Programming Assignment 2

Getting started

This assignment is designed as a practice on programming with loops, conditionals and string operations.

Programming Project: WordsGame   **worth 12 points**

Implement a simple game.

Did you ever play a two- or more person game in which players take turns naming cities, and each person must name a city that starts with a letter that was the last letter of the city named right before?

The game ends when a player cannot name a city that has not appeared before. For example the chain of cities *Waltham, Madison, New-York, Kathmandu* could be produced during such game.

In this assignment you will write a program for a similar game for two players. The program will let players enter words and check that each word starts with the correct letter.

Since we do not have a database of all cities in the world at our disposal, the rules of the game are relaxed and players can enter any word, not just the city names. In fact, that word doesn't even have to be a meaningful English word - for our purpose a word is any sequence of non-blank characters.

Your program should get the names of two players and the let the players take turns in inputting words. The program must terminate with a message declaring the winner when

1. the entered word does not start with the right letter, or
2. the word consists of a single character

The program should be case insensitive, i.e., for example, treat 'c' and 'C' as the same letter.

Here's a sample interaction:

```
Greeting!
Player 1, please enter your name: Andy
Player 2, please enter your name: Fred
Andy, please enter a word: banana
Fred, please enter a word starting with letter a: Apricot
Andy, please enter a word starting with letter t: Telephone
Fred, please enter a word starting with letter e: elephant
Andy, please enter a word starting with letter t: xxx
Fred WON!
```

The program terminated the game because Andy entered 'xxx' which does not start with 't'.

Here is another example

```
Greeting!
Player 1, please enter your name: Fred
Player 2, please enter your name: Jean
Fred, please enter a word: Antananarivo
Jean, please enter a word starting with letter o: Oslo
Fred, please enter a word starting with letter o: Ottawa
```

```
Jean, please enter a word starting with letter a: A
Fred WON!
```

The program terminated the game when Jean entered 'A', which is a one-letter word.

The program that is going to be used for testing your code is going to check if your program terminates the game at the right moment and if it declares the winner correctly. Note that the last line of your output should consist of the winner's name and the word 'WON!' only.

Hints

1. There are a number of ways in which you can decide whose turn it is.
    - One approach is to swap player names at each turn (i.e. after each iteration of a loop). Note that swapping values of two variables requires the use of a third, temporary variable.
    - Another approach is based on keeping track of the turn number, and assign one name for even-numbered turns, and another for odd-numbered ones.
2. Note that the first turn is different from all others, it is easiest to conduct it before the main game loop.
3. There is more than one termination condition, hence you will need to write a loop condition that combines the two. You may want to represent each condition with a separate boolean variable or just compute it in the header of the loop.

Grading: The grading schema for this project is roughly as follows:

- Your program should compile without syntax errors to receive any credit. If a part of your program is working, you will receive partial credit, but only if the program compiles without syntax errors.
- 1 point for reading the inputs correctly, in the specified above order and format. Note that in this and all other programs you **must use only one Scanner object**, or points will be subtracted.
- 5 points for correctly terminating the game.
    - o Note, that to receive full credit your program should avoid using `break` statements and `while (true)` loops.
- 2 points for correctly displaying the player's name and the letter at each turn.
- 1 point for correctly identifying the winner's name.
- 2 points will be awarded for good programming style, as defined earlier.

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