Lab Project Extra Credit #1  (Individual Project. You must work alone!)  
10 pts

Solve Project #4 (as restated below) by using the approach suggested in the class lecture of 25 Feb 2010, the lecture notes for chapter 5 and the document labeled Lab Project4 Algorithms.

Write a lottery program that generates a random five digit integer number n such that $10000 \leq n \leq 99999$. (See #5 below)
The lottery player enters a five digit number m in the same range, i.e., $10000 \leq n \leq 99999$.

If the player enters a number that contains only one digit that occurs in the lottery number n then the player wins $100. However if that digit occurs in the same location in both n and m the player wins $500.

If the player enters a number that contains two digits that occurs in the lottery number n then the player wins $300. However if one of those digits occurs in the same location in both n and m then the player wins $800. I.e., if n == 54371 & m == 59983 then the player wins $800. If both digits each, individually occur in the same location in n as they hold in m, then the player wins $1,400. I.e., if n == 54371 & m == 59981 then the player wins $1,400.

If the lottery number contains duplicate digits, the occurrence of a single occurrence of the same digit in the guess m counts a match of one. E.g., n == 91960 & m == 89234 yields the occurrence of the digit “9” only one in m.

If the lottery number contains duplicate digits, the occurrence of a two occurrences of the same digit in the guess m counts a match of two. E.g., n == 91960 & m == 89239 yields the occurrence of the digit “9” twice in m.

If the player enters a number that contains three digits that occurs in the lottery number n then the player wins $600. However if one of those digits occurs in the same location in both n and m then the player wins $1,000. I.e., if n == 54371 & m == 57483 then the player wins $1,000. If two digits, each individually occur in the same location in n as they hold in m, then the player wins $1,800. I.e., if n == 54371 & m == 57481 then the player wins $1,800. If all three digits occur in the same location in both numbers then the player wins $2,400.

If the player enters a number that contains four digits that occurs in the lottery number n then the player wins $2,800. However if one of those digits occurs in the same location in both n and m then the player wins $4,000. If two digits, each individually occur in the same location in n as they hold in m, then the player wins $6,000. If three digits, each individually occur in the same location in n as they hold in m, then the player wins $8,000. If all four digits occur in the same location in both numbers then the player wins $10,000.
If the player enters a number that contains all five digits that occurs in the lottery number \( n \) then the player wins $15,000. However if one of those digits occurs in the same location in both \( n \) and \( m \) then the player wins $15,500. If two digits, each individually occur in the same location in \( n \) as they hold in \( m \), then the player wins $16,000. If three digits, each individually occur in the same location in \( n \) as they hold in \( m \), then the player wins $20,000. Otherwise, the player wins $25,000.

1. Before you write the program, create one good test case for your program. Using a calculator, determine the answers. **Do not use the instructor's test cases.** But use the same form in preparing your test case. Test cases will use the manual entry of the lottery number as specified in #5 below.

2. Compile and run your program on JGrasp.

3. Check that your program matches your test cases.

4. Correct any errors in your program.

5. Run the instructor's test cases (Lab Project4 Test Case Data). Have the run-time document initialized by either the **lab assistant** or the **instructor** to verify that your program works on the instructor's test case. For testing purposes, you must provide for the manual entry of the lottery number when desired.

6. Conventions: Follow programming style and documentation conventions from text Section 2.13. Make sure that you prompt for all user input.

7. Submit the project as per the following instructions

Universal Project Header
- Project # <number>: <title>, i.e., Project #4: Triangle Calculator
- Section # <number>, i.e., Section 14201
- Programmer: <name>
- Date: <date submitted>
- Description: <short statement of what the program will accomplish>

Order of Documents
- Source Code
- Test Case Runs, i.e., System Output
- Remark: Copy the Output into a Text Editor, e.g., JGrasp, to avoid extraneous garbage on the submission sheet
- Test Case Data Sheets
- Design Documents, i.e., correct Algorithms & Data Analysis Sheet, e.g., Lab Project4 Algorithms document.

Submissions
- Read & Follow the Specifications "To The Letter"
- Make Program Header Obvious, i.e., use comment lines such as

```java
// Comp 110 //
```