QUESTION 7

7.1   **DataWize** is considering writing an OOP application to manage their stock and sales. The program will instantiate **Stock** objects.

The Stock class will be used to instantiate **Stock** objects.

The class will have the following fields:
- **name** – the name of each stock item
- **category** – the hardware category each item belongs to
- **costPrice** – the price in rands and cents paid by **DataWize** when they purchase stock items
- **stockLevel** – the number of each item in stock

The individual fields of any one object should not be accessible from outside the Stock class.

The class will need the following methods:
- a constructor method to initialise the fields of the object
- accessor methods for the **name**, **costPrice** and **stockLevel** fields
- a mutator method for the **stockLevel** field
- a **toString()** method to display all the fields of an object

You are required to draw a class diagram for the **Stock** class according to the specification shown above in the standard format. Choose appropriate field types for each field.

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                                                                                    (10)

7.2   The **Stock** class makes use of accessor and mutator methods.

Explain why these methods are needed in this class.

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7.3   Assume a further class has been coded. This class has an array called **stockArr** that will hold a number of **Stock** objects. There are many methods in this class, one of which is called **changeStock()**. The code for this method is shown on the Insert included with this question paper.

7.3.1   What specific term is used to describe the item **name** in the header of the method?

_____   (1)

7.3.2   What is the purpose of the variable **pos** in this method?

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_____   (1)

7.3.3   Examine the statement and its associated action line and explain what this code will achieve in the context of the **Stock** class.

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_____   (3)

7.4   While using the **Stock** class, it has been discovered that there are some stock items that have duplicate names in the data file which has been used to populate **stockArr**. The owners of **DataWize** have asked for your assistance in this regard.

      7.4.1   You are required to write an **algorithm** which can be used by either a Java or Delphi programmer to write a method which will read through the populated array and identify any duplicate stock item names. Your algorithm should achieve the following:

- Loop through the array **stockArr**.
- Check for stock items with duplicate names.
- Should a duplicate be found, the **name** and **stockLevel** of both the original and the duplicate should be written away to a text file called "**duplicates.txt**".

          NB: Algorithms are NOT written in a high-level programming language. Marks will be deducted for any solutions presented in Java or Delphi.

(10)

7.4.2 Explain ONE test that could have been used to ensure that no items with duplicate names were entered into **stockArr**.

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_____ (2)

[29]

52 marks

Total: 180 marks