Assignment 2 - Architectural Patterns

Use Cases

Use Case	Description
UC1 - Product Purchasing Sessions (R01, R02, R06)	Once a cashier wants to start scanning products, they must start a product purchasing session first through the keyboard. Once this is done, the cashier may scan products using the barcode reader. However, they can also cancel the session at any time during the session but this will delete any items that were scanned since the beginning of the session. After a successful purchase from a customer, the cashier can end the product purchasing session and a list of all the selected products with price, quantity and total price are printed to a paper ticket receipt.
UC2 - Adding/Deleting Items (R03, R04, R07)	Once an item is scanned by the barcode scanner and is identified, its name and price are displayed on a display. If an item cannot be identified, then "unknown product" will be displayed on the screen and the cashier will have to enter the barcode manually using the Keyboard If a customer wishes to cancel an item that was already scanned, then the cashier will be able to select a 'cancel' option on the keyboard and then either scan the item or enter the barcode using the keyboard to cancel the item from the purchase without having to cancel the product purchasing session.
UC3 - Payments (R05)	When all of the selected products have been read and the customer wishes to pay, the customer can select a payment option (cash, debit or credit card). If the user pays with cash, they can give the cash to the cashier, then the machine will calculate the change to give back to the user and they can walk away with their items. However, if the debit/credit card is being used then a third party payment must be used to complete the payment. Once the card is scanned, the payment is sent to the bank to be verified, once it is verified then the customer may leave with their items. However, if the purchase is not verified, then they must either try again or use a different pay method until it is verified.
UC4 - Portable Software	The software is universal so that it will be easy to change hardware platforms in the future.

Quality Attributes

ID	Quality Attribute	Scenario	Associated Use Case
QA-1	Portability	If the hardware needs to be changed sometime in the future, the software is easily adaptable to other kinds of hardware.	UC-4
QA-2	Efficiency	If the customer wishes to add or delete any items, they can easily do so without having to cancel the entire session. This allows the customer to be able to purchase their items faster which makes the customer happy and allows the cashier to be able to scan more customers for the business.	UC-2
QA-3	Availability	Since the software is easily adaptable, if the hardware of a cash register is malfunctioning, it is really easy to replace and will therefore always be available.	UC-4
QA-4	Security	Since the cashier must first log on to the system before being able to scan items, this enhances the security of the system since the database is not accessible to the public and is protected.	UC-1
QA-5	Security	When purchasing an item, if the customer is paying with credit/debit, the payment will not go through unless it is verified by a third party. The customer will have to either try again or use a different payment option until they can finally purchase their desired products. This is to ensure the security of the payments and avoid any kinds of scams..	UC-3

Constraints

ID	Constraint
CON-1	All cash registers must be linked to the database and be updated automatically as soon as a purchase is made
CON-2	The system must be extremely versatile and be easily able to switch different hardwares if necessary.
CON-3	The network connection to each cash register must be generally reliable
CON-4	The database must be pre existing and the server cannot be used for any other purpose other then hosting the database.