Assignment 04 – Master Mind

You must work in **alone** on this assignment. Do not use any Java language features we have not cover so far in this course.

Assignment Objectives
After completing this assignment the student should be able to:
- Write programs that use loops to repeat instructions
- Demonstrate the use of **while** or **for** loops in Java
- Use conditional expression to control loops and decisions

Assignment Requirements
For this assignment you are given the following files:

        Assignment04.java   (you must complete this file)

Problem Description and Given Info
Within the **main** method in the **Assignment04.java** file, you must write a program to play a game of Master Mind with the user.

Your program will choose a random 4 digit number as the secret number. Your program must prompt the user to enter a 4 digit number as their guess. The program will respond with a message indicating how many of the digits in the user's guess are the same as the digit in the same position in the secret number. For example, if the secret number is **3749**, and the user's guess is **9753**, then the program would respond with the message **You matched 1**, because only one of the digits (the **7**) in the user's guess is the same as the digits in the same position in the secret number. The program will allow the user to continue to enter guesses until they guess the correct secret number.

After the user has entered the secret number, the program will output a count of the total number of guesses the user took to find the secret number. Then the program will ask the user if they would like to play again. If the user answers **"yes"**, then the program will choose another random 4 digit number and play continues as described above.

Here's an example interaction (user input in bold):

```
----- MASTERMIND -----
Guess the 4 digit number!

Guess 1: 0000
You matched 0

Guess 2: 1111
You matched 1

Guess 3: 1234
You matched 1

Guess 4: 2444
You matched 2

Guess 5: 1442
You matched 4

Congratulations! You guessed the right number in 5 guesses.
Would you like to play again (yes/no)?
```

Program Pseudocode Template

You may use the following template if you find it helpful.

```
While the user wants to play another game

    Pick a new secret number


    While the user's guess is not completely correct

        Prompt the user to make a guess

        User enters a guess

        Display number of correct digits in user's guess


    Congratulate the user and tell them the number of guesses they took

    Ask the user if they want to play again
```

What to turn in

For this assignment you must upload the following files by the due date.

Assignment04.java

Any assignment submitted **less than 24 hours after the posted due date** will have **10 points deducted**.

Any assignment submitted **more than 24 hour after the posted due date** will receive **a zero in the grade book**.

Grading Rubric

Criteria	Points
All required files are submitted	10
Each file includes a comment header with the following information: • `CSE 110     : <Class #> / <meeting days and times>` • `Assignment  : <assignment #>` • `Author      : <name> & <studentID>` • `Description : <of the file contents>` • Partial credit can be awarded	
Code is neat and well organized	10
• Good naming conventions for all identifiers • Good use of whitespace • Descriptive comments • Partial credit can be awarded	
Code compiles with no syntax errors	20
• No Partial credit can be awarded • **No credit will be awarded for structure or logic if your code does not compile**	
Code passes structure tests	30
• Code chooses a random 4 digit number • Code uses at least 2 **loops** • Code uses at least 1 decision (**if**) • Code displays messages to the user • Code collects user input • Partial credit can be awarded	
Code passes logic tests	30
• Code correctly plays game of Master Mind as described above • **No credit will be awarded for logic if your code does not pass all structure tests** • Partial credit can be awarded	
TOTAL	**100**