Bulls and Cows

Bulls and Cows is a guessing game where you try to guess an '*n*' digit code. (Note: each number in the code must be distinct) When a number is guessed and a digit is in the correct location, then that is a bull. When a digit is in the number, but in the incorrect location, then that is a cow. So if a 3 digit code is 289, and the user guesses 829. Then that is "1 bull and 2 cows" because '9' is in the correct location and '2' and '8' are in the code but are currently in the wrong location. The guessing continues until the code is guessed in the correct order... "3 bulls"!

This website will give you a feel for the game. To emulate our version using 3 digits, click on "Options" and select any 0-9, 3 Codes. http://www.mathsisfun.com/games/bulls-and-cows.html

Note: Programming Project should be done primarily on your own. However, it is appropriate to get some support from your professor, and even other students. Refer to the Syllabus for guidelines. Remember to use Piazza and post your partial code if you are stuck with a problem in your code.

Requirements

- Use appropriate static methods to separate basic functionality of the implementation. For example: checkBulls(), checkCows() etc.
- Ask from the user to provide the option (3 digits, 4 digits or 5 digits code). Then use the provided generateRandomCode() method to generate a random code. The code must be stored in a String.
- Get guess from user as a String.
  - If more digits than the number in the code, get number again. For example: the code is 3 digit (145) but user enters 5 digit guess (5687).
  - If any digits are repeated, get number again.
    For example: If the user guess is 335, get the number again.
  - If not enough digits, assume the missing digit to the left as zero.
    For example: For a 3 digit code, 35 is the same as 035 where zero is the *first digit.* On the other hand, if user enters 5 for a 3 digit code, then you need to reject this entry because 005 is a repeating code.
- If the user enters string "quit" anytime during the play, the program should stop and display the code that the user was playing with output "Thanks for playing!"
- You must allow the program to be played repeatedly without ending the program after successful run (that is getting all the bulls).
  - Typing 'y' causes program to run again. Anything else exits the program with output "Thanks for playing!"
- Follow formatting as demonstrated in the "Sample Output" below. Highlighted values are the user input.
- Make sure you have your name and Bronco ID in the header comment
  /*   Name: Jane-Joe
  *   Bronco ID: 12345678
  *   Jon Doe helped me with…………
  */

Example Output

```
Welcome to "Bulls and Cows"
Which option do you want to play? 3 digits, 4 digits or 5 digits? 3

Number to guess: ???
Enter guess: 89
2 bulls
0 cows
Enter guess: 29
3 bulls - 029 is Correct!

Enter 'y' to play again: Y
Which option do you want to play? 3 digits, 4 digits or 5 digits? 3
Number to guess: ???
Enter guess: 268
1 bulls
0 cows

Enter guess: 16984
"You can only enter 3 digits!"
Enter guess: 169
0 bulls
0 cows

Enter guess: 568
1 bulls
1 cows

Enter guess: 558
"Each digit must be different!"

Enter guess: 258
2 bulls
0 cows

Enter guess: 458
3 bulls - 458 is Correct!

Enter 'y' to play again: Y
Which option do you want to play? 3 digits, 4 digits or 5 digits? 4
Number to guess: ????
Enter guess: quit
Number to guess: 3492

Thanks for playing! Goodbye.
```

Due: Submit your BullsAndCows.java file to Blackboard. December 01, 2017 by 11.59pm midnight

Total Points = 100

- Correctness/Robustness: 60 points
- Code complies to requirements: 20 points
- Good coding style: 20 points