Description

Develop a Java SE Netbeans project using the requirements outlined below.

Provide an abstract superclass called *Tablet* and three subclasses called *iPadTablet, GalaxyTablet,* and *NexusTablet* with default constructor(no-arg) and full-arg overloaded constructors. Provide accessors and mutators for all of the class fields: manufacturer, modelNumber, displaySize, memory, hasWifi, hasMobileCarrier, weight and cost. Provide *toString()* methods to format all of the object data output. Use static counters to count objects instantiated of each of the three tablet subclass types.

Provide an interface called *TabletRelatable* with the following methods:
• *String FindLargestDisplayTablet(Tablet [] tablets);*
• *String FindLowestCostTablet(Tablet [] tablets);*
• *String FindNumberOfCreatedTabletTypes(Tablet [] tablets);*
• *String FindLightestWeightTabletType(Tablet [] tablets);*
Implement this interface in the *Tablet* class. ***Note - This allows the methods to be implemented in the base (or super class), making the methods available to (or exposed by) all sub classes. The alternative would be to implement the interface explicitly in each sub class, which would result in duplicated logic across each sub class.***

Provide a driver class that includes the following features:

- randomly creates 20 tablet subclass instances
- populates each subclass instance with its type data randomly
- collects all instances into an array of Tablet
- displays all created tablets data using the *toString()* method from the array
- displays all interface method results using the array as an argument

Provide a portable test script that executes the application and writes all display data to a file called *mp1out.txt* in a portable file system location.
Comment your code and provide a detailed README (*pdf* only) file that includes:

- project description
- installation, compile and run-time requirements
- insights and expected results
- screen captures demonstrating **all** application capabilities

- generate project *javadocs*

Installation, Compile & Run-Time Requirements

Program was built using a Windows XP desktop configured with—

- java version "1.7.0_07"
- Java(TM) SE Runtime Environment (build 1.7.0_07-b11)
- Java HotSpot(TM) Client VM (build 23.3-b01, mixed mode, sharing)

To run, extract the contents of the mp1.zip file to a local folder. Open a windows command prompt, and navigate to the dist subdirectory. To run the project from the command line, go to the dist folder and type the following:

```
java -jar "mp1.jar"
```

Alternately, navigate to the test directory and run the test.bat script. This script will capture all STDOUT and STDERR output in the test\mp1out.txt file. After executing the mp1.jar, the script opens the mp1out.txt file in window's Wordpad.

When executed, the application begins by parsing the contents of the data\tablets.csv. This file can be used to add or subtract the source of tablet data referenced by the application. This file uses the following columnar layout:

#	Column	Type	Accepted Values
1	Manufacture	String	Apple, Samsung, Google
2	Model	String	
3	Screen Size (in)	Double	
4	Memory (GB)	Double	
5	Wifi Support	Boolean	0 = False, 1 = True
6	Mobile Carrier Support	Boolean	0 = False, 1 = True
7	Weight (lb)	Double	
8	Price	Double	

NOTE – The application read entries where the Manufacturer is Apple, Samsung or Google. In other words, if another Manufacturer is added, the entry will be ignored.

Insights and Expected Results

This application delivers the results as described earlier in this document. Additionally, it introduces a StringDictionary class. The class is wrapper for a HashMap in which the key and value are pre-cast to Strings. The class provides a get, put, contains, and count methods. This class is included in the mpUtil package and is used throughout the other pieces of the application.

Screen Captures

When executed, the application will write its output to the STDOUT in the following format.

```
Outputting tablet instances...
[

        Manufacturer:    Apple
        Model Number:    iPad 3 (Wi-Fi+4G+16+GB)
        Display Size:    9.7
        Memory:  16.0
        Weight:  1.5
        Wifi:            No
        Mobile Carrier: No
        Price:           629.99

,

        Manufacturer:    Apple
        Model Number:    iPad 3 (Wi-Fi+64+GB)
        Display Size:    9.7
        Memory:  64.0
        Weight:  1.5
        Wifi:            No
        Mobile Carrier: No
        Price:           699.0

,

        Manufacturer:    Samsung
        Model Number:    Galaxy Tab 7.0 Plus (Wi-Fi+4G+16+GB)
        Display Size:    7.0
        Memory:  16.0
        Weight:  0.8
        Wifi:            No
```

```
        Mobile Carrier: No
        Price:          500.0

,

        Manufacturer:   Apple
        Model Number:   iPad 2 (Wi-Fi+3G+32+GB)
        Display Size:   9.7
        Memory: 32.0
        Weight: 1.3
        Wifi:           No
        Mobile Carrier: No
        Price:          630.0

,

        Manufacturer:   Apple
        Model Number:   iPad 3 (Wi-Fi+16+GB)
        Display Size:   9.7
        Memory: 16.0
        Weight: 1.5
        Wifi:           No
        Mobile Carrier: No
        Price:          499.0

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        Manufacturer:   Apple
        Model Number:   iPad 2 (Wi-Fi+16+GB)
        Display Size:   9.7
        Memory: 16.0
        Weight: 1.5
        Wifi:           No
        Mobile Carrier: No
        Price:          400.0

,

        Manufacturer:   Apple
        Model Number:   iPad 2 (Wi-Fi+3G+32+GB)
        Display Size:   9.7
        Memory: 32.0
        Weight: 1.3
        Wifi:           No
        Mobile Carrier: No
```

```
        Price:          630.0

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        Manufacturer:   Samsung
        Model Number:   Galaxy Tab 8.9 (Wi-Fi+16+GB)
        Display Size:   8.9
        Memory: 16.0
        Weight: 1.0
        Wifi:           No
        Mobile Carrier: No
        Price:          400.0

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        Manufacturer:   Google
        Model Number:   Nexus 7 (Wi-Fi+8+GB)
        Display Size:   7.0
        Memory: 8.0
        Weight: 0.7
        Wifi:           No
        Mobile Carrier: No
        Price:          200.0

,

        Manufacturer:   Apple
        Model Number:   iPad 3 (Wi-Fi+4G+32+GB)
        Display Size:   9.7
        Memory: 32.0
        Weight: 1.5
        Wifi:           No
        Mobile Carrier: No
        Price:          729.0

,

        Manufacturer:   Samsung
        Model Number:   Galaxy Tab 10.1 (Wi-Fi+4G+16+GB)
        Display Size:   10.1
        Memory: 16.0
        Weight: 1.3
        Wifi:           No
        Mobile Carrier: No
```

```
        Price:          700.0

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        Manufacturer:   Apple
        Model Number:   iPad 2 (Wi-Fi+32+GB)
        Display Size:   9.7
        Memory: 32.0
        Weight: 1.5
        Wifi:           No
        Mobile Carrier: No
        Price:          558.95

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        Manufacturer:   Samsung
        Model Number:   Galaxy Tab 2 (7.0) (Wi-Fi+8+GB)
        Display Size:   7.0
        Memory: 8.0
        Weight: 0.8
        Wifi:           No
        Mobile Carrier: No
        Price:          250.0

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        Manufacturer:   Samsung
        Model Number:   Galaxy Tab 10.1 (Wi-Fi+32+GB)
        Display Size:   10.1
        Memory: 32.0
        Weight: 1.2
        Wifi:           No
        Mobile Carrier: No
        Price:          550.0

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        Manufacturer:   Apple
        Model Number:   iPad 3 (Wi-Fi+4G+16+GB)
        Display Size:   9.7
        Memory: 16.0
        Weight: 1.5
        Wifi:           No
        Mobile Carrier: No
        Price:          629.99
```

```
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        Manufacturer:    Apple
        Model Number:    iPad 3 (Wi-Fi+32+GB)
        Display Size:    9.7
        Memory:  32.0
        Weight:  1.5
        Wifi:            No
        Mobile Carrier: No
        Price:           600.0

,

        Manufacturer:    Apple
        Model Number:    iPad 2 (Wi-Fi+32+GB)
        Display Size:    9.7
        Memory:  32.0
        Weight:  1.5
        Wifi:            No
        Mobile Carrier: No
        Price:           558.95

,

        Manufacturer:    Google
        Model Number:    Nexus 7 (Wi-Fi+8+GB)
        Display Size:    7.0
        Memory:  8.0
        Weight:  0.7
        Wifi:            No
        Mobile Carrier: No
        Price:           200.0

,

        Manufacturer:    Apple
        Model Number:    iPad 3 (Wi-Fi+64+GB)
        Display Size:    9.7
        Memory:  64.0
        Weight:  1.5
        Wifi:            No
        Mobile Carrier: No
        Price:           699.0
```

```
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         Manufacturer:    Samsung

         Model Number:    Galaxy Tab 7.0 Plus (Wi-Fi+4G+16+GB)

         Display Size:    7.0

         Memory:  16.0

         Weight:  0.8

         Wifi:            No

         Mobile Carrier: No

         Price:           500.0

]

Finding the largest display tablet...

Samsung Galaxy Tab 10.1 (Wi-Fi+4G+16+GB) :          10.1 inches,

Samsung Galaxy Tab 10.1 (Wi-Fi+32+GB):     10.1 inches

Finding the lightest tablet...

Google Nexus 7 (Wi-Fi+8+GB):  0.7 Ounces

Google Nexus 7 (Wi-Fi+8+GB):  0.7 Ounces,

Finding the cheapest tablet...

Google Nexus 7 (Wi-Fi+8+GB):      $200.0,

Google Nexus 7 (Wi-Fi+8+GB):      $200.0

Finding the type of tablets...

Galaxy Tablets:          6,

Nexus Tablets:           2,

Ipad Tablets:            12
```

If the data\tablets.csv cannot be found, then the application will generate the following error message.

```
Sep 23, 2012 11:29:06 PM Program main
SEVERE: null
java.io.FileNotFoundException: ..\data\tablets.csv (The system cannot find the file specified)
         at java.io.FileInputStream.open(Native Method)
         at java.io.FileInputStream.<init>(Unknown Source)
         at java.io.FileInputStream.<init>(Unknown Source)
         at java.io.FileReader.<init>(Unknown Source)

         at Program.main(Program.java:56)
```

Additional Info

For additional information, please refer to the Javadoc web published in the \docs directory.