KADİR HAS UNIVERSITY

CE 343 Object Oriented Programming Languages

2018-2019 Fall

HW 1 – Arrays

Due Date: Sunday 14/10/2017 23:59 – 2 points

Submit your java **source** files (.**java**) via BlackBoard before the due date.
Maximum 2 students can work together. The file should contain the name of group members.
You are expected to provide **compile-able** and **executable** source code.
Any type of **shared** work with different groups will be considered **cheating**. Thus, do **not** share your work.

Task#1 Histogram

- Complete *Histogram.java* that creates a histogram allowing to visually inspect the score distribution of a set of students. The program should read from the input file *inputGrade.txt* an arbitrary number of integers that are in the range 0 to 100 inclusive; then produce a chart similar to the one below that indicates how many students scored in the range 91 to 100, 81 to 90 and so on. Print one number sign (#) for each student in that range.
- The output should be as follows:

```
91 - 100 | # #
81 - 90  | # # # #
71 - 80  |
61 - 70  | # # # # # # #
51 - 60  | # # # #
41 - 50  | # #
31 - 40  | #
21 - 30  | # #
11 - 20  |
0  - 10  | #
```

Task#2 Special Square

- Complete *Square.java* that represents a square matrix.
- Complete *SquareTest.java* that reads input for squares from the input file *inputSquare.txt* and tells whether each is a special square. Note that the main method reads the size of a square, then after constructing the square of that size, it calls the *readSquare* method to read the square in.
- You should find that the first and second squares in the input are special, and that the third and fourth are not. Note that the -1 at the bottom tells the test program to stop reading.
- The output should be as follows:

```
******** Square 1 ********
8   1   6
3   5   7
4   9   2
Sum of row 0: 15
Sum of row 1: 15
Sum of row 2: 15
Sum of column 0: 15
Sum of column 1: 15
Sum of column 2: 15
Sum of the main diagonal: 15
Sum of the other diagonal: 15
It's a special square!


******** Square 2 ********
30   39   48   1    10   19   28
38   47   7    9    18   27   29
46   6    8    17   26   35   37
5    14   16   25   34   36   45
13   15   24   33   42   44   4
21   23   32   41   43   3    12
22   31   40   49   2    11   20
Sum of row 0: 175
Sum of row 1: 175
Sum of row 2: 175
Sum of row 3: 175
Sum of row 4: 175
Sum of row 5: 175
Sum of row 6: 175
Sum of column 0: 175
Sum of column 1: 175
Sum of column 2: 175
Sum of column 3: 175
Sum of column 4: 175
Sum of column 5: 175
Sum of column 6: 175
Sum of the main diagonal: 175
Sum of the other diagonal: 175
It's a special square!
```

```
******** Square 3 ********
3    16   2    13
6    9    7    12
10   5    11   8
15   4    14   1
Sum of row 0: 34
Sum of row 1: 34
Sum of row 2: 34
Sum of row 3: 34
Sum of column 0: 34
Sum of column 1: 34
Sum of column 2: 34
Sum of column 3: 34
Sum of the main diagonal: 24
Sum of the other diagonal: 40
It's not a special square!


******** Square 4 ********
30   39   48   1    10   28   19
38   47   7    9    18   29   27
46   6    8    17   26   37   35
5    14   16   25   34   45   36
13   15   24   33   42   4    44
21   23   32   41   43   12   3
22   31   40   49   2    20   11
Sum of row 0: 175
Sum of row 1: 175
Sum of row 2: 175
Sum of row 3: 175
Sum of row 4: 175
Sum of row 5: 175
Sum of row 6: 175
Sum of column 0: 175
Sum of column 1: 175
Sum of column 2: 175
Sum of column 3: 175
Sum of column 4: 175
Sum of column 5: 175
Sum of column 6: 175
Sum of the main diagonal: 175
Sum of the other diagonal: 168
It's not a special square!
```

Task#3 Arrays of Objects

- *Song.java* is complete and will not be edited. *inputClassics.txt* is the data file that will be used by *CompactDisc.java*, the file you will be editing.
- In *CompactDisc.java*, there are comments indicating where the missing code is to be placed. Declare an array of Songs, called *cd*, with a size of 6.
- Fill the array by creating a new song with the title and artist and storing it in the appropriate position in the array.
- Print the contents of the array to the console.
- The output of *CompactDisc.java* should be as follows:

```
Contents of Classics:
Ode to Joy by Bach
The Sleeping Beauty by Tchaikovsky
Lullaby by Brahms
Canon by Bach
Symphony No. 5 by Beethoven
The Blue Danube Waltz by Strauss
```