CAB201 Programming Principles

Second 10% Assignment
Gold Lotto Checker
Due date: 12th April 2017 at 12pm (noon)

Specification

In Gold Lotto, a player selects six (6) numbers per game they wish to play. The six numbers in a game are referred to as your Lotto Numbers.

Gold Lotto has forty-five balls numbers from 1 to 45 from which eight (8) numbers are randomly chosen, these are referred to as the Draw Numbers. The first six (6) Draw Numbers are the "winning numbers" and the last two (2) numbers are the "supplementary numbers". Due to the process of choosing these numbers, all eight numbers are unique.

The aim of Gold Lotto is to match as many of the eight Draw Numbers with the six numbers in a single game.

In this assignment you are to implement a Gold Lotto checking program.

For this assignment there are two stages which will be explained below.

In order to get the mark for the second stage, the first stage must be completed satisfactorily.

The first stage is to write a program which checks the six numbers of each game with the Draw Numbers and report how many matches of "winning numbers" and "supplementary numbers" were found in a game. Similar to screenshots 1 and 2 on pages 4 & 5 of this document.

For completing stage 1 the highest mark you can achieve is 7 out of 10

Assignment Requirements

In this assignment, you are not to use **any** of the **System.Array** class methods, eg **Array.BinarySearch**, **Array.CopyTo**, etc, no **LINQ** queries and no other data types such as **lists** and an **array of arrays** or **ragged arrays**. Your Main method will be solely a test driver code to show that your methods produce the desired outcome. In structure it will be similar to the Main which was supplied for Activity 4 in worksheet 4, Linear Search Implementation Exercise.

Stage 1:

The only statements that will be in **Main** will be method calls to methods which you have written or assignment statements for receiving the returned value from a method or a loop construct if required. There are to be no explicit **Write** or **WriteLine** calls within the body of **Main,** you should use a trivial method similar to **OutputMessage** method in the Linear Search Implementation program to print any simple messages to the screen.

You are to use the near empty **Program.cs** of **Gold Lotto Checker** Project which has been provided. Do NOT start you own New Project. Do not change the array declarations of **`lottoNumbers`** or **`drawNumbers`**.

Stage 2:

The second stage of this assignment is only to be attempted if stage 1 is complete and your code produces the same result as screenshot 2. Stage 2 will not be marked if your stage 1 is not 100% functionally correct. For the second stage your program will randomly generating the 8 draw numbers. Information on generating random numbers is in a separate document, **Random Number Generation.**

For this stage you are to use the near empty **Program.cs** of **Gold Lotto Checker Stage 2.** As a starting point, copy your methods from stage 1 into the stage 2 **Program.cs**. Be careful not to remove or delete the array declarations that have been provided for stage 2 in the near empty body of **Main**. In stage 2 the array **`drawNumbers`** is not initialised with any numbers.

To compile and execute code in the project you need to inform VS to use this project, **Gold Lotto Checker Stage 2** as the **StartUp Project**.

Open **Solution Explorer;** left click on **Gold Lotto Checker Stage 2 (**screenshot 3). Right click and select **Set as StartUp Project**. If you have done this correctly **Gold Lotto Checker Stage 2** will be **Bold** as in screenshot 4. Now select **Program.cs** of **Gold Lotto Checker Stage 2** (screenshot 5). This code compiles, check it by removing a semi-colon.

Screenshots 6 show the Lotto Checker running with the draw numbers randomly generated. The Random variable declaration statement used was

```
Random randomValue = new Random(10);
```

Use the seed value of 10 in your program to generate the same 6 draw numbers every time you run your program. Your random numbers may differ from those in screenshot 6 even if you use the seed value of 10. You may need to experiment with different seed values to obtain a sequence which contains duplicated values to test your code is correct.

Electronic Submission

You will submit your assignment via the link in the Assessment folder on Blackboard (Bb) before 11:50am on 12th April. Information on the assignment submission is available on Bb in the document, **Second Assignment Submission Details** which is similar to the first assignment submission details though with some information unique to this assignment. (You should not be surprised by this!)

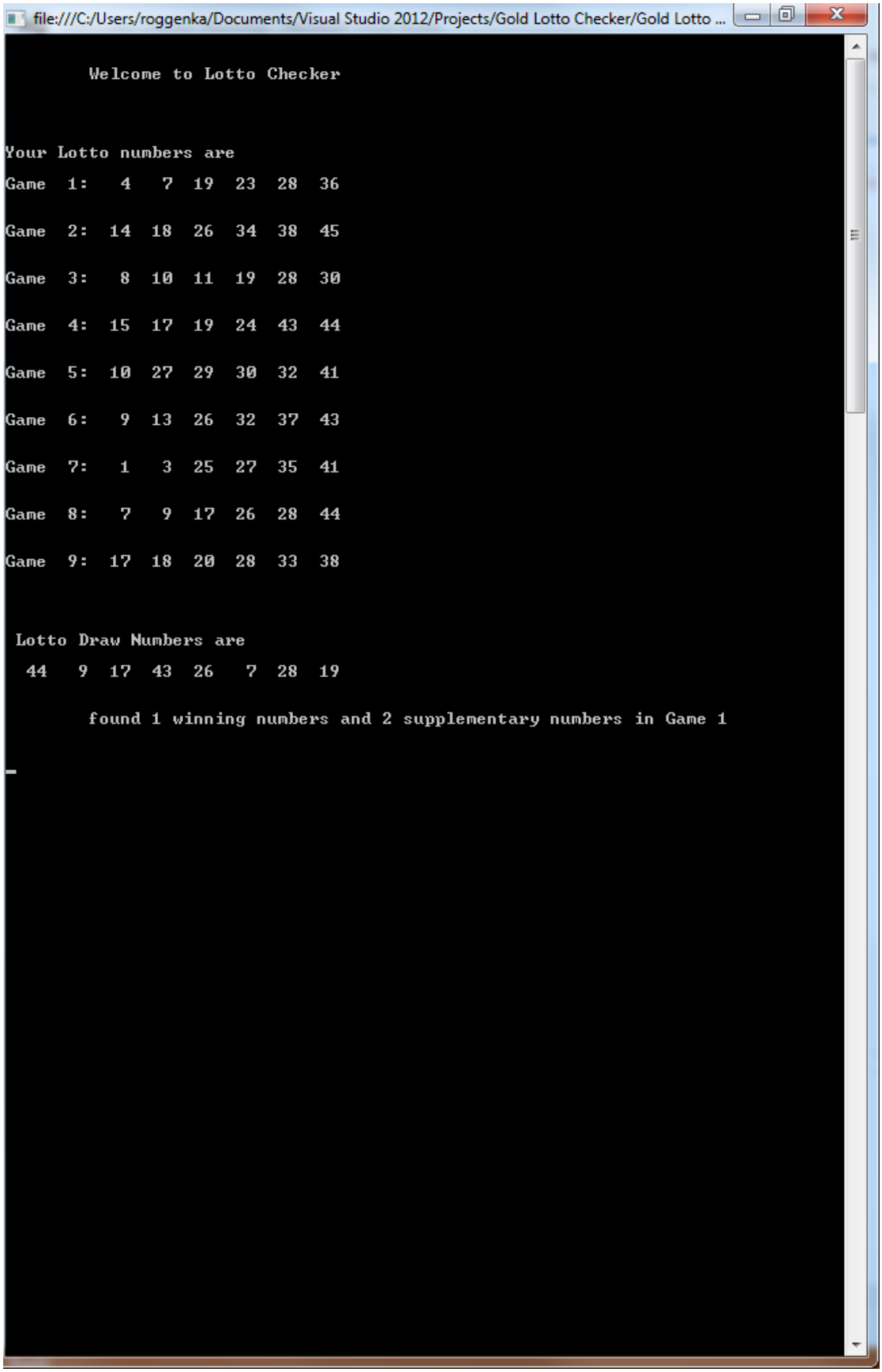
It is recommended that you upload your file to Bb from a lab at QUT. Inability to access Bb from home is not a sufficient reason for submitting the assignment late or requesting an extension.

Final Comments

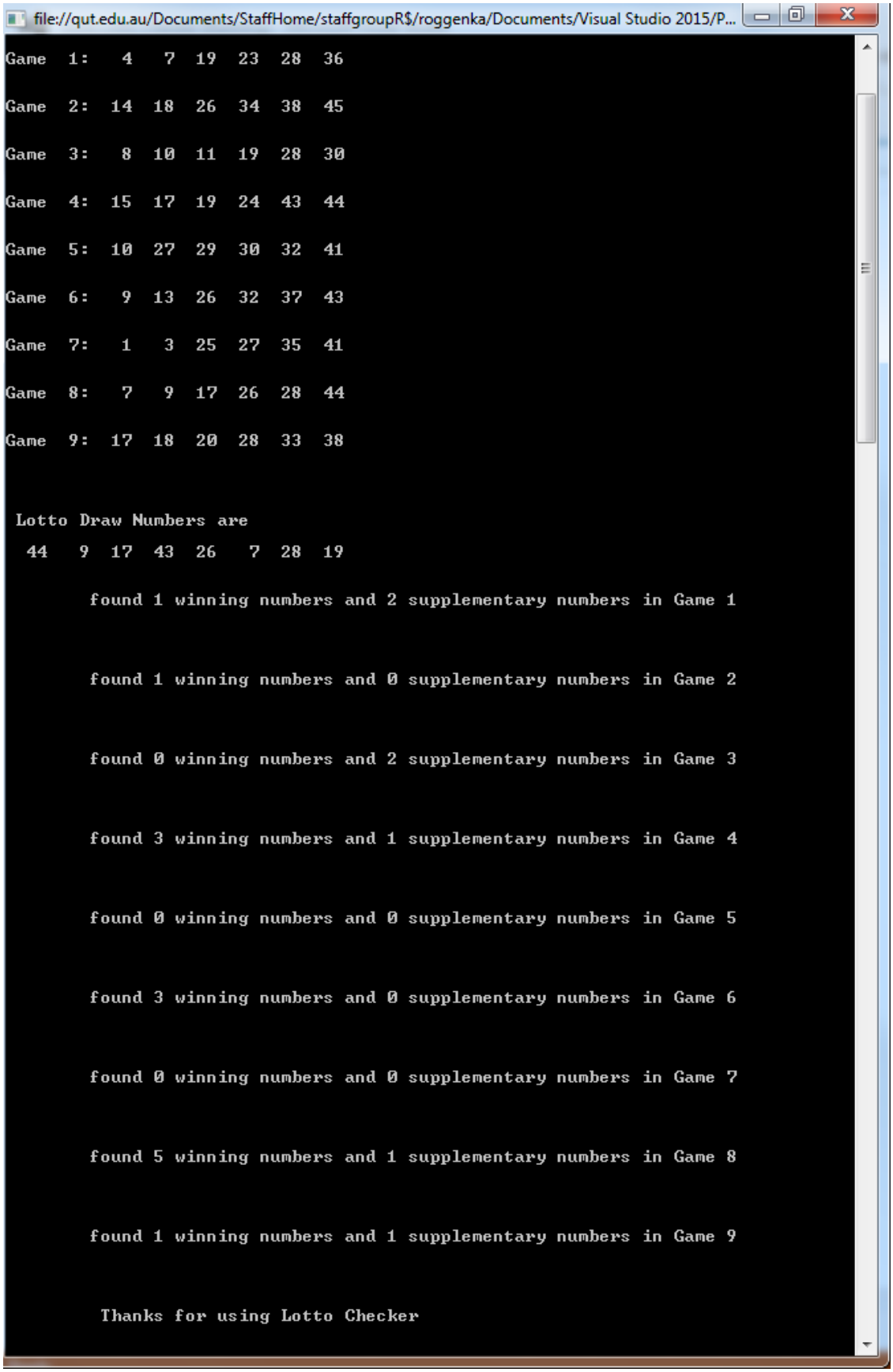
You must use the supplied project folder as a starting point. The code in **Program.cs** of both projects compiles successfully and runs with albeit no functionality. You should ensure that your assignment always compiles and does something. Incremental development and implementation, Structure Programming as well as following the DRY principle.

Whatever you do, do not share your code with a friend or develop the actual code in collaboration with another person; the assignment is to be your own work. If you are found to have engaged in Academic Misconduct, you will receive 0 for this assignment item and it will be reported as a major case of Academic Misconduct which will remain on your student record forever.

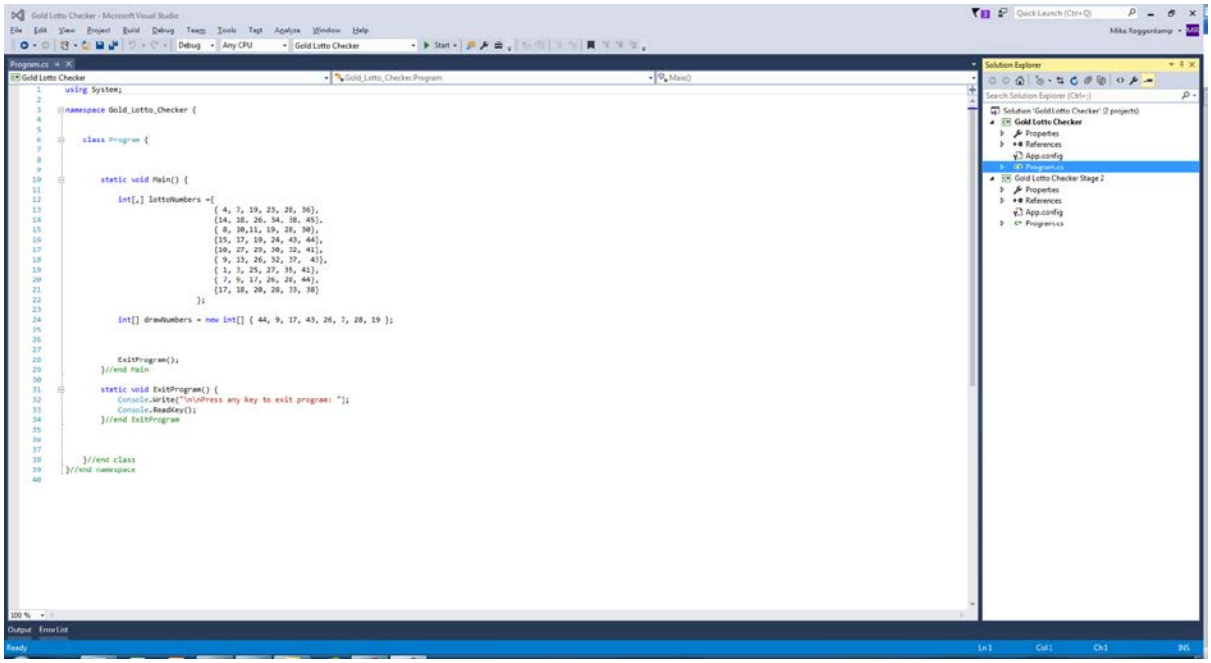
Enjoy the challenge of this assignment!



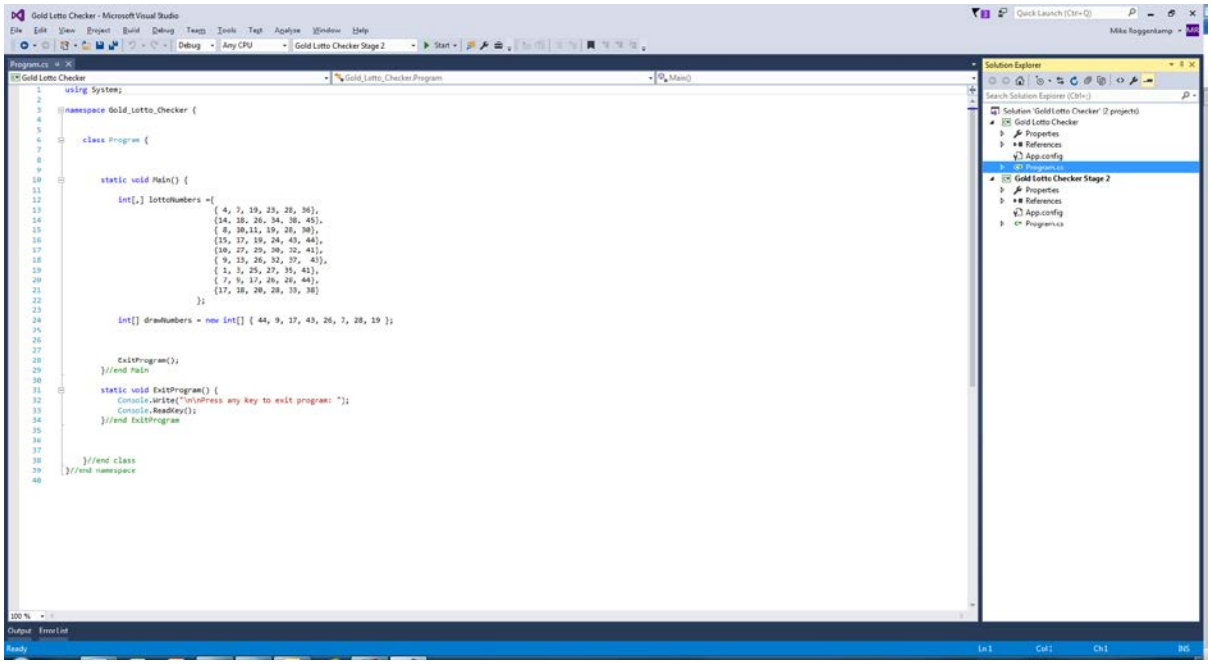
Screenshot 1: Shows the 9 games each with 6 numbers, the 8 draw numbers and the matches found in Game 1.



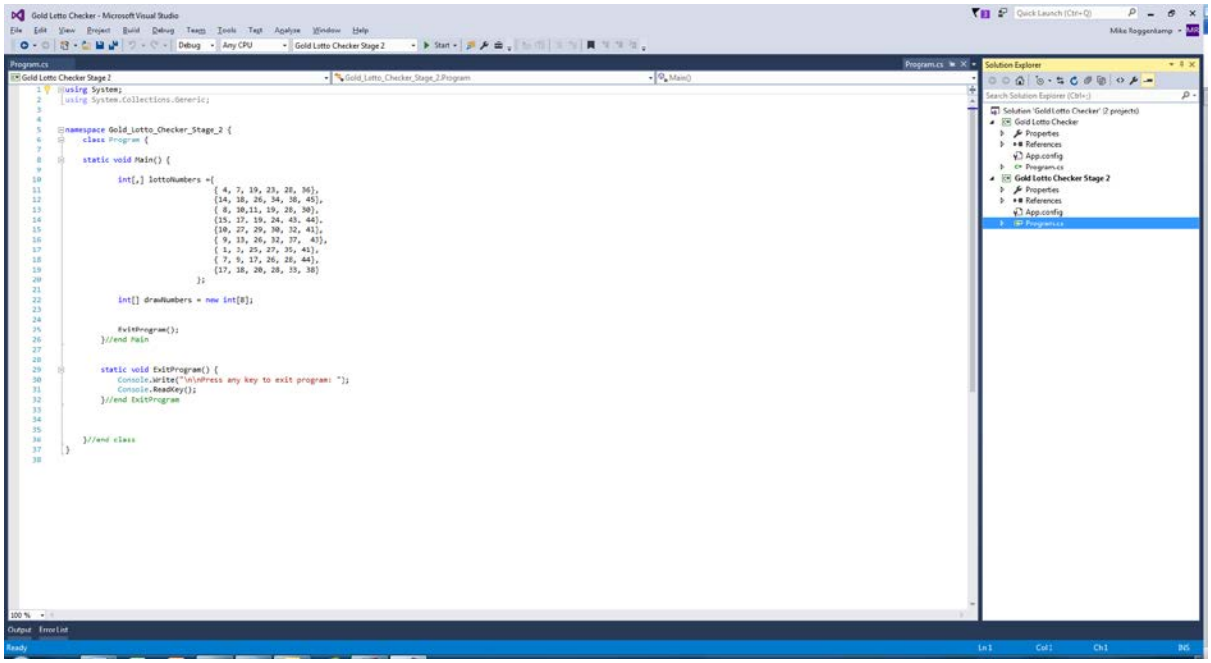
Screenshot 2: Shows the matches for all 9 games.



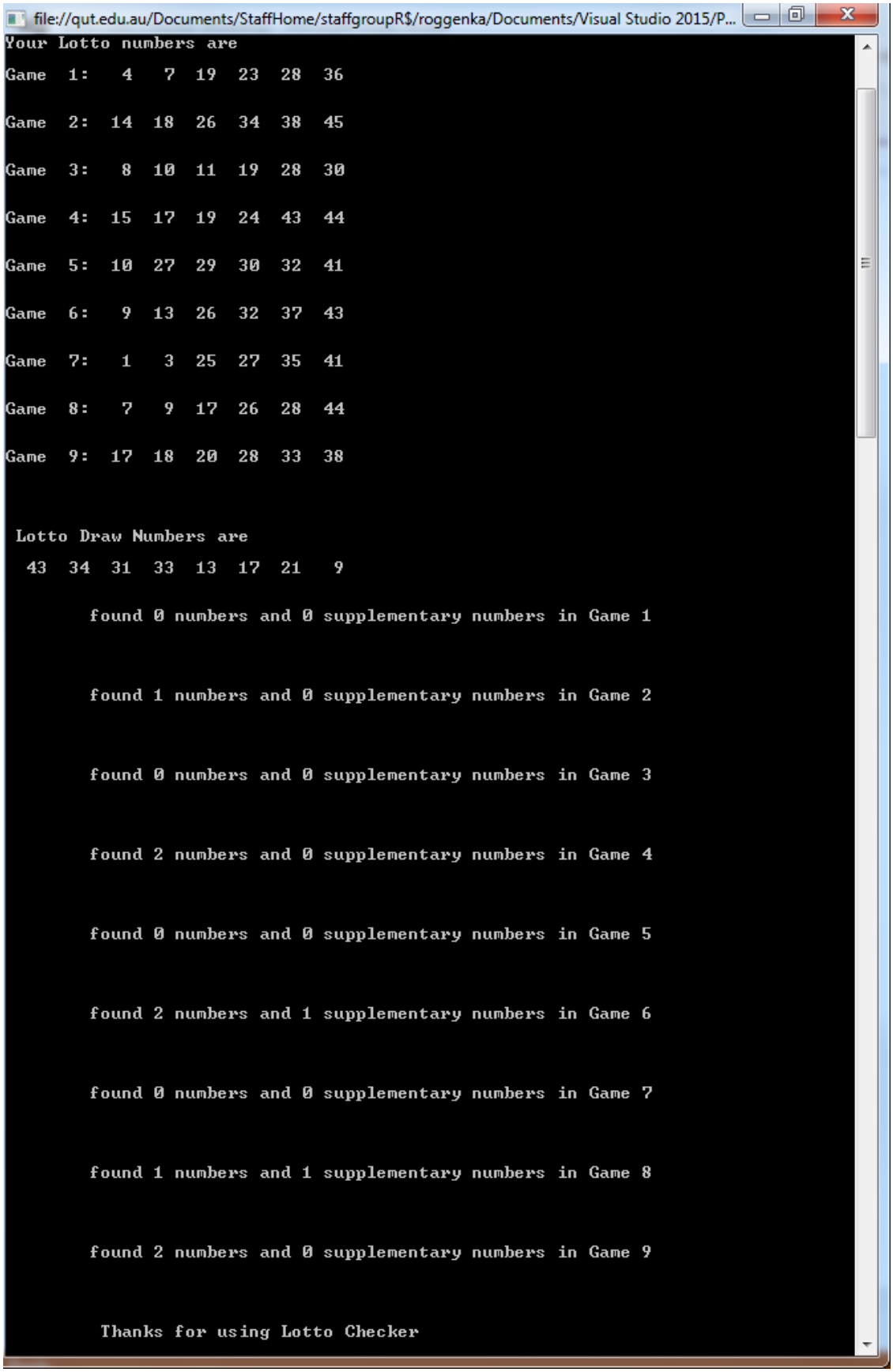
Screenshot 3: Solution Explorer showing two projects, **Gold Lotto Checker** and **Gold Lotto Checker Stage 2** each contain their own **Program.cs** and associated other items. **Gold Lotto Checker** is currently **Bold** which indicates it is the **StartUp Project**. **Build** and **Start (Debug)** apply to this project's **Program.cs**



Screenshot 4: Gold Lotto Checker Stage 2 is now **Bold**, so it is the **StartUp Project**. The screen still shows the body of **Gold Lotto Checker** Program.cs.



Screenshot 5: Program.cs of Gold Lotto Checker Stage 2which now can be compiled and run. **Gold Lotto Checker** project is grey.



Screenshot 6: Stage 2 output showing 9 games and the 8 random draw numbers in the order that they were drawn and the matches for the 9 games. Your 8 random draw numbers may be different even if you use the seed value of 10.