Program 1 pgm1cop3530dsB - cop3530 Data Structures and Algorithms

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- Program must be named: yourLastNameFirstLetterOfYourFirstNamepgm1.java
  If your name is George Washington the program should be named:
  WashingtonGpgm1.java

- Turn in the signed source code on paper, and email me the source code.

- Make sure the program is properly documented and aligned uniformally, looking professionally,
  I will take points off if it is not.

- Include the following header in every program:

```
/*********************************************************************
Author     : Your Name
Course     : COP 3530 Date, Time and place of class
Professor  : Michael Robinson
Program #  : Program Purpose/Description
             {A brief description of the program }
Due Date   : MM/DD/YYYY

Certification:
I hereby certify that this work is my own and none of it is the work of any other person.
 ..........{ your signature }..........

*********************************************************************/
```

Purpose of this program: Implement chapter 2 ideas

1 - Worth 3 points
    From the main method call a method named BigO, in the BioO method do the following:
    *** Using one set of two for loops (a nested for loop)
    - Create a two dimensions array of ints of size 10 x 10
    - Load all indexes with the addition of its row + column
    - Display the two dimension array with its data displaying a perfect square
    - Analyze the contensts of the array and obtain the following totals:
      - Total for all values found in columns 0 and 9
      - Total for all values found in rows   4 and 5
      - Total for all values found in columns 5 and 4
      - Total for all values found in rows   9 and 0
      - Print the big O of this method

2 - Worth 3 points
    - Using ints only, implement recursion to find the factorial of 50
    - Find out what is the first positive int where recursion fails

    - Using longs only, implement recursion to find the factorial of 50
    - Find out what is the first positive long where recursion fails

    - Find the factorial of 50 using BigInteger data type
    - Find out what is the first positive BigInteger where recursion fails

    - Print the big O of each of these methods

3 - Worth 2 points
    Using binary search
    - Load into primary memory in a single dimension array the numbers from 1 to 1,000,000
    - Find out how many reads it takes to find the numbers:
      15; 279,025; 775; and 897,000 e.g.

      e.i. : To find number x it took y reads.

      - Print the big O of this method