OOSE Team Work 1:

Due by 10/26/2018 (Oral presentation on 10/31/2018, 11/1/2018)

Instruction:

- The team leader shall properly assign tasks to each of your group members and coordinate team coordination.
- A **zip file** containing questions and answers, executable code, a participation summary of team members, and ppt shall be submitted to Yuntech E-Learning Platform. The teaching assistant (TA) will set the ppt file of each group be downloadable by other groups.
- Another **print file** containing questions and answers, fractions of significant code should be placed in the instructor's mailbox at the office.
- The team work will be evaluated based on completeness and correctness of the design. The final grade will be given A, B, C, D, or E.

Project design description:

In this team work, we will analyze a design of an online shopping website. This site will provide a user-friendly shopping experience for customers. The system will allow more than one category and different brands under the segment. A customer can visit the online shopping portal, buy item or just visit the page and logout. The customer can select a segment, then a category, and brand to get the different products in the desired brand. The customer can select the product for purchasing. The process can be repeated for more items. The data collection will be stored in varied structures such as tree, linked list, hash table, and the like. The concrete data structure to organize the elements and the implementation detail to traverse the data structure are hidden from whatever software client visits the elements of the aggregate.

When customers search for any product and it is unavailable then there is option called "Notify me when product is available". If the customer subscribes to that option then when state of product changes i.e. it is available. The customer will get notification mail "Product is available now you can buy it".

A shopping cart is a collection of selected products that the user can use to manage their online shopping experience. The user can add, update and remove products from their cart. Further, the user can choose to change the quantity of each product in the shopping cart. A subtotal cost shall be displayed for each of the items in the cart plus shipping charges, etc. At any time, the user can choose to continue shopping or proceed to

checkout – meaning to paying and ordering what is in the shopping cart.

The design should support undo and "undo" commands. The "do" method is expected to store any information needed to "undo" the command. For example, the command to delete an item would remember the content of the item being deleted.

Whenever a product is presented, an “add to cart” button should be visible, this lets the user add the respective product to the product cart. The contents of the cart can be viewed at any time, in detail by clicking on a “show cart” link.

By discount policy, here are some rules:
If a customer buys Product X, Product Y and Product Z he gets a discount of 5%.
If a customer buys 100 units of Product X, he gets a discount of 15%.
If a customer has brought in the last year more than $100K, he gets a 20% discount
If a customer has purchased 2 units of Product X, he gets 1 unit of Product X (or Product Y) free on national holidays.

To make the order process easier, if the customer presses “ClearOrder”, it will combine “ClearProduct”, “ClearPayment”, and “ClearInvoice”.

When the user chooses to checkout, he/she is presented with a final list of items on the order, as well as payment options (CreditCard, LinePay, and WeChatPay). The details need to be confirmed by the customer. For final payment the customer has to login the portal, if the customer is visiting for the 1st time he must register with the site, else the customer must use the login page to proceed.

You shall consider a context-sensitive help facility for a graphical user interface. The user can obtain help information on any part of the interface just by clicking on it. The provided help depends on the part of the interface that's selected and its context; for example, a button widget in a dialog box might have different help information than a similar button in the main window. If no specific help information exists for that part of the interface, then the help system should display a more general help message about the immediate context.

This design should undo or rollback to full object status. For example, it should remember shopping cart contents even after a user has logged out. Next time, when the user logon to the website, the shopping cart should be shown with previously selected items and the user should be allowed to continue to shop in the next session.

Based on the project description, please apply suitable design patterns to the design. And do the following tasks:

1) Display some snapshots of the result in the report.
2) You need to evaluate the design quality by using object-oriented quality metrics (WMC, DIT, NOC, CBO, RFC, LCOM). The figure shall be drawn like the provided references below.
3) Create Junit test cases and Junit test suite to test one selected class.
4) Conduct part of the software testing including white box and black box.
5) Please analyze the invocation chains of your design.

References:

The matrix of design quality can be displayed like the following figures.

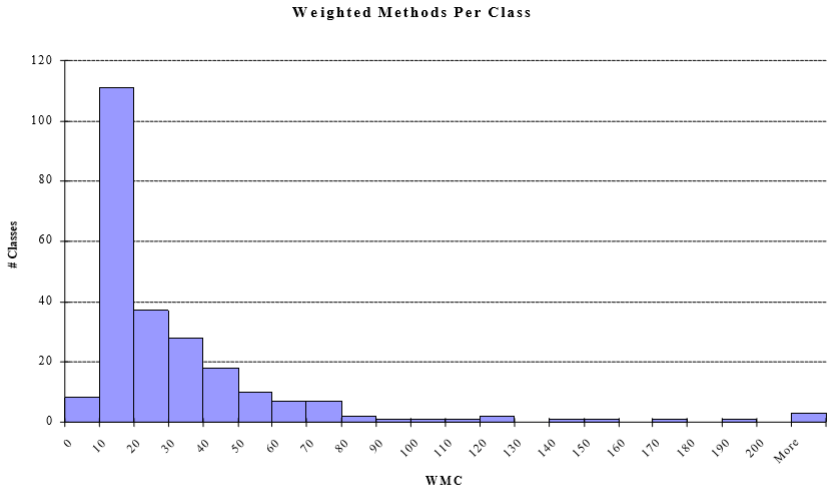

Figure 7: Weighted Methods Per Class

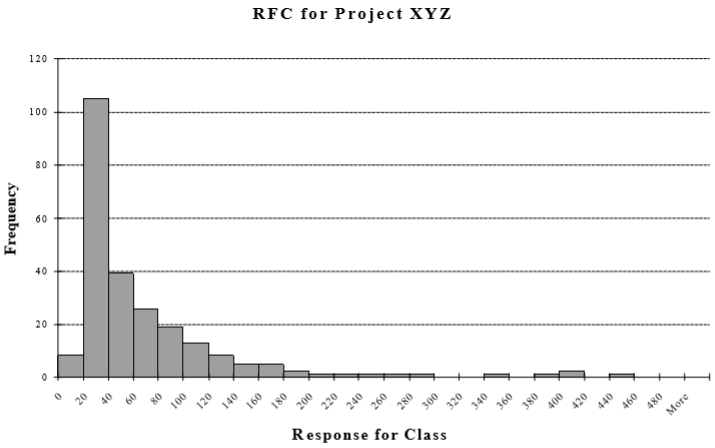

Figure 8: Response for a Class

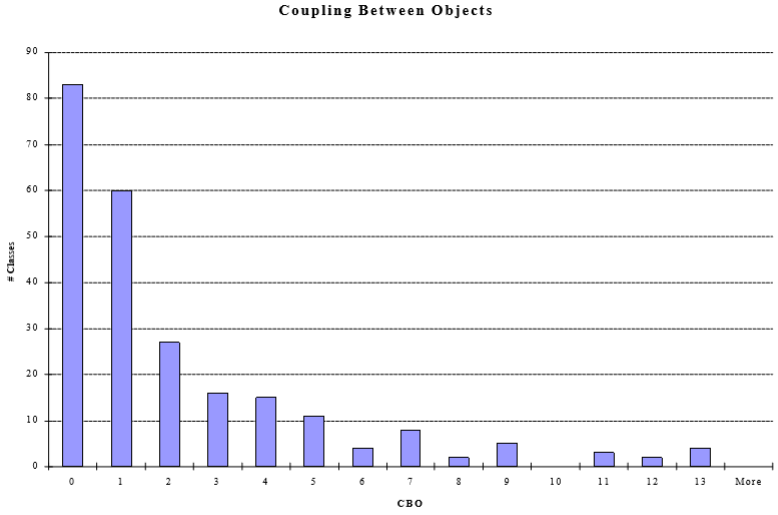

Figure 9: Coupling Between Objects

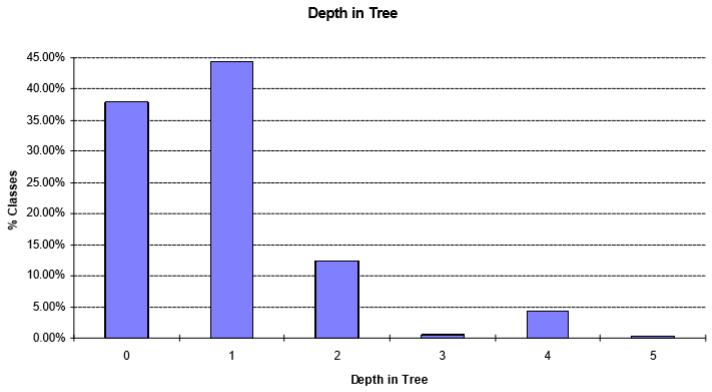

Figure 10: Depth in Tree (DIT)

The figure of Number of Children (NOC) is similar to DIT.