Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **ASSIGNMENT GOALS:**   1. **Get more experienced with the Java Language and Eclipse operation.** 2. **Leverage a Custom “utility” Class that’s already been developed for you.** 3. **Complete the implementation of a partially completed, stubbed out, custom Class to meet the specifications of a stated requirement.** |

(20 Points)

1. **Read Textbook Chapter 5 – pp 269-304** –and complete the following exercises (startingat the top P308):

**Short answers – (12 pts).**

**T/F Questions starting at the top of P308**

15) True / False ? 15- true

16) True / False ? 16- true

19) True / False ? 17- false

20) True / False ? 18- true

**Short Answer Questions starting at the bottom of P310**

1)

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| 1-The divide and conquer algorithm recursively breaks a problem into two or more problems, until it becomes simple to solve it directly. |

5)

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| 5-An method parameter values are copied to another variable and the copied object is then passed. |

(80 Points)

**NOTE** start with the source code provided:**edu.cuny.csi.csc330.lab3.LottoQuickPicker**

1. **Programming assignment (80 points):** 
   1. You will be designing / implementing the completion of a Programthat simulates the ‘QuickPick’ function at a local convenience-store when sellingLottery Game Tickets such as

Lotto, MegaMillons, Daily Number, PowerBall, etc.

You will need the “services” of the already implemented Class called the “Randomizer” - specifically, the generateInt() method which has the following “signature”:

/\*\*Returns a random integer value between the values passed in as arguments – high and low – inclusive of. So invoking generateInt(100, 200) might return 100, or 200 or any value between …

\*/

**intgenerateInt(int low, int high){ }**

* 1. Review the code of the “stubbed out”   
     edu.cuny.csi.csc330.lab3.LottoQuickPicker

Finish the implementation of this Class given the following requirements reviewed in class:

* + 1. **Needs to generate 1 or more quick pick game (one by default – overridden by an optional command line argument).**
    2. **For each game:**
       1. Generate 6 **unique**numbers between **1 and 59**.
       2. The Class is responsible for displaying the game ticket as described below (see actual example below as well).
          1. The**unique** numbers for each game must be sorted in ascending order on the same horizontal line.
          2. The Game Ticket should display a game specific heading including a date/time.
          3. Each game will be numbered/indexed – 1,2,3, … N
          4. Game numbers will be evenly spaced /formatted. And single digit numbers will be padded with a leading 0.
          5. The Game Ticket should display both a header and trailer of your own choosing (see general format and sampledisplayed ticket below).

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| ***LOTTO***  ***Jan 5, 2022 10:11am***  *( 1) 15 18 25 32 37 42*  *( 2) 12 28 44 46 55 57*  *……………*  *(N) 02 09 19 20 21 29*  ***<store name>*** |

|  |  |
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| **Actual NYSTicket** | **Proposed Program Output** |
| New York Ticket Lotto | ---------------------------------  ------------ LOTTO ------------  WedJan510:11:17 EDT 2022  ( 1) 15 18 25 32 37 42  ( 2) 12 28 44 46 55 57  ( 3) 16 18 24 27 28 54  ( 4) 08 25 29 38 40 44  ( 5) 05 14 18 29 53 58  ***<store name>*** |

**EXTRA CREDIT FEATURE +10 points**

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| ---------------------------------  ------------ LOTTO ------------  Sun, Aug 22, 2021 9:39:26 AM  ( 1) 15 18 25 32 37 42  ( 2) 12 28 44 46 55 57  ( 3) 16 18 24 27 28 54  ( 4) 08 25 29 38 40 44  ( 5) 05 14 18 29 53 58  ( 6) 31 44 46 50 51 54  ( 7) 08 09 11 14 29 47  **Odds of Winning: 1 in *45,057,474*<<<<<< EXTRA CREDIT INFO**  ----- (c) S.I. Corner Deli -----  --------------------------------- |

* How would you calculate the odds of customer winning asingle purchased Lotto Game? Well, what are the odds of picking 6 randomly selected numbers out of a pool of 59 numbers? Research the mathematical solution, and code it in the calculateOdds() method - and display the value returned by this method as shown above.
* NOTE:
  + Your solution should work for any game specification – not just 6 of 59.
  + To get full [10 points] credit, describe your solution in comment block above the calculateOdds() method.

**PASTE YOUR SAMPLE OUTPUT HERE**

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| --- |
| ----------------------------  -----------Lotto------------  Tue Oct 11 11:21:10 EDT 2022  (1) 14 25 39 40 46 53  (2) 05 25 32 38 44 51  (3) 01 02 25 26 40 44  (4) 08 12 15 27 39 46  (5) 18 26 39 40 42 55  (6) 05 06 23 25 43 58  (7) 03 07 09 38 46 47  Odds of Winning : 1 in 45057474  ---- (c)S.I Corner Deli ----  ---------------------------- |