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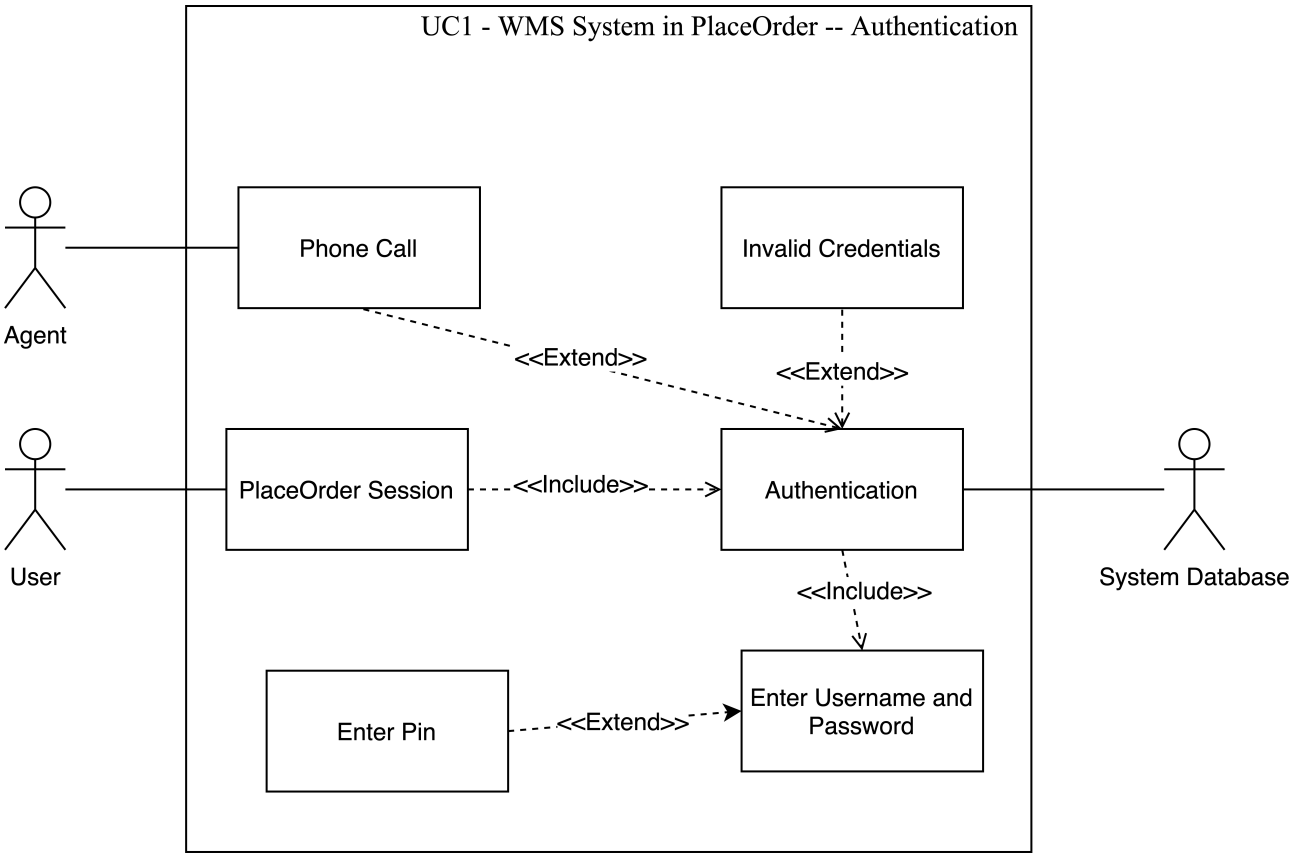
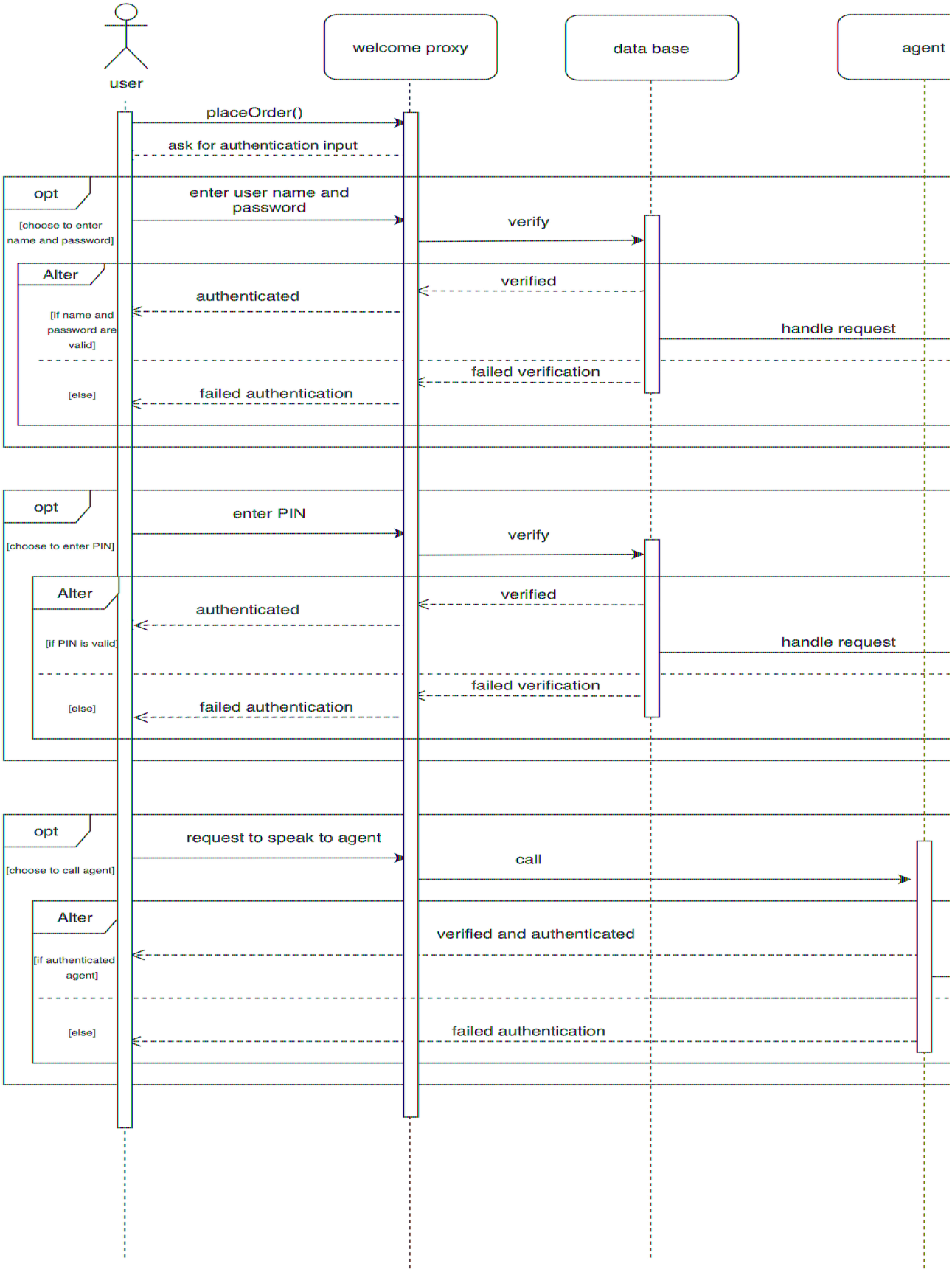
# UC1 - Use Case Diagram




This use case diagram demonstrates the process of a user having placeOrder request, and the subsequently necessary authentication he/she encounters. In normal cases, users are asked to enter their credentials, i.e. username and passwords, pin can be a substitute as well. In special cases, users may call an agent to aid in their authentication. The credentials provided by users are verified by the backend system database. Note that the authentication process may fail due to invalid credentials.

# UC1 - Sequence Diagram



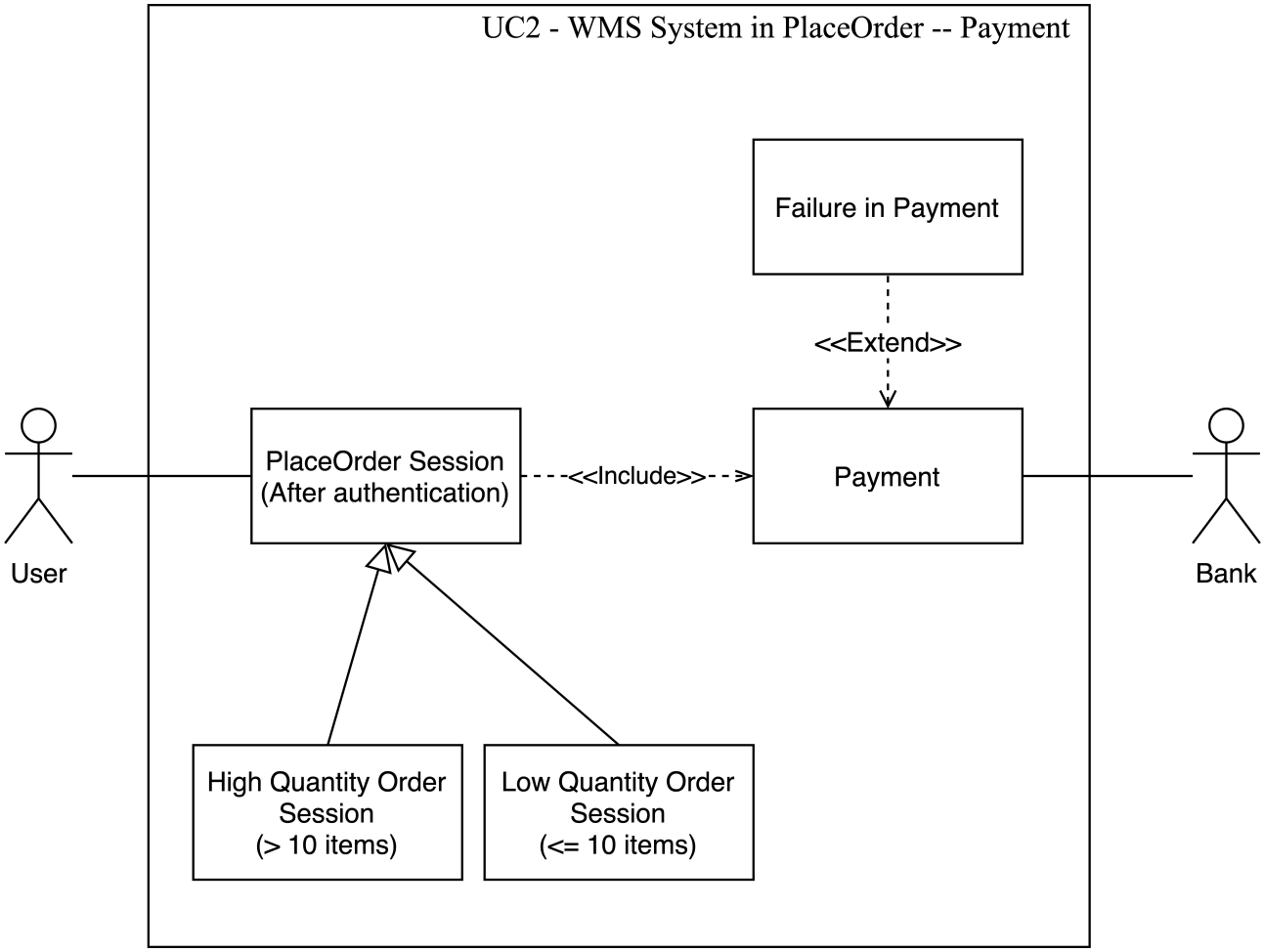
The participants in this use case are the user, welcome proxy, database, agent, and the backend system. Firstly, the buyer will send the “placeOrder()” method request to the welcome proxy, and the message for asking input options for authentication will be prompted and returned to the user. In order to handle the different possibilities, “opt” is used.

The first “opt” aims to handle the input when name and password are entered, the credential will be sent to the welcome proxy and then sent to the database to be verified. Inside the “opt” block, “alt” is used to distinguish whether it is verified or not. Inside the “alt” block, if the name and password are valid, the “is valid” message will be returned to the welcome proxy by the database, and then returned and prompted to the user by the welcome proxy. Moreover, the database will send a message to the backend system to let the system to handle the request. Otherwise, if the name and password are invalid, the “invalid” message will be returned to the welcome proxy by the database, and then returned and prompted to the user by the welcome proxy.

The second “opt” aims to handle the input when the PIN is entered, the PIN will be sent to the welcome proxy and then sent to the database to be verified. Inside the “opt” block, “alt” is used to distinguish whether it is verified or not. Inside the “alt” block, if the PIN is valid, the “is valid” message will be returned to the welcome proxy by the database, and then returned and prompted to the user by the welcome proxy. Moreover, the database will send a message to the backend system to let the system to handle the request. Otherwise, if the PIN is invalid, the “invalid” message will be returned to the welcome proxy by the database, and then returned and prompted to the user by the welcome proxy.

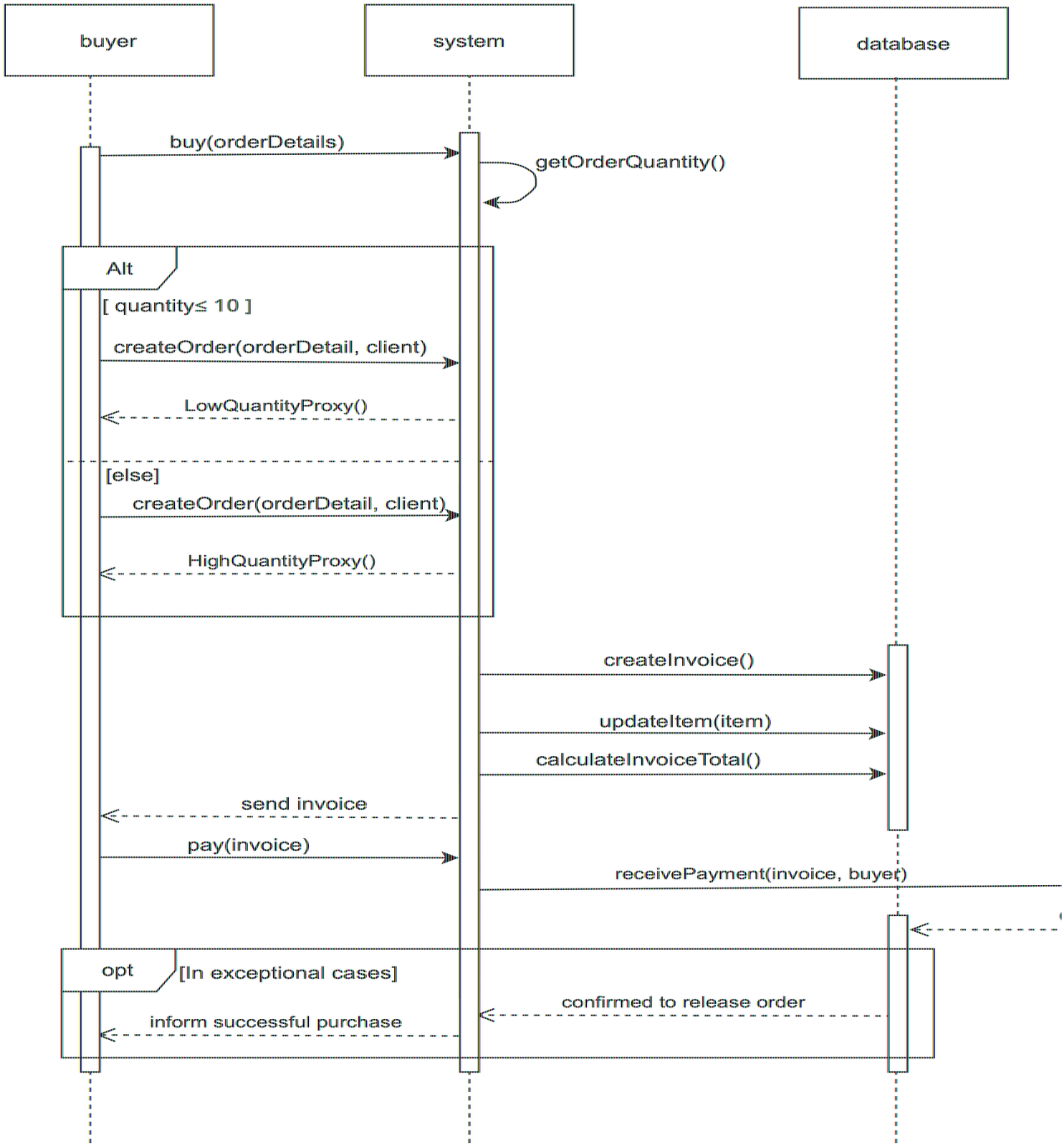
The third “opt” aims to handle the special case when the user chooses to call the agent to be authenticated. Firstly, the request to call will be sent to the welcome proxy and then sent to the agent. Inside the “opt” block, “alt” is used to distinguish whether it is verified or not. Inside the “alt” block, if the agent approves the authentication, the “is valid” message will be returned and prompted to the user by the agent. Moreover, the agent will send a message to the backend system to let the system to handle the request. Otherwise, if the authentication failed, the “invalid” message will be returned and prompted to the user by the agent.

# UC2 - Use Case Diagram



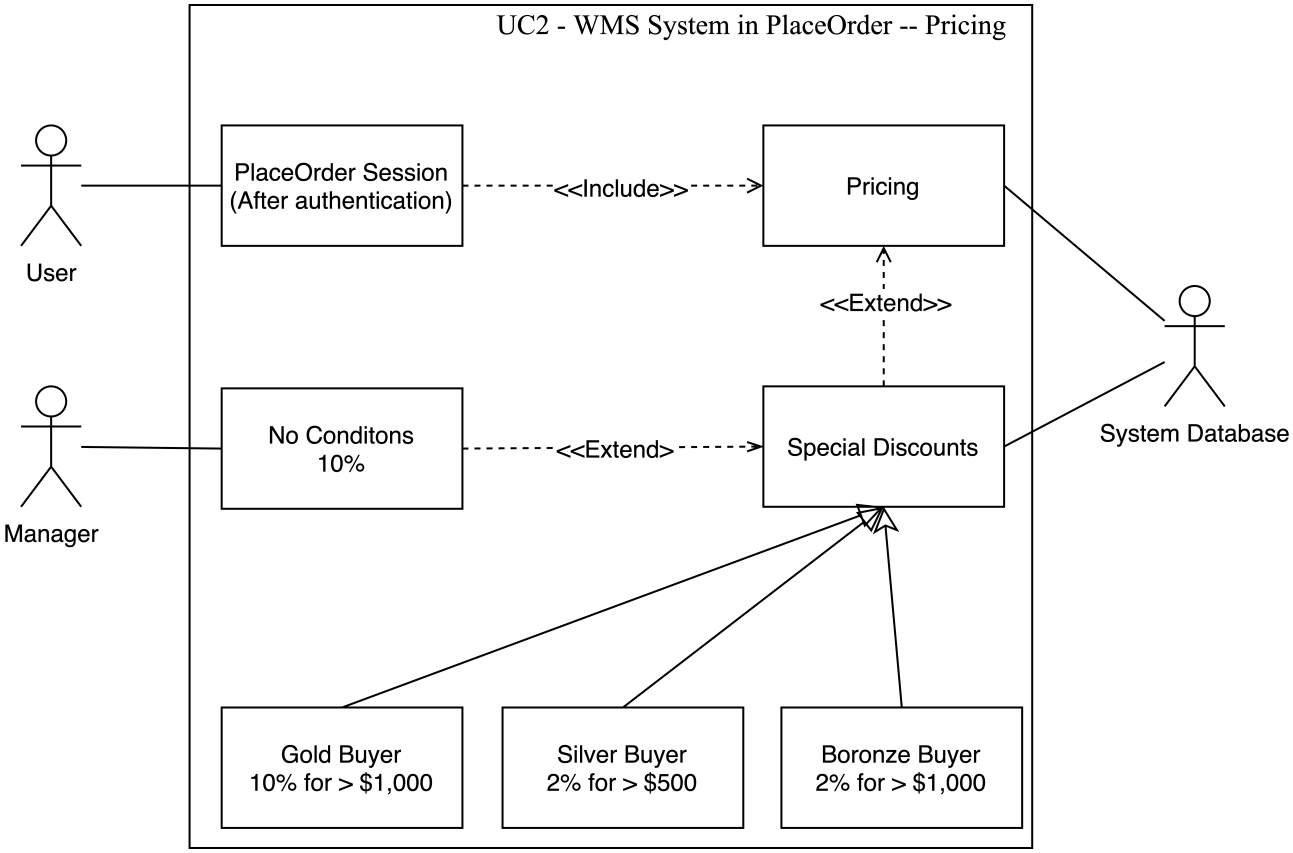

Depending on the quantities of customer order, users will be notified that whether low/ high quantities section is handling the placeOrder request. Within the placeOrder session, users are prompted to make their payments, payments are received by the external banking system. Note that the payment may fail if user has invalid payment detail.

# UC 2 - Sequence Diagram



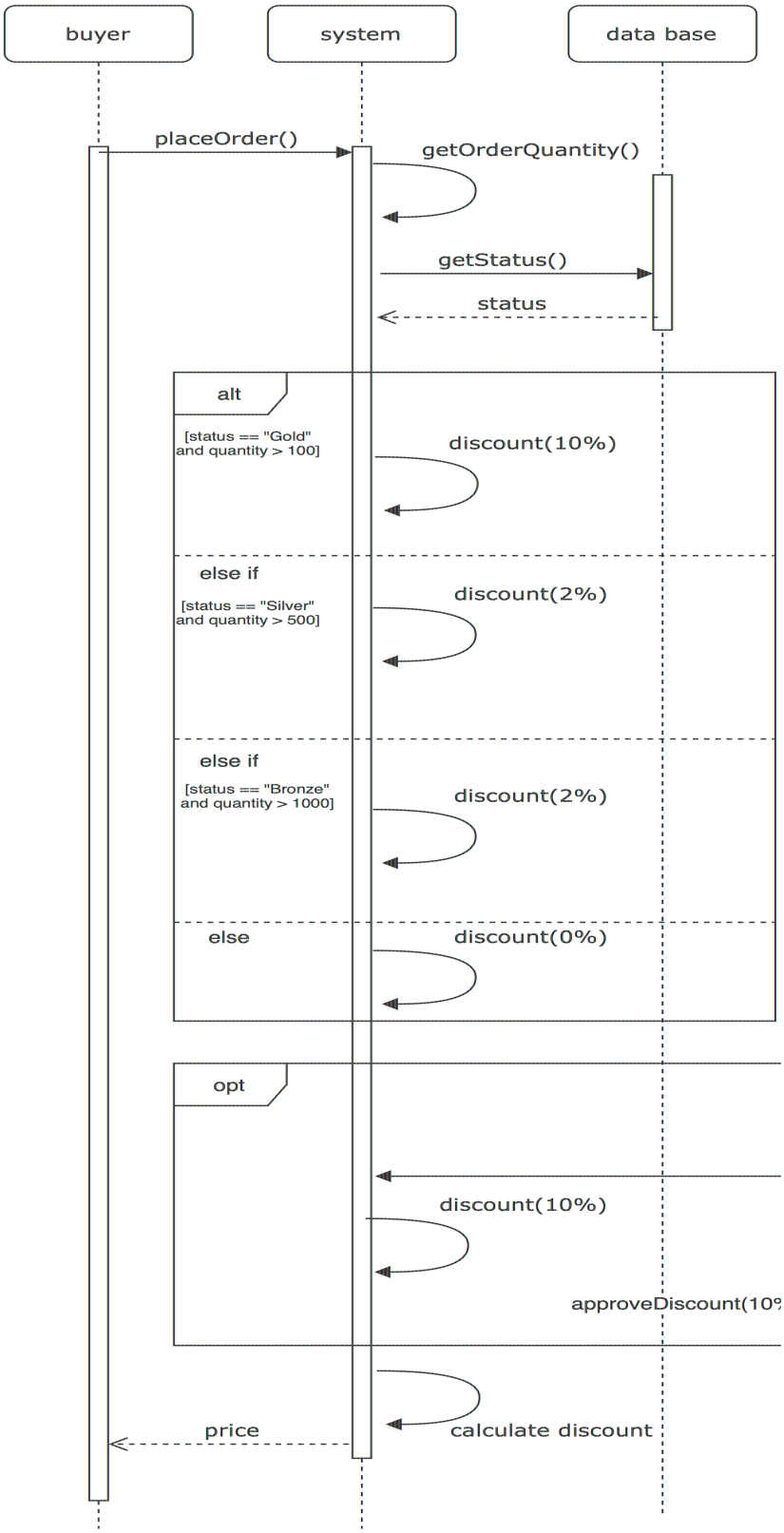
There are four participants in this use case, they are buyer, warehouse interface system, database and banking system. First, buyer sends message with order details to the system, and system records the order quantity accordingly. Order will be created with order detail and client information, under different jurisdictions depending on the quantity (more than 10 items or not), buyers are informed which component the order is treated with (either high or low quantity order proxy). Then, the system continues the workflow by creating invoice, updating items which reduces the amount of sold items in stock, and calculate the total price of invoice. The buyer will receive the invoice and pay for order. The external banking system will process the transaction with invoice and buyer's information and receive the payment. The corresponding database will hold the order and keep payment details where such information is stored in Order class. Under exceptional situations, items will be sent to buyers when above overall process is executed.

# UC3 - Use Case Diagram




In the placeOrder session, there is a pricing displayed to users after the final price of an order is ready to be processed. There may be specula discounts to the pricing, depending on customer's status. In odd cases, a warehouse manager can give a 10% discount to the order without any conditions. Customer status are returned to users from a system database.

# UC 3 - Sequence Diagram



The participants in this use case are the buyer, system, database, and manager. When the buyer sends a request to place the order, firstly, the “placeOrder()” method request is sent to the system, then the system calls the function “getOrderQuantity()” to check the numbers of orders the buyer buys. Then, access the database by sending “getStatus()” to get the status and return to the system, so that the status differentiates the buyer into three types: gold, silver, and bronze. The diagram uses “alt” to implement the possibility by checking the returned status and the order quantity. If the status is gold and the quantity is greater than 100 then the system will deduct a 10% discount to itself; else if the status is silver and the quantity is greater than 500 then the system will deduct a 2% discount to itself; else if the status is bronze and the quantity is greater than 1000 then the system will deduct a 2% discount to itself; else, there is no discount. In order to handle the exceptional case, “opt” is used in case the manager approves a 10% discount, the message is sent by the manager so that it’s pointing to the system. Then, the system will deduct a 10% discount to itself. After all, the system will calculate the discount again, and return the price to the buyer.