3 rounds, the patient dies and the Doctor is fired.

Refer to the Problem-Solving Roadmap if you don't know where to begin. The key to solving any non-trivial problem is to break it down and work on little pieces one at a time (decomposition!). I suggest creating the test plan first, then sketching out a Hierarchy Chart and perhaps even a Flowchart before you start coding key parts of the program in pseudocode. Only after all that start to write code in Java.

Refer to the Sample Input/Output section to see how the program should work with various types of input. Make your output look EXACTLY like the sample code! Or, if you want to be creative, make it better with a whole different concept – but don't make it worse and cover all the concepts.

Use a standard input validation routine to validate the input entered by the user.

There are many ways to create a program that works – the beautiful, the good, the bad, and the ugly. Full credit will only go to code that is formatted as expected in this class, and fully documented programs with comments explaining the purpose of the code, not just repeating what each line of code in comment form.

Lab Deliverables

- A thoroughly used Test Plan
- Java source code (the .java file)

Your Grading Decision

If you don't turn this in, or it doesn't work at an acceptable level, you will receive a zero on the assignment. Start early! Give yourself enough time to be successful.

Sample Input/Output: (code for all these situations!)

The program begins like this:

****

Beat the Disease!

Note the **red** title.

You are a doctor battling a disease in your patient.

If you can guess the disease's weakness, you will save the patient.

If you guess incorrectly 3 times the patient will die and your conduct will be reviewed.

****

Example 1:

Please enter your name doctor. **Joe**

We have several medicines to try to defeat the disease, Dr. Joe.
We will identify them by number:

1. Ciprofloxacin
2. Amoxicillin
3. Penicillin
4. Cipro
5. Vitamin E

Note that the doctor's name is used here.

----- Round 1 -----
Choose a medicine to prescribe for the patient. **22**
Error: Invalid medicine number. Try Again.
Choose a medicine to prescribe for the patient. **2**
Amoxicillin. Good choice.

Use the standard input validation routine.

The program randomly chooses a random medicine the disease is vulnerable to before the first round and it does not change.

It is time. The patient takes the medicine…
The disease IS vulnerable to Amoxicillin!

Note the ! and capitalization.

Your prescription beat the disease! Well done.
Thank you for saving the patient, Dr. Joe!

Note the specific language for saving the patient.

Example 2:

Please enter your name doctor. **Joe**

We have several medicines to try to defeat the disease, Dr. Joe.
We will identify them by number:

1. Ciprofloxacin
2. Amoxicillin
3. Penicillin
4. Cipro
5. Vitamin E

----- Round 1 -----
Choose a medicine to prescribe for the patient. **2**
Amoxicillin. Good choice.

It is time. The patient takes the medicine…
The disease is not vulnerable to Amoxicillin.

Note the period at the end of the sentence.

Your prescription did not affect the disease.
Your patient's health is at 66%!

----- Round 2 -----
Choose a medicine to prescribe for the patient. **1**
Ciprofloxacin. Good choice.

It is time. The patient takes the medicine…
The disease is not vulnerable to Ciprofloxacin.

Your prescription did not affect the disease.
Your patient's health is at 33%!
One more round to go!

Note the "One more round to go!" text.

----- Round 3 -----
Choose a medicine to prescribe for the patient. **5**
Vitamin E. Good choice.

It is time. The patient takes the medicine…
The disease is not vulnerable to Vitamin E.

Your prescription did not affect the disease.
Your patient's health is at 0%!

Your patient has died, and your conduct will be under review.
Better go back to school!