OOAD – project 3

Project Title : Hardware Rental System

Language and Environment used : Java8 and Eclipse

System Design:

Assumption Discussion:

Below are the list of assumption we made while designing the system

1. Tools are only 24 and customers are only 12 (5- casual customer, 4 – regular customer and 3 – business customer)
2. Tools are (paintings – 5, plumbing – 5, Woodwork-5, Concrete – 5 and yardwork – 4)
3. No Customer will take more than what is assigned to them.
4. Add on tools are unlimited and will be added per tool.
5. Customers are loyal, i.e they return tools on right time.
6. Hardcoded 12 customers and 24 tools so cannot handle if 13 customers come to store.

System Design:

We have used three design patterns to make the hardware Rental System work properly.
Let us discuss about them.

1) Decorator Design pattern
    a. AddOnDecorator :
    This is the class which acts as a decorator class for accessory (add ons) which user can add to their tools and perchance whole set. This will update the price of the order by adding price of add on and providing cashier with proper amount.
    Below are the classes which uses this:
        - AccessoryKit.java
        - ExtensionCord.java
        - ProtectiveGearPack.java
2) Factory Design Pattern
    a. ToolFactory
    This factory will provide us with instance of various tools as requested. It will limit the instance creation with amount set by us.
    b. CustomerFactory

This factory will provide us with the customer details and customer type when a customer enters store and provide their id. Only 12 customers are hardcoded into this.

3) Observer Design Pattern
    a. DisplayObserver
    This is our observer class which will maintain all updated details of day and transation details per day. This will also print details to console which allow us to see store performance per day.

Class Diagram:

Please see attached class diagram file for class diagram of this system.