CENG 4501 2020 Fall Midterm Exam

Download and extract the given zip file.

1. The package "midterm.observer.without" contains the existing implementation. Do not modify code in this package. You can copy the existing classes to other packages and modify them as requested. Apply the Observer Pattern in 3 different ways as described below: (**25 pts.**) (Objective 3)

    a. Create necessary classes and interfaces to apply Observer Pattern and modify the existing code accordingly. Your source files for this solution should be placed under "midterm.observer.**myclasses**" package.
    b. Use the java.util classes to apply the Observer pattern. Your source files for this solution should be placed under "midterm.observer.**javautil**" package.
    c. Use PropertyChangeSupport to apply the Observer Pattern. Your source files for this solution should be placed under "midterm.observer.**propertychange**" package.

2. Apply the most relevant design pattern to the following problem. Your source files should be placed under "midterm.**pattern1**" package. (**20 pts**.) (Objective 3)

    Automobile manufacturer Sonda requires an application which calculates the price of its models. The company has two models one of which is Sivic and the other is Sity and their base prices are 40000 and 50000 respectively. If requested the following optionals can be added to the car. Each optional has a cost as listed below. If an optional is selected its cost is added to the Car's price and Customer may select multiple optionals.

Optional	Cost
Airbag	3000
Music System	1000
Autamatic Breaking System (ABS)	5000
Sunroof	2000

3. Refactor the code given in "midterm.**pattern2**" package by applying the most relevant design pattern so that when new attack and move behavior modes are introduced, Soldier class do not need to be modified. (**20 pts.**) (Objective 3)

4. Draw the class diagrams for each of the solution you provided for the above problems and also name the design patterns you applied in the 2nd and 3rd questions. Note that you should provide 3 class diagrams for the 1st question and separate class diagrams for 2nd and 3rd questions. Totally 5 class diagrams. (**35 pts.**) (Objective 1 & 2)

Note: Upload your source code in a zip or rar file. Also provide a document (word/pdf) for the 4th Question.