CS318 – Project 02 – Bulls and Cows

Due Date is posted on Blackboard.

This project is from the text "Programming Principles and Practice", Chapter 5, Exercises 12 and 13. Use the specifications here – do not use the std_lib_facilities.h file.

Specifications:

- Create a C++ project for the guessing game called "Bull and Cows"
- The program randomly generates four different integers in the range 0 to 9 and stores them in a vector.
  - e.g. 1234 is acceptable; 1233 is not acceptable
  - generate these one at a time
  - Hint: Make sure you seed the random number generator so that you get different sequences of numbers. See the following link for an example that might be helpful: http://www.cplusplus.com/reference/cstdlib/rand/
- The user's task is to discover the numbers by repeated guesses.
  - User should enter the guess as a string, which should then be stored in a vector of ints.
  - Say the number to be guessed is 1234 and the user guesses 1359
  - The output/response would be "1 bull and 1 cow"
    - The user gets a bull when a digit guessed is the right integer and in the right position:
      - 1234 compared to 1359
    - The user gets a cow when a digit guessed is right but in the wrong position:
      - 1234 compared to 1359
  - The guessing continues until the user gets 4 bulls.
- The user should be able to play this repeatedly – "Play again?"
- Make sure you use functions to: check for all integers, check for duplicates, etc.
- Make sure you include your test runs in your submission.

Follow specifications for submitting projects – CS318 C++ Programming Project Submission Requirements.pdf

Sample Run of 1 Iteration:

```
Number to Guess is 0418

Enter guess -- 4 non-repeating digits (for example 4567):  5621
Guess #1: Bulls 0 Cows 1

Enter guess -- 4 non-repeating digits (for example 4567):  4613
Guess #2: Bulls 1 Cows 1

Enter guess -- 4 non-repeating digits (for example 4567):  4458
Error:  Digits can not be repeated
Guess #3: Bulls 0 Cows 0

Enter guess -- 4 non-repeating digits (for example 4567):  5624
Guess #4: Bulls 0 Cows 1

Enter guess -- 4 non-repeating digits (for example 4567):  5641
Guess #5: Bulls 0 Cows 2

Enter guess -- 4 non-repeating digits (for example 4567):  hello
Error:  Guess must be 4 digits
Guess #6: Bulls 0 Cows 0

Enter guess -- 4 non-repeating digits (for example 4567):  0418
Guess #7: Bulls 4 Cows 0

*** YOU WIN! ***
```