CS526
Homework Assignment 2

Due: 9/23

This assignment is a practice of using the *ArrayList* class of Java.

The *ArrayList* class of Java is an implementation of a dynamic array whose size is not fixed. It is also a generic class which can store objects of any type. In this assignment, you will practice how to use Java's *ArrayList* by storing and managing *Car* objects and *Person* objects in *ArrayList*s.

Requirements

First, you must define *Car* class and *Person* class according to the following requirements.

Car class (in *Car.java* file)

- Three instance variables:
  make: String type
  year: int type
  price: int type
- A no-argument constructor
- A constructor with three arguments *make*, *year*, and *price*
- getMake method
- getYear method
- getPrice method
- setMake method
- setYear method
- setPrice method

Person class (in *Person.java* file)

- Two instance variables:
  name: String type
  age: int type
- A no-argument constructor
- A constructor with two arguments *name* and *age*
- getName method
- getAge method
- setName method
- setAge method

Next, you must write a program named *Hw2.java*, which includes a *main* method. This program performs the following:

(a) Read a list of cars from an input file named *car_info.txt* and store them in an ArrayList. Then, your program must print:

(1) All cars in the ArrayList in the following format:

```
All cars in the list are:

Make = GM           Year = 2000  Price = 10000
Make = Honda        Year = 2013  Price = 20000
Make = Ford         Year = 2019  Price = 25000
Make = Hyundai      Year = 2005  Price = 15000
Make = Chevy        Year = 2012  Price = 20000
Make = Volvo        Year = 2009  Price = 13000
Make = Kia          Year = 2017  Price = 23000
Make = Toyota       Year = 2010  Price = 17000
```

(2) The oldest car in the following format:

```
Oldest car is:

Make = GM    Year = 2000  Price = 10000
```

(3) The newest car in the following format:

```
Newest car is:

Make = Ford  Year = 2019  Price = 25000
```

(4) The average price of all cars in the list in the following format:

```
Average price is:17875.0
```

(b) Read a list of persons from an input file named *person_info.txt* and store them in an ArrayList. Then, your program must print:

(1) All persons in the ArrayList in the similar format as the cars are printed
(2) The oldest person in the similar format as the oldest car is printed
(3) The youngest person in the similar format as the newest car is printed
(4) The average age in the similar format as the average price is printed

Two sample input files are posted along with this assignment.

Documentation

No separate documentation is needed. However, you must include sufficient inline comments within your program.

Deliverables

Submit *Car.java*, *Person.java*, and *Hw2.java* files on Blackboard. Make sure that you include your name at the top of your code as a comment.

Grading

The assignment is worth 20 points.

The TA will run your program with four input files, (two for Person class and two for Car class), and 3 points will be deducted if your output is wrong for each input.

Up to 4 points will be deducted if your program does not have sufficient inline comments.