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Faculty of Natural Sciences

Department of Computer Science

CSE2101 Software Engineering
Semester Project

Submission 3: System Design

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Part 1 - System Diagrams

Context Model

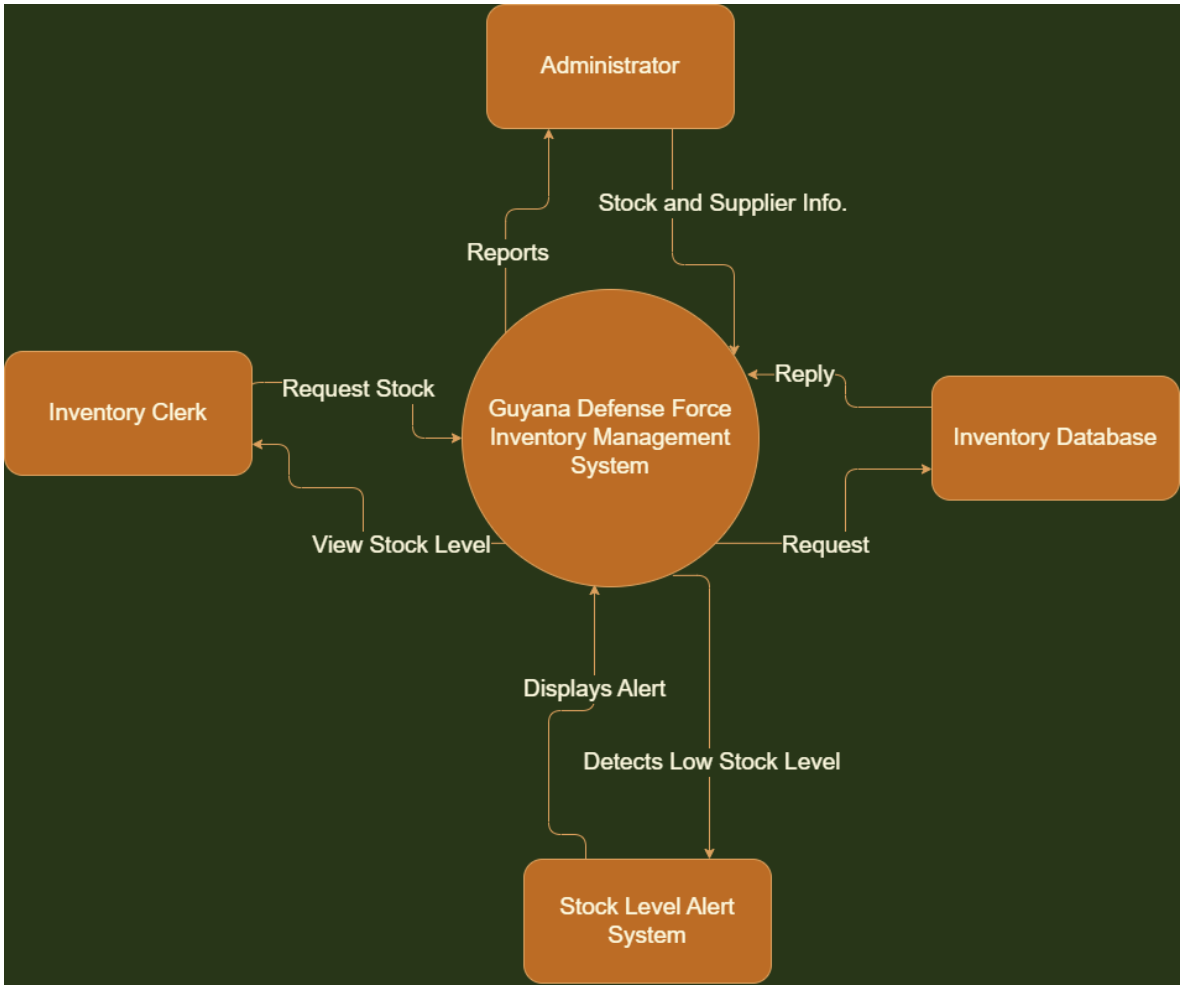

Figure 1: GDF-IMS Context Diagram - This diagram shows the operational context of the system and what lies outside the system boundaries.

Use Case Model

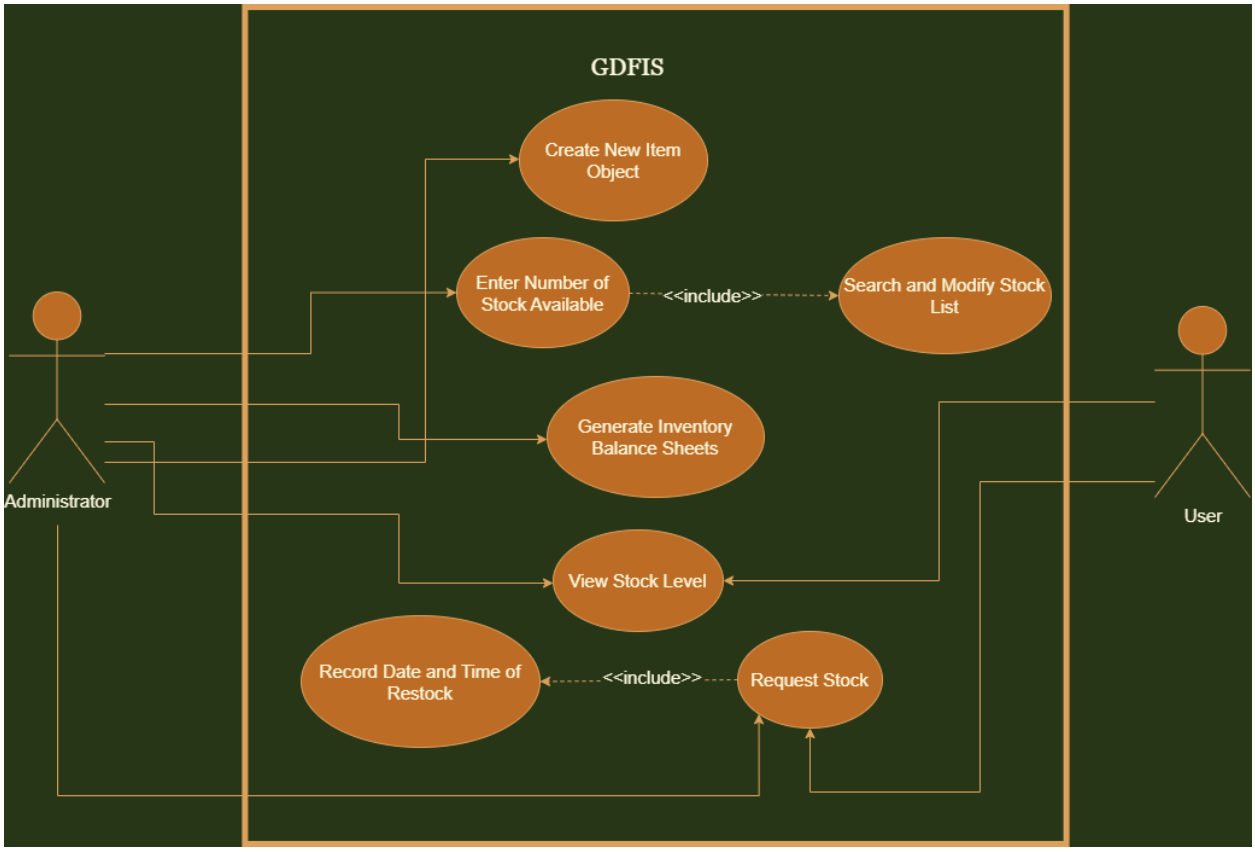

Figure 2: GDF-IMS Use-case Diagram - This diagram shows system functions and the actors involved.

GDF-IMS: Create New Item Object	
Actors	Administrator
Description	Admin will be able to create and make available a list of all items available in inventory, along with the amount.
Data	Item name, stock available, supplier
Stimulus	Command issued by administrator
Response	Database is updated with new item and amount
Comments	The administrator must have the appropriate permissions to input the new information

GDF-IMS: Enter Number of Stock Available	
Actors	Administrator
Description	Admin will be able to enter the stock available for any stck item
Data	Stock available
Stimulus	Command issued by administrator
Response	Database is updated with new item and amount
Comments	The administrator must have the appropriate permissions to input the new information

GDF-IMS: Search and Modify Stock List	
Actors	Administrator
Description	Admin will be able to search for any stock item and modify any attributes
Data	Item name
Stimulus	Command issued by administrator
Response	Data related to item is displayed
Comments	The administrator must have the appropriate permissions to view this information

GDF-IMS: Records the Date of Restock	
Actors	Administrator, User
Description	The database will store the time when restock took place
Data	Time of restock
Stimulus	When new stock is issued
Response	Type of change and time of change is stored
Comments	The database will store the type of change and the data it was made and by which user

GDF-IMS: Generate Inventory Balance Sheets	
Actors	Administrator
Description	The administrator will be able to create generate inventory balance sheets
Data	Item name, stock available, stock removed
Stimulus	Command issued by administrator
Response	Appropriate balance sheet is created
Comments	The administrator must have the appropriate permissions to view and create the reports

GDF-IMS: View Stock Level	
Actors	Administrator, User
Description	Users will be able to view the current available stock
Data	Item name, stock available
Stimulus	Command issued by administrator/user
Response	Stock information is displayed
Comments	The administrator/user must have the appropriate permissions to view stock levels

GDF-IMS: Request Stock	
Actors	Administrator, User
Description	Users will be able to request stock
Data	Item name, stock amount, supplier
Stimulus	Command issued by administrator/user
Response	Stock order is placed
Comments	The administrator/user must have the appropriate permissions to request stock

Sequence Diagram

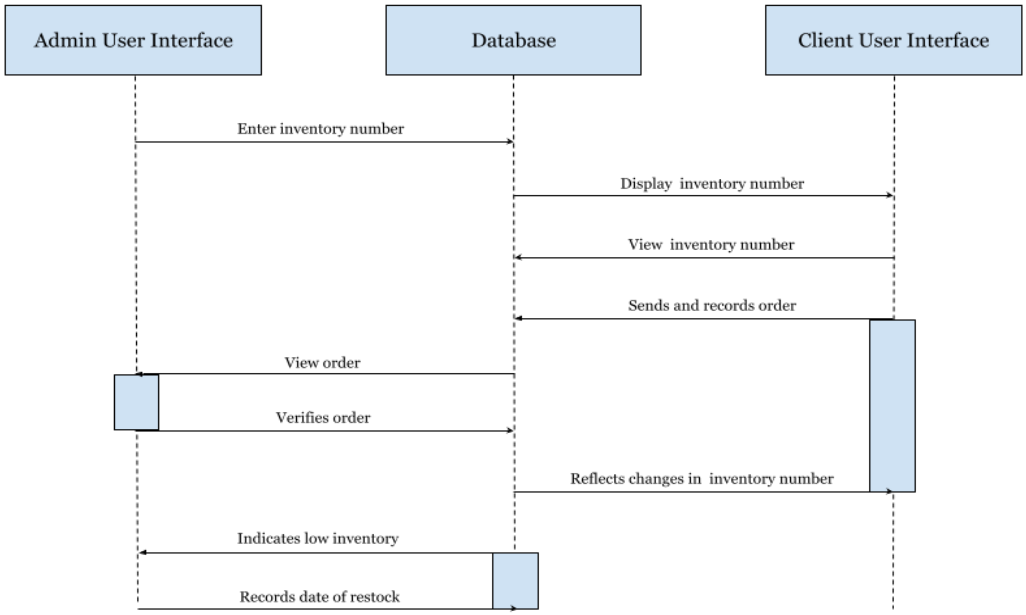

Figure 3: GDF-IMS Sequence Diagram - The sequence diagram above depicts the basic interaction between the admin and the client user. The diagram also shows interactions that are reliant on other interactions as well as interactions that are only brought about if a certain condition is met.

Class Diagram

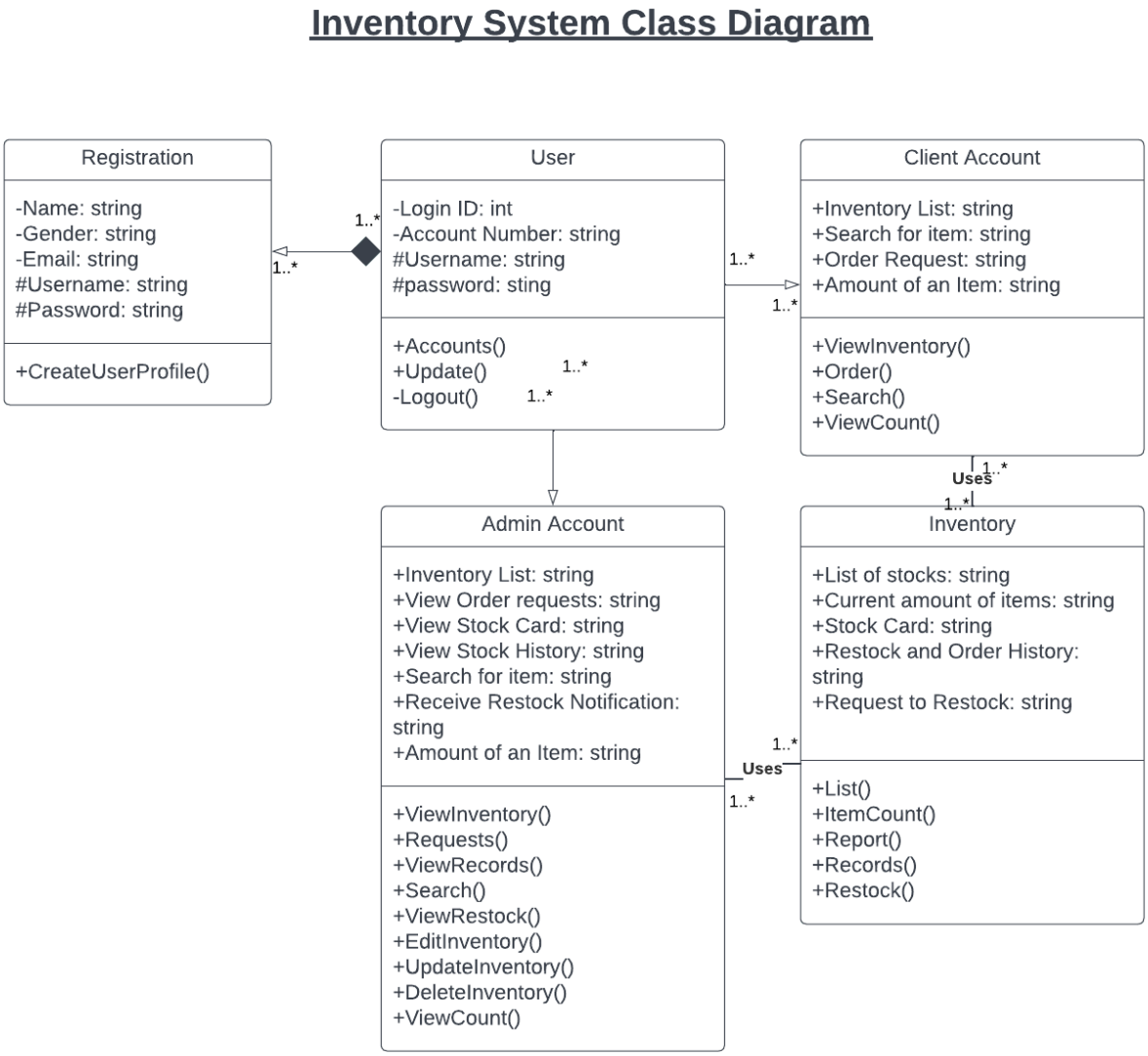

Figure 4: GDF-IMS Class Diagram - The diagram above show the structure of classes and their attributes.

Activity Diagram

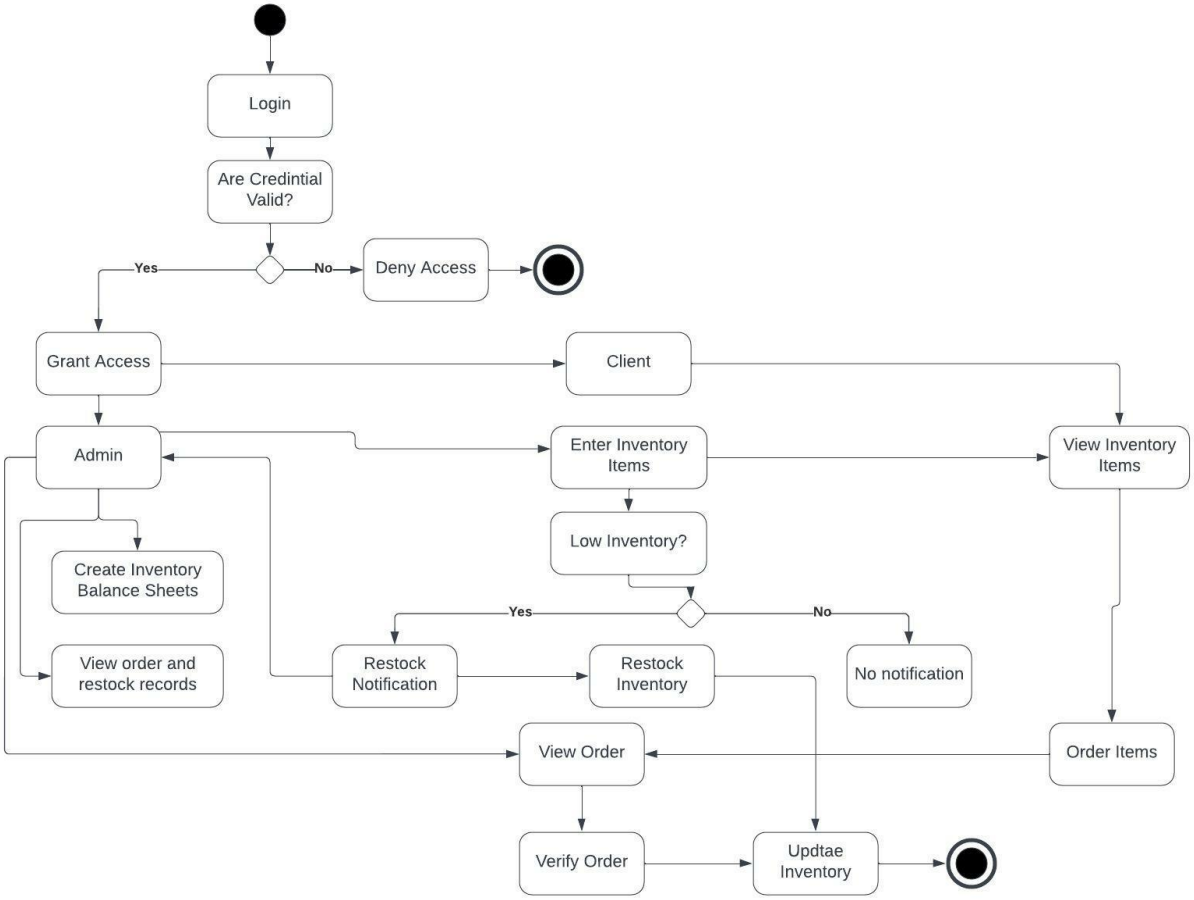

Figure 5: GDF-IMS Activity Diagram - The diagram above show the series of activities and the flow of data of the system.

Part 2 - System Architecture Design
MVC Architecture of an Admin User

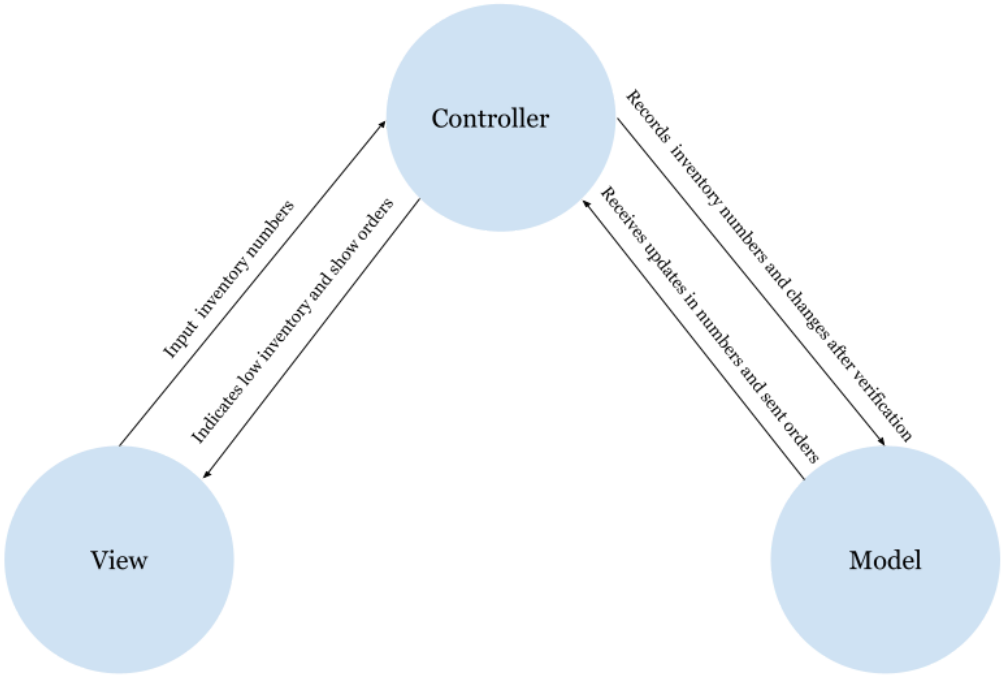

Figure 5: GDF-IMS Activity Diagram MVC Architecture of an Admin User

The MVC architecture diagram above depicts the most critical functions of an admin user or inventory manager using the GDF-IMS. An admin user is expected to enter the number of items available in the inventory for the client to see. In return, the admin user will receive orders for the listed items. After fulfilling the order, admin users are expected to verify that the order was issued with the purpose of updating the numbers to reflect the changes or decreases in number for the system records and for client users. If numbers are not verified timely, the system will fail to indicate to the admin user when an item is low in stock. When verifications are done regularly, the system will be able to alert the administrator, resulting in a timely restock, which will be updated in the database and displayed to client users.

MVC Architecture of a Client User

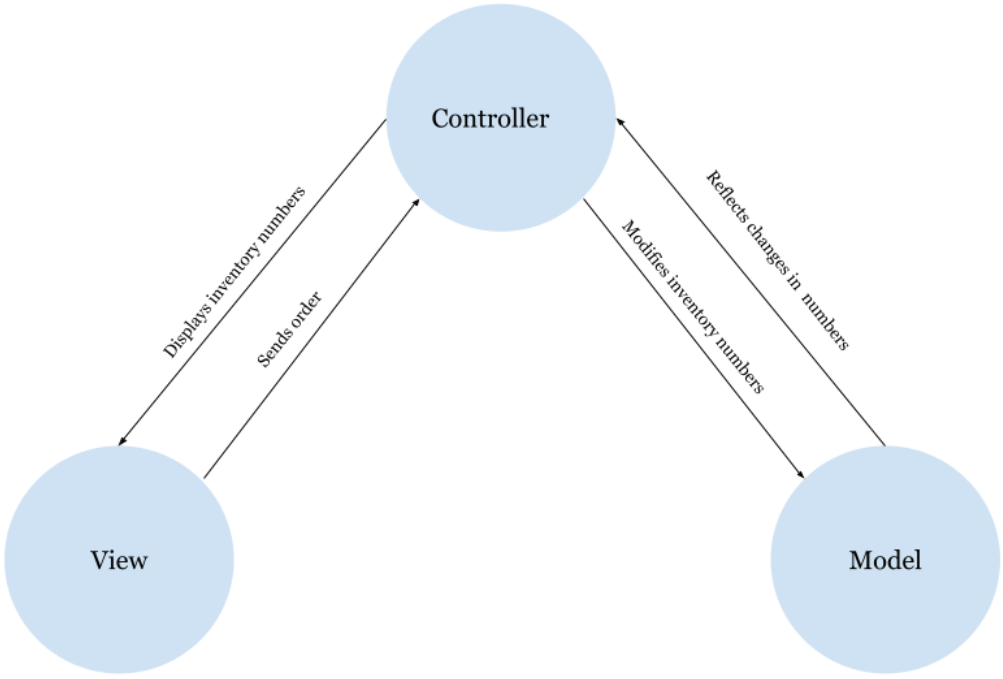

Figure 5: GDF-IMS Activity Diagram MVC Architecture of a Client User

The MVC architecture diagram above depicts the most critical functions of a client user or unit using the GDF-IMS. Upon client users or units logging into their interface, they are able to see items available in inventory along with the quantity entered by an admin user. Client users are furthermore able to order supplies as needed for the unit. After the client user, or unit uplifts their order, they must be able to see the change in quantity. It is important that verification is timely and inventory numbers are accurate because when the client user is creating an order, they must be able to make them accordingly, meaning that if they see 10 packs of A4 paper available, they cannot order more than 10 packs of A4 paper. However, if verification is untimely and changes were not made, and there are actually 5 packs available and a possible order for 6, this defeats the purpose of having a real-time inventory system and the process of human verification to prevent software errors.