COMP 1531, Software Engineering Fundamentals

Assignment 1, 2018, S1

(Individual Assignment – 5% of overall mark)

Due: Thursday, 29th of March, 11:59 pm

Objectives:

The aim of this assignment is to give students a deeper understanding of the process involved in requirements engineering through:

- Learning how to analyse a set of user-requirements and develop a requirements specification applying use-case modelling
- Designing a OO based domain model for the problem domain

Deliverables:

1. Create a set of use-cases (use-case diagram) for the case-study outlined below. Use the lecture slides presented in week 02 as a guide-line to assist you in this task **(6 marks)**
2. Develop a domain model based on the set of use-cases developed in the previous step. The domain model should be presented as a UML class diagram. **(9 marks)**
3. Both the above artefacts must be digitally drawn using an appropriate case-modelling tool e.g., 'draw.io'

Submission:

The above artefacts must be submitted before the dead-line using the GIVE submission system. More details on submission will be provided through the week. A late penalty of 5% per day will apply for late submissions. No submissions will be accepted beyond Monday, 2nd April, 11:59 pm.

Background:

Catamount Pty Ltd is a successful outdoor and camping gear store who now wish to expand their business by staring an online shopping system to attract more customers since online shopping is where most buyers shop now.

Definitions

User	A potential customer using the online shopping system
Admin	Staff of the store who have admin control over the inventory allowing them to add/remove items from the inventory and update prices/discounts to items
Item	A piece of clothing or camping equipment available for purchase
Discount	A deduction from the current price of the item (after any previously applied discount)
Shopping Cart	Refers to the current order of a User and comprises the set of items selected for purchase
Line Item	Refers to each individual line in the order and includes details of the item ordered and quantity ordered

Functional Requirements:

The online shopping system shall address the following requirements:

Maintain an inventory
- The inventory stores all items currently sold by the store
- Every item in the store has a *name*, *product description* and a *price*.
- Items in the store are grouped into categories: clothing and camping gear
- Clothing items include shirts, pants, jackets, swimwear, boots and accessories. Items such as gloves, beanies etc. are grouped under accessories
    - All clothing items also have a *size* and *colour*.
    - Allowable sizes are 'S', 'M', 'L'.
    - Colour is provide as text e.g. 'blue'
- Camping items include tents, electrical and miscellaneous items. Miscellaneous items include foldable chairs, buckets etc.
    - All camping gear also have *dimension* and *weight*

Search inventory
- Allow a customer to do a search of all the items currently sold by the store.
- The search will display the item name, product description, quantity currently in stock
- Allow a customer to do a search by category (e.g., clothing or camping gear) or by sub-category (e.g., pants, tops, miscellaneous etc.)

Maintain periodic discounts for the various items in the store
- The store would like to associate periodic discounts to their items
- Currently, discounts can be grouped into *individual* and *group* discounts
- An individual discount can be a flat discount or a percentage discount.

- A flat discount reduces the current price (after any previously applied discount) by a flat amount e.g., '$20.00 off the current price'
- A percentage discount reduces the current price (after any previously applied discount) by a percentage '20% off the current price'
- A group discount is implemented as a 'BuyXGetOneFree' strategy, A 'BuyXGetOneFree' discount reduces the price of the next same item to $0 for every X Items bought. So for example, Buy 4 gloves Get One Free means 4 Items are purchased at the current price, and the 5th of the same Item is free
  - **Note:** *A group discount will only apply to items of the same sub-category (e.g. accessories, pants etc)*
- Discounts on an item can be chained together, with the most recently added one applied last

Admin user features
- Can add a new item to make it available for purchase
- Can remove an Item, effectively making it unavailable for purchase
- Can add multiple Discounts to an item
- Can remove the top level Discount (most recently added) off an Item

Enable customers to purchase online
- A User can choose items from their search and add to a shopping cart
- When a User adds an item to their shopping cart, they must specify the quantity of the item
- A User can view their shopping cart at any time
- The shopping cart must display all the items selected by the user
- For each item in the shopping cart,
  - the item name, quantity, base-price per unit, the discount applied (if any) and the net price (base-price less the discount) is displayed
  - e.g. Nike-Red-Gloves   5 $5.00 Buy 5 Get 1 Free $20.00
- The shopping cart will also display a total price for the entire cart
- A User can remove a line item any item from their shopping cart
- A User can purchase their cart (and effectively emptying it)
- A User can click on check-out any time, to purchase their shopping cart and provide payment details. (For the purposes of this assignment, the payment processing has been omitted)