Computer Science Exam style question

CIE 9618

Name _____

- Carry out every instruction in each task.
- Save your work using the file names given in the task as and when instructed.
- You must save your work in the evidence document as stated in the tasks. If your work is not saved in the evidence document, you will not receive marks for that task.
- You must use a high-level programming language from this list: Java (console mode) Python (console mode) Visual Basic (console mode)

THIS PAPER REQUIRES THE SOURCE FILE carFile.DAT

Using a text editor such as Microsoft Word, save a new file called ***myname_evidence*** eg garysmith_evidence.doc

1. A Car is an object that has the following attributes:
   - `regNum` eg "dnc1023"
   - `age` eg 12
   - `price` eg 1200

(a) Write code for the Car class. Do not write the constructor or any other methods. Declare the attributes as private.

If you are using Python add a comment for each property to give its identifier and datatype. Copy and paste the program code into the evidence document with **Question 1a** clearly typed before the code is pasted.

[2]

(b) The constructor method:
- takes the `regnum`, `age` and `price` as parameters

Edit your program from Part 1a and write the constructor method of the `Car` class. Do not write any other methods.

Copy and paste the program code into the evidence document with **Question 1b** clearly typed before the code is pasted.

[4]

(c) The `Car` class has the following methods:

Method name	Purpose
`getRegNum`	Return the `regNum` property
`getAge`	Return the `age` property
`getPrice`	Return the `price` property

Implement these methods.

Copy and paste the program code into the evidence document with **Question 1c** clearly typed before the code is pasted.

[2]

(d) A binary data file, `carFile.DAT` stores an array of `Car` records (see source file). Open the file and load the data into your program.

Copy and paste the program code into the evidence document with **Question 1d** clearly typed before the code is pasted.

[2]

(e) A function, `getMaxPrice`, processes the array of records and returns the maximum price of any `Car` stored in the array. Write this function.

Copy and paste the program code into the evidence document with **Question 1e** clearly typed before the code is pasted.

[4]

(f) A `ClassicCar` is a `Car`. It has the same properties and methods as a `Car` except that the `getPrice` method will return the price of the car plus 20%. Design the `ClassicCar` class.

Copy and paste the program code into the evidence document with **Question 1f** clearly typed before the code is pasted.

(f) Construct 5 `ClassicCar` objects and store them in an array, `classics`. Dump the array of records into a binary file, `classics.DAT`

Copy and paste the program code into the evidence document with **Question 1f** clearly typed before the code is pasted.

[4]

END OF QUESTION