**CPSC1012 Assignment 3 Part 2 – Arrays**

**Weight: 5% of your final mark**

**Due Date: 11:50pm Monday, November 28, 2022 (Late submissions will not be graded)**

**Introduction**

In this assignment you will design and write a modularized menu-driven program that allows the user to play Lotto MAX with EXTRA or to play Lotto 6/49 with EXTRA.

**LOTTO MAX**

You can play LOTTO MAX by picking **seven** unique numbers from **1** to **50**. To win a prize, numbers matched must appear in the same selection (line) as shown in the table below.

|  |  |
| --- | --- |
| Match | Prize |
| 7 of 7 | Win or share Jackpot of at least $10 Million or 87.25% of Pools Fund |
| 6 of 7 + Bonus | Share of 2.5% of Pools Fund |
| 6 of 7 | Share of 2.5% of Pools Fund |
| 5 of 7 + Bonus | Share of 1.5% of Pools Fund |
| 5 of 7 | Share of 3.5% of Pools Fund |
| 4 of 7 + Bonus | Share of 2.75% of Pools Fund |
| 4 of 7 | $20 |
| 3 of 7 + Bonus | $20 |
| 3 of 7 | Free Play |

**LOTTO 6/49**

You can play LOTTO 6/49 by picking **six** unique numbers from **1** to **49**. To win a prize, numbers matched must appear in the same selection (line) as shown in the table below.

|  |  |
| --- | --- |
| Match | Prize |
| 6 of 6 | Win or share Jackpot (79.5% of the Pools Fund) |
| 5 of 6 + Bonus | Share of 6% of the Pools Fund |
| 5 of 6 | Share of 5% of the Pools Fund |
| 4 of 6 | Share of 9.5% of the Pools Fund |
| 3 of 6 | $10 |
| 2 of 6 + Bonus | $5 |
| 2 of 6 | Free Play |

**LOTTO EXTRA**

You can play EXTRA by getting the system to generate 7 digits for you. To win a prize match the number drawn **in exact order** from the **right-hand side** to win.

|  |  |
| --- | --- |
| Match | Prize |
| All 7 digits | $250,000 |
| Last 6 digits | $100,000 |
| Last 5 digits | $1,000 |
| Last 4 digits | $100 |
| Last 3 digits | $50 |
| Last 2 digits | $10 |
| Last digit | $2 |

**Program Menu**

Create a program menu to allow the user to perform the operations shown below in the sample:

|------------------------------------------------|

| CPSC1012 Lotto Centre |

|------------------------------------------------ |

| 1. Change Lotto MAX winning numbers |

| 2. Change Lotto 6/49 winning numbers |

| 3. Change Lotto EXTRA winning numbers |

| 4. Play Lotto MAX |

| 5. Play Lotto 6/49 |

| 0. Exit Program |

|------------------------------------------------|

Enter your menu number choice > 1

The current Lotto MAX winning numbers are: 5, 7, 15, 18, 35, 37, 45 (Bonus: 47)

Would you like to generate or enter the winning numbers (g/e): g

The new Lotto MAX winning numbers are: 10, 20, 24, 25, 32, 39, 46 (Bonus: 15)

// re-display menu

Enter your menu number choice > 1

The current Lotto MAX winning numbers are: 10, 20, 24, 25, 32, 39, 46 (Bonus: 15)

Would you like to generate or enter the winning numbers (g/e): e

Enter number #1: 10

Enter number #2: 17

Enter number #3: 18

Enter number #4: 22

Enter number #5: 23

Enter number #6: 25

Enter number #7: 34

Enter bonus number: 37

The new Lotto MAX winning numbers are: 10, 17, 18, 22, 23, 25, 34 (Bonus: 37)

// re-display menu

Enter your menu number choice > 3

The current Lotto EXTRA number is: 1646351

The new Lotto EXTRA number is: 5379569

// re-display menu

Enter your menu number choice > 4

The current Lotto MAX winning numbers are: 5, 7, 15, 18, 35, 37, 45 (Bonus: 47)

The current Lotto EXTRA number is: 1646351

Your Lotto MAX quick pick numbers are: 1, 3, 5, 7, 35, 37, 50

Your Lotto EXTRA number is: 1646359

Your Lotto MAX Match: 4 / 7

Your Lotto MAX Prize: $20

Your Lotto EXTRA Match: 0 digits

Your Lotto EXTRA Prize: $0

// re-display menu

Enter your menu number choice > 5

The current Lotto 6/49 winning numbers are: 6, 8, 13, 14, 35, 40 (Bonus: 26)

The current Lotto EXTRA number is: 2647447

Your Lotto 6/49 quick pick numbers are: 2, 4, 6, 8, 30, 49

Your Lotto EXTRA number is: 2647047

Your Lotto 6/49 Match: 4 / 7

Your Lotto 6/49 Prize: Free Play

Your Lotto EXTRA Match: Last 2 digits

Your Lotto EXTRA Prize: $10

// re-display menu

Enter your menu number choice > 0

Good-bye and thanks for coming to the CPSC1012 Lotto Centre.

Generate the winning numbers for Lotto MAX, Lotto 6/49, and Lotto EXTRA at program startup. Design your program to use methods where each method cannot have more than 30 statements. Your program must handle invalid input values and not crash.

**CODING STANDARDS**

The following coding standards must be followed when developing your program:

* Your C# Console App project must be named as **Assignment3Part2-*YourFullName*** (eg: Assignment3Part2-CodeGuru)
* A C# comment block at the beginning of the source file with titles for the **purpose**, **inputs**, **outputs, algorithm, test plan, written by, written for, section no,** and **last modified** of the program such as shown below:

/\*

Purpose:     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Inputs:       \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Outputs:     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Algorithm:    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Test Plan:

Test Case Test Data Expected Results

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Written by:         Your full name

Written for: Instructor Name

Section No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Last modified:     yyyy.MM.dd

\*/

* Write only one statement per line.
* Write only one declaration per line.
* Use camelCase (firstName) for local variable names and method parameter names.
* Use PascalCase/TitleCase (FirstName) for constant variable names and method names.
* If continuation lines are not indented automatically, indent them one tab stop (four spaces).
* Do **NOT** use the **goto** or **continue** statement
* Do **NOT** use **break** statement to exit a looping structure (a switch statement is not a looping structure)
* Braces layout must be at next line.
* If statement must include braces.
* Multi-way if-else statement must include an else block.
* Switch statement must include a default case.
* All looping statements must include braces.
* Value-returning methods are not allowed to use more than ONE return statement.
* Write descriptive comments in your code for each major task you perform.
* Do not use data structures in your code that has not been presented in class without consulting your instructor first.

**MARKING RUBRIC**

|  |  |
| --- | --- |
| **Mark** | **Description** |
| **5** | Excellent – no improvements to recommend |
| **4** | Very Good – program passes all test cases but there are some improvements to the code that is recommended |
| **3** | Acceptable – coded all the requirements but some test cases are not passing because there are minor logical errors in the code |
| **2** | Needs Work – coded most of the requirements and code is structured correctly but there are major logical errors in the code |
| **1** | Unsatisfactory – coded some of the requirements, code has syntax errors, code has many warnings |
| **0** | Not done. |

**Submission Requirements**

* Your instructor will inform you on how/where your final solution should be submitted.