

## PROJECT 3

### PROGRAM TITLE:

Tool Rental Store Design.

### TEAM MEMBERS:

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### LANGUAGE:

JAVA 8

### ENVIRONMENT USED FOR DEVELOPMENT:

ECLIPSE

### PROGRAM DESIGN:

We have used Factory, Decorator and Observer Patterns in this project. We have made Painting, Plumbing, Concrete, WoodWork and Yardwork as concrete products which extends the InventoryFactory class. The abstract class for factory pattern in this project is Inventory.java. It has the functions required for each of the categories. The decorator pattern is implemented by having the Cost\_accessory as the decorator class which holds the getPrice function. The concrete decorators here are Extension\_cord, Accessory\_kit and Gear\_Package which overrides the getPrice function to return the decorated price. We have Order\_Observer interface which initializes the day count and tools available. Order\_Observer\_Class implements the interface and performs update\_Observer and announce\_event function. The publisher (Order\_main) performs the function and whenever a change is seen, it updates the observer and the event is announced.

Objects for the required classes are created. Random() is used to allow random number of customers for each day. Provided the customers, the tool and accessory are obtained from user input and the prices are calculated. Hashmap is used to store the tools and number of days it is rented. For each day, this map is visited to reduce the rented days count for each tool. Once the count is 0, value is removed from Hashmap. The profit made by the rental store is calculated as and when a tool is rented. A List is maintained for the available tools each day. When a day begins, the day number, profit made the previous day, tools available on the current day and the transactions made will be printed.

### ASSUMPTIONS MADE:

- We have assumed that random number of customers visit the store every day.
- Tool list in each of the categories are assumed.
- Number of tools in each category is assumed to be 5,5,5,5,4 in Painting, Plumbing, Concrete, WoodWork and Yardwork respectively.

### REFERENCES:

1. <https://coderanch.com/t/412443/java/subtract-arrays>
2. <https://stackoverflow.com/questions/1526826/printing-all-variables-value-from-a-class/45128748#45128748>

## UML CLASS DIAGRAM:

The UML class diagram is shown below. It includes all the classes and relationships. Each class has all the data attributes and member functions used in the program.

