LAB 6

Due Date: April 06 by 10:00 p.m. submission on Blackboard. Submit under assignment folder Lab6.

Max. Grade: 4 points.

Topics:

- **Exceptions**
- **Writing text data into a file and reading text from a file utilizing stream classes.**

TASK 1 (2.0 POINTS)

This task has to do with Exceptions. Utilizing your solution to extra credit exercise 6 implement three user defined exception classes:

1. TooLargeArea exception. This exception class has a constructor, a getMessage method (message: "The area calculated exceeds the limits") and a toString methods (message: "TooLargeAreaException occurred").
2. TooLargeVolume exception. This exception class has a constructor, a getMessage method (message:"The volume calculated exceeds the limits") and a toString method (message: "TooLargeVolumeException occurred").
3. TooLargeCost exception. This exception class has a constructor, a getMessage method (message"The cost calculated exceeds the limits") and a toString method (message: "TooLargeCostException occurred").

Include the proper messages by studying the sample output given below.

Modify the proper interfaces and classes and the proper methods within them so that the following errors can be caught during the runtime of the project.

1. An area is declared too large if it exceeds 1000 units squared.
2. A volume is declared too large if it exceeds 10000 units cubed.
3. The costToDraw is considered too large if it exceeds 400000

When an exception occurs because of the area, volume or cost the message should appear on the display.

The program should be modified so that customer objects are created by the user via the keyboard. The user can create as many objects as he/she desires as

long as the value “done” is not typed. This is done in the Customers class. When the user types done, the vector is returned to the client class the results are displayed.

Adjust the client program so that the input Cube and Sphere objects data is provided via the keyboard from the user. The user can keep typing information for cube objects as long as the word “done” is not typed. BOTH types of objects are saved in one ArrayList. After the user types done the program iterates through the ArrayList and for each shape object in the list proceeds to calculate and display the costs.

- Keep in mind that when an exception occurs the program should continue until it finishes all customer objects.
- You may need to utilize a finally block also besides a try/catch in some cases.

Sample Output- No Exceptions thrown

```
C:\CS116\SPRING2014\Labs\Lab6\Lab6Solution\TASK1>java FigureCost
Please enter the shape the length(or radius) and the asked value separated by space or type done
sphere 2 area
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
cube 10.0 volume
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
sphere 2 volume
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
cube 10.0 area
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
done

Please enter the 2 pieces of information for type and score for a customer object separated by space or type done
Architect 500
```

Please enter the information for type and score for a customer object separated by space or type done
Other 500
Please enter the information for type and score for a customer object separated by space or type done
Architect 700
Please enter the information for type and score for a customer object separated by space or type done
Other 700
Please enter the information for type and score for a customer object separated by space or type done
done
The Customer is: type= Architect score= 500
The Customer is: type= Other score= 500
The Customer is: type= Architect score= 700
The Customer is: type= Other score= 700
Calculating the cost for shape object: The name of the shape is: sphereThe radius is 2.0
And the parameter asked for is: area
The area drawing cost for an Architect with score <600 is 2010.62
The area drawing cost for an Other with score <600 is 3015.93
The area drawing cost for an Architect withscore >=600 is 1005.31
The area drawing cost for an Other with score >=600 is 2010.62
The Customer is: type= Architect score= 500
The Customer is: type= Other score= 500
The Customer is: type= Architect score= 700
The Customer is: type= Other score= 700
Calculating the cost for shape object: The name of the shape is: cube The length is 10.0
And the parameter asked for is: volume
The volume drawing cost for an Architect with score <600 is 40000
The volume drawing cost for an Other with score <600 is 60000
The volume drawing cost for an Architect with score >=600 is 20000
The volume drawing cost for an Other with score>=600 is 50000
The Customer is: type= Architect score= 500
The Customer is: type= Other score= 500
The Customer is: type= Architect score= 700
The Customer is: type= Other score= 700
Calculating the cost for shape object: The name of the shape is: sphereThe radius is 2.0
And the parameter asked for is: volume
The volume drawing cost for an Architect with score <600 is 2010.62
The volume drawing cost for an Other with score <600 is 3015.93
The volume drawing cost for an Architect with score >=600 is 1005.31

The volume drawing cost for an Other with score>=600 is 2513.27
The Customer is: type= Architect score= 500
The Customer is: type= Other score= 500
The Customer is: type= Architect score= 700
The Customer is: type= Other score= 700
Calculating the cost for shape object: The name of the shape is: cube The length is 10.0
And the parameter asked for is: area
The area drawing cost for an Architect with score <600 is 12000
The area drawing cost for an Other with score <600 is 18000
The area drawing cost for an Architect withscore >=600 is 6000
The area drawing cost for an Other with score >=600 is 12000

Sample output – Exceptions thrown

C:\CS116\SPRING2014\Labs\Lab6\Lab6Solution\TASK1>java FigureCost
Please enter the shape the length(or radius) and the asked value separated by space or type done
cube 1000 area
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
sphere 45 volume
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
done
2
Please enter the 2 pieces of information for type and score for a customer object separated by space or type done
Architect 500
Please enter the information for type and score for a customer object separated by space or type done
done
The Customer is: type= Architect score= 500
The area calculated exceeds the limits
Calculating the cost for shape object: The name of the shape is: cube The length is 1000.0 And the parameter asked for is: area
The area drawing cost for an Architect with score <600 is 0
The Customer is: type= Architect score= 500
The volume calculated exceeds the limits
Calculating the cost for shape object: The name of the shape is: sphereThe radius is 45.0
And the parameter asked for is: volume

The volume drawing cost for an Architect with score <600 is 0

Sample Output- Excepton is thrown

```
C:\CS116\SPRING2014\Labs\Lab6\Lab6Solution\TASK1>java FigureCost
Please enter the shape the length(or radius) and the asked value separated by space or type done
cube 20 volume
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
done
1
Please enter the 2 pieces of information for type and score for a customer object separated by space or type done
Other 500
Please enter the information for type and score for a customer object separated by space or type done
done
The Customer is: type= Other score= 500
The cost calculated exceeds the limits.
```

SUBMIT ALL FILES INSIDE A FOLDER NAMED TASK 1.

TASK 2 (2.0- POINTS)

Modify the client class so that the information from the display is also written in a text file called **output.txt**. The information should be written line by line as it appears on the DOS window (with exception of the data typed by the user for creating the customers and figure objects---- see sample output below).

After the data is written into the file display a message asking the user to type the word readfile if he/she wants the file to be read and its contents displayed on the DOS window. If the user types no the program terminates without reading the file. You must use the corresponding streams to read the file and NOT A SCANNER OBJECT!.

As a test , generate programmatically and submit the text file (together with your program files in Task 2) for objects and customers:

cube 10.0 area

sphere 5 volume

done

Architect 500

Other 700

Done

The grader will use your program to generate the same file and match it against yoru submission.

- Don't forget to flush the data into the stream
- Don't forget to write the escape operator \n as a String in order to create a new line in the file
- You will have to use Wordpad or something similar to open the file. Using Notepad will not sometimes show the lines separated.

SUBMIT ALL FILES INSIDE A FOLDER NAMED TASK 2. You must copy and paste all files from your TASK 1 so that the program can be run from the TASK 2 folder.

Sample Output- DOS display

C:\CS116\SPRING2014\Labs\Lab6\Lab6Solution\TASK2>java FigureCost

Please enter the shape the length(or radius) and the asked value separated by space or type done
cube 10.0 area
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
sphere 5.0 volume
Please enter the shape the length(or radius) and the asked (area or volume) separated by space or type done
done

Please enter the 2 pieces of information for type and score for a customer object separated by space or type done
Architect 500
Please enter the information for type and score for a customer object separated by space or type done
Other 700
Please enter the information for type and score for a customer object separated by space or type done
done
The Customer is: type= Architect score= 500
The Customer is: type= Other score= 700
Calculating the cost for shape object: The name of the shape is: cube The length is 10.0 And the parameter asked for is: area
The area drawing cost for an Architect with score <600 is 12000
The area drawing cost for an Other with score >=600 is 12000

The Customer is: type= Architect score= 500
The Customer is: type= Other score= 700
Calculating the cost for shape object: The name of the shape is: sphereThe radius is 5.0 And the parameter asked for is: volume
The volume drawing cost for an Architect with score <600 is 31415.93
The volume drawing cost for an Other with score>=600 is 39269.91
Type readfile if you want to have the text file read and displayed or type no if you want the program terminated:
readfile

Calculating the cost for shape object: The name of the shape is: cube The length is 10.0 And the parameter asked for is: area
The area drawing cost for an Architect with score <600 is 12000
The area drawing cost for an Other with score >=600 is 12000
Calculating the cost for shape object: The name of the shape is: sphereThe radius is 5.0 And the parameter asked for is: volume
The volume drawing cost for an Architect with score <600 is 31415.93
The volume drawing cost for an Other with score>=600 is 39269.91

Sample Output – Text File (when opened with Wordpad)

Calculating the cost for shape object: The name of the shape is: cube The length is 10.0 And the parameter asked for is: area
The area drawing cost for an Architect with score <600 is 12000

The area drawing cost for an Other with score >=600 is 12000
Calculating the cost for shape object: The name of the shape is: sphereThe radius is 5.0 And the parameter asked for is: volume
The volume drawing cost for an Architect with score <600 is 31415.93
The volume drawing cost for an Other with score>=600 is 39269.91