FINAL ASSIGNMENT

Mustafa Can İNCE

March 31, 2022

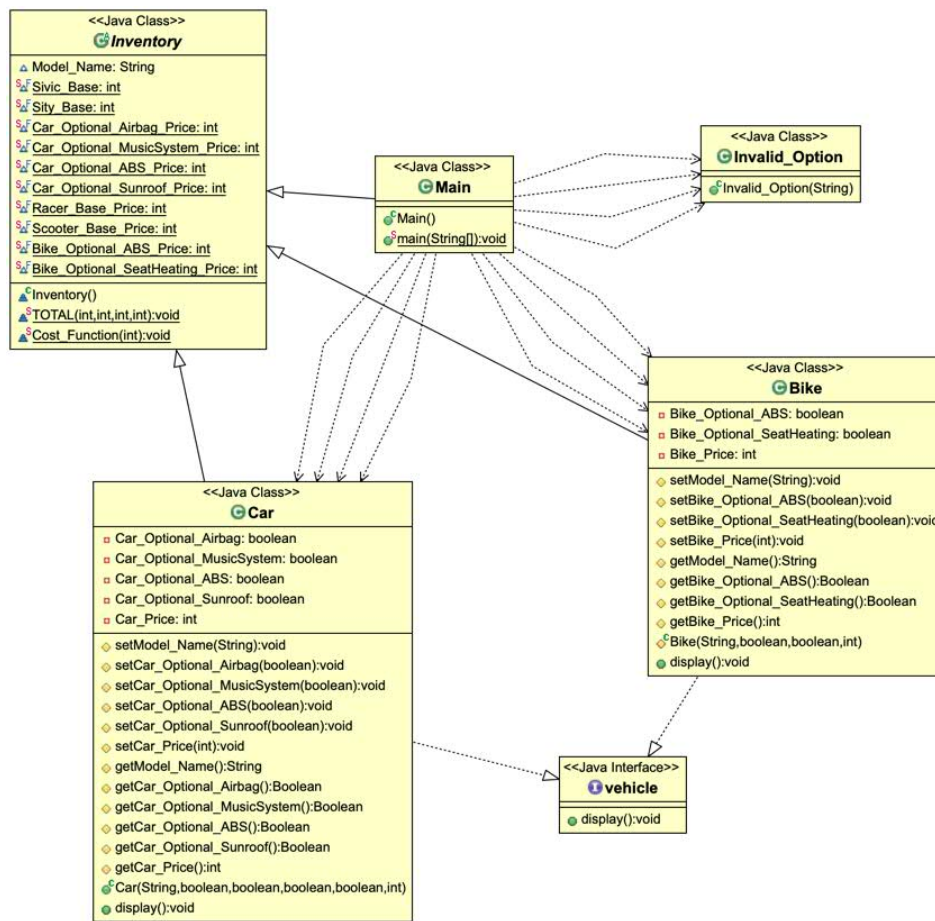## A. Provide the class diagram of your implementation.

Figure 1: Class diagram.

B. What are the differences between an abstract class and a concrete class?

- Abstract class: is a restricted class that cannot be used to create objects (to access it, it must be inherited from another class).

- Concrete class: A concrete class is a class that has an implementation for all of its methods. They cannot have any unimplemented methods. It can also extend an abstract class or implement an interface as long as it implements all their methods. It is a complete class and can be instantiated.

C. What is Encapsulation?

The main purpose of encapsulation is to hide sensitive data from users. If a data member is private, it is accessible only within the same class. No outer class can access the data as it is, but we use setter and getter methods to update and read data from outside classes. This way the outer class can access these private data.

- Better control of class attributes and methods

- Encapsulation increases data security in our code.

- It makes the code we write more flexible, it can change one part of the code without affecting the other.

D. What are the advantages of Inheritance in Object Oriented Programming?

Inheritance ; It is the mechanism that allows one class to inherit the attributes and methods of another class. We use the extends keyword to inherit from the superclass we have created. superclass; inherit class (I used "Inventory" class as superclass in my code.) Sub class; class that inherits from another class (my subclasses are "Test","Bike" and "Car") I defined the attributes of Cars and Bike objects in Inventory class, I set these attributes as setter and getter. In the Test class, I extended the Inventory class and carried out the definition of attributes of the objects. The benefits of inheritance are;

- When we want to create a new class and there is a class that already contains some of the desired code, we derive a new class from the existing class.

- We make use of inheritance and polymorphism to increase the fast performance and readability of the code in the application.

- If we keep the variables constant in the superclass in inheritance; It can be used by the subclass but cannot be changed.

E. Explain the usage of final keyword in java. Can you use final keyword in any part of your implementation? Explain why or why not?

Final keyword is a non-access modifier applicable only to a variable, a method or a class.When a variable is declared with final keyword, its value can't be modified, essentially, a constant.if the final keyword is used in classes, the class marked as final cannot be inherited.

I used the final keyword in my code.Because I wanted the prices of vehicles such as cars, motorcycles, or the options of these vehicles to be kept at a constant value.

F. Have you benefited from polymorphism in your implementation. If yes, copy the code segment where you use polymorphism to your report and give the name of the polymorphic variable.

I used polymorphism over methods in my code;

```
polymorphic variable ; "display".
interface vehicle {
void display();
}
class Bike extends Inventory implements vehicle{
...
@Override
public void display(){
...
}
}
class Car extends Inventory implements vehicle{
...
@Override
public void display(){
...
}
}
```

References

[1] https://dys.mu.edu.tr/

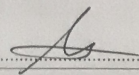[2] https://www.w3schools.com/java/

[3] https://www.geeksforgeeks.org/

[4] https://www.javatpoint.com/java-tutorial

[5] https://www.tutorialspoint.com/java

[6] https://docs.oracle.com/javase/tutorial/java

DECLARATION OF HONOR CODE[1]

Student ID ....200708081..
Name ....Mustafa Can..
Surname ....iN CE...

In the course of Introduction to Object Oriented Programming (CENG 1004), I take academic integrity very seriously and ask you to do as well. That's why, this page is dedicated to some clear statements that defines the policies of this assignment, and hence, will be in force. Before reading this assignment booklet, please first read the following rules to avoid any possible violation on academic integrity.

- This assignment must be done individually unless stated otherwise.

- You are encouraged to discuss with your classmates about the given assignments, but these discussions should be carried out in an abstract way. That is, you cannot copy code (in whole or in part) of someone else, cannot share your code (in whole or in part) with someone else either.

- The previous rule also holds for the material found on the web as everything on the web has been written by someone else.

- You must not look at solution sets or program code from other years.

- You cannot share or leave your code (in whole or in part) in publicly accessible areas.

- You have to be prepared to explain the idea behind the solution of this assignment you submit.

- Finally, you must make a copy of your solution of this assignment and keep it until the end of this semester.

I have carefully read every of the statements regarding this assignment and also the related part of the official disciplinary regulations of Muğla Sıtkı Koçman University and the Council of Higher Education. By signing this document, I hereby declare that I shall abide by the rules of this assignment to prevent any violation on academic integrity.

Signature ....

[1]This page should be filled and signed by your handwriting. Make it a cover page of your report.

Figure 2: Declaration of Honor Code.