**Class Diagram – Methods & Classes Explanation**

1. User Authentication: This class is utilized to get user information from the database and is

for authenticating the users.

Authenticate User: This message is used to authenticate a particular user who has provided

the login credentials and wishes to login in the system. This method checks the credentials in

the database.

Check User Name: This method checks to see if the provided username already exists in the

database. If there is an existing user with the same name, then the user is prompted to select

another username to create an account.

Register User: This method allows a new user to register for an online shopping-cart

account by entering a valid username and password. If the username already exists in

database, the user will be prompted to choose another name.

Login User: This method allows the existing users to log in to the database with the

credentials they used for first registering into the application.

2. DB Controller: This class is used for getting users and product information from the

database, and it is also used to update the database with the information about new user

registration, product checkout, and user details.

Initialize DB: This method allows the initialization of a database on the first run of the

application.

Retrieve Items List: This method fetches all items from the code/workspace into the

database and allows the administrator to view information about the items.

Retrieve Category List: This method retrieves the list of all categories that are available for

the shopping-cart application.

Retrieve User’s Details: This role locates all the registered users in the database and also

fetches any new user who registers by completing the user-authentication form.

Get Order Details: This role updates the row in the database with the details of the user who

checks out the items and successfully places an order.

Get Ordered Product Details: This role inputs the details of the order once the items are

checked out and the order is successfully placed. This role updates the row in the database to

show the details of products that have been checked out.

3. Place Order: This class is used to process all information regarding the order of products.

Get Checkout Information: This method provides information about items in the shopping

cart once the checkout method is called. This will further invoke the user-authentication

method.

Get User Authentication: This method fetches the user-authentication information. The

place-order class is invoked once all three methods are successfully called. If the user

authentication fails, the place-order class is not executed.

Retrieve Order Form Information: This method is executed once user authentication is a

success. This method evaluates an order form. If any of the information is incomplete or is invalid, then an error message is depicted, and the place-order class is not called.

4. Cart: This class invokes the shopping cart. This class can be called in cases when no items

are added to the cart, when items are already there in the cart, or when the user adds an item

to the cart.

Get Items: This method retrieves information for all the items that the user adds to the

shopping cart.

5. Checkout: This class invokes the checkout button. The checkout class is only called when

there are items in the shopping cart. In the case of an empty shopping cart, the checkout class

is not called, thus no checkout option is available on user-interface screen.

Retrieve Cart Info: This method retrieves the shopping cart’s information if there are items

in the cart, and then, the checkout class is called.

Get Items: This method gets all the items in the shopping cart. If the count of items in

shopping cart is greater than 0, then this function updates the card information, indicating

that cart is not empty which then calls the checkout class.