2015-4-3

Design Document
Of
Hotel Booking System

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Content

1. Requirement analysis

1.1 System architecture diagram

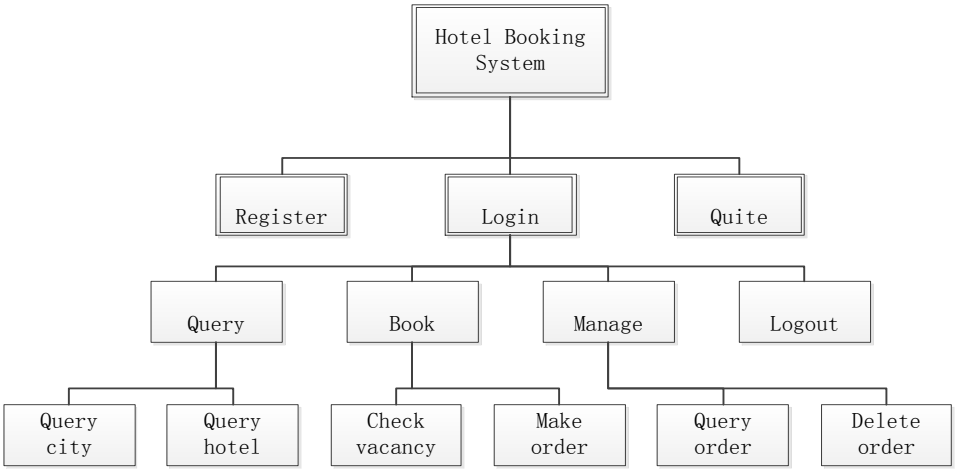

Figure 1: System architecture diagram

As we can see from Figure 1, when the Hotel Booking System is running, users can choose to register, login and quite. After login, there are 4 main modules, including query, book, manage and logout. Query module includes “query city” and “query hotel”; Book module includes “check vacancy” and “make order”; Manage module includes “query order” and “delete order”.

1.2 Use case diagram

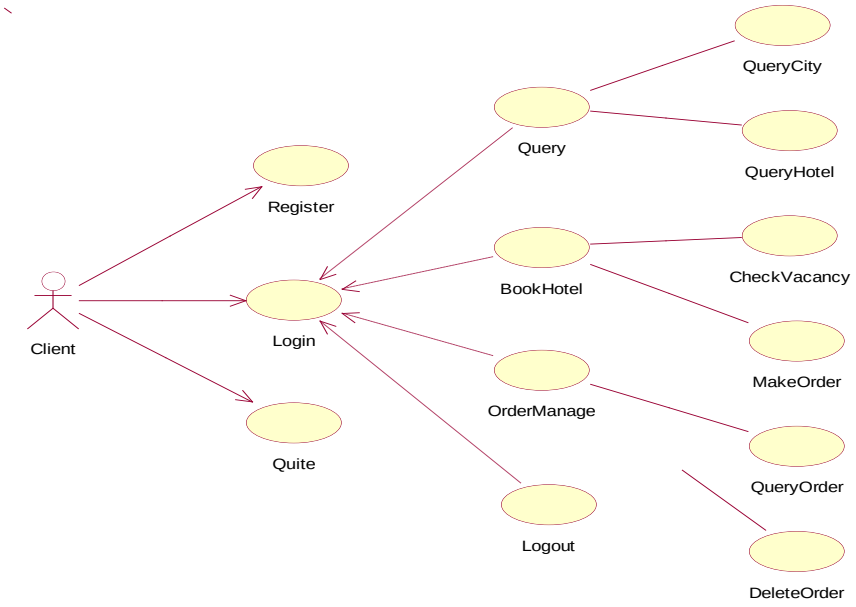

Figure 2: Use case diagram

2. System design

2.1 Database Design

2.1.1 User table: user

Table 1: User table

Field Name	Type	Data Integrity Constraints	Meaning
userid	VARCHAR(255)	PK	User ID
psw	VARCHAR(255)		User password

2.2.2 City table: city

Table 2: City table

Field Name	Type	Data Integrity Constraints	Meaning
cityid	VARCHAR(255)	PK	City ID
cityname	VARCHAR(255)		City name

2.2.3 Hotel table: hotel

Table 3: Hotel table

Field Name	Type	Data Integrity Constraints	Meaning
hotelid	VARCHAR(255)	PK	Hotel ID
cityid	VARCHAR(255)	FK	City ID
hotelname	VARCHAR(255)		Hotel name
priceA	DECIMAL(10,2)		Price of single room
priceB	DECIMAL(10,2)		Price of double room
priceC	DECIMAL(10,2)		Price of VIP room
port	INT		Port number of hotel server

2.2.4 Room table: room

Table 4: Room table

Field Name	Type	Data Integrity Constraints	Meaning
hotelid	VARCHAR(255)	PK	Hotel ID
roomid	VARCHAR(255)	PK	Room ID
type	VARCHAR(2)		Room type (A, B or C)
state	VARCHAR(2)		Room state (vacancy or not)

2.2.5 Order table: order

Table 5: Order table

Field Name	Type	Data Integrity Constraints	Meaning
orderid	VARCHAR(255)	PK	Order ID
userid	VARCHAR(255)		User ID
username	VARCHAR(255)		User name
cityid	VARCHAR(255)		City ID
cityname	VARCHAR(255)		City name
hotelid	VARCHAR(255)		Hotel ID
hotelname	VARCHAR(255)		Hotel name
roomid	VARCHAR(255		Room ID
indate	VARCHAR(2)		Date of check in
outdate	VARCHAR(2)		Date of check out
phone	VARCHAR(20)		Phone number of user
card	VARCHAR(20)		Credit card number of user

2.2 Specification of messages

2.2.1 Client & Broker Server:

Table 6: Client State Transition Diagram

Current state	Write	Read	Next state
loop			login
			register
			quite
register	REGISTER userID psw	SUCCEEDED	loop
		ERROR	loop
login	LOGIN userID psw	SUCCEEDED	homepage
		ERROR	loop
quite	QUIT		
homepage			query(city)
			book
			manage
			logout
query(city)	QUERY	cityID:cityname	queryhotel
		ERROR	homepage
queryhotel	HOTEL cityID	cityname:hotelID +hotelname+priceA +priceB+priceC	book/homepage
		ERROR	query(city)

book	BOOK hotelID,roomtype	roomID	order
		ERROR	book
order	ORDER userID,hotelID,roomID, username,indate,outdate, phone,card	SUCCEEDED	Manage /homepage
		ERROR	book
manage	MANAGE userID	orderID,username, cityname,hotelname, roomID,indate, outdate,phone,card	delete/homepage
		ERROR	homepage
delete	DELETE orderID	SUCCEEDED	manage
		ERROR	
logout			loop

Table 7: Broker Server State Transition Diagram

Current state	Read	Next state	Write	Next state
run	REGISTER userID psw	register	SUCCEEDED	run
			ERROR	
	LOGIN userID psw	login	SUCCEEDED	
			ERROR	
	QUIT	break		
	QUERY	query(city)	cityID:cityname	
			ERROR	
	HOTEL cityID	queryhotel	cityname:hotelID+hotelname +priceA+priceB+priceC	
			ERROR	
	BOOK hotelID,roomtype	book	roomID	
			ERROR	
	ORDER userID,hotelID,roomID ,username,indate,out date,phone,card	order	SUCCEEDED	
			ERROR	
	MANAGE userID	manage	orderID,username,cityname, hotelname,roomID,indate, outdate,phone,card	
			ERROR	
	DELETE orderID	delete	SUCCEEDED	
			ERROR	

2.2.2 Broker Server & Hotel Server

Table 8: Broker Server State Transition Diagram

Current state	Write	Read	Next state
book	BOOK hotelID,roomtype	roomID	book
		ERROR	
order	ORDER userID,hotelID,roomID, username,indate,outdate, phone,card	SUCCEEDED	order
		ERROR	
delete	DELETE orderID	SUCCEEDED	delete
		ERROR	

Table 9: Hotel Server State Transition Diagram

Current state	Read	Next state	Write	Next state
run	BOOK hotelID,roomtype	book	roomID	run
			ERROR	
	ORDER userID,hotelID,roomID, username,indate,outdate, phone,card	order	SUCCEEDED	
			ERROR	
	DELETE orderID	delete	SUCCEEDED	
			ERROR	

From these State Transition Diagram above, we can easily understand the message transmission between client & broker server and broker server & hotel server. This specification includes enough details about message formats, which can help us to implement a client or server to handle the messages.

2.3 Class diagram

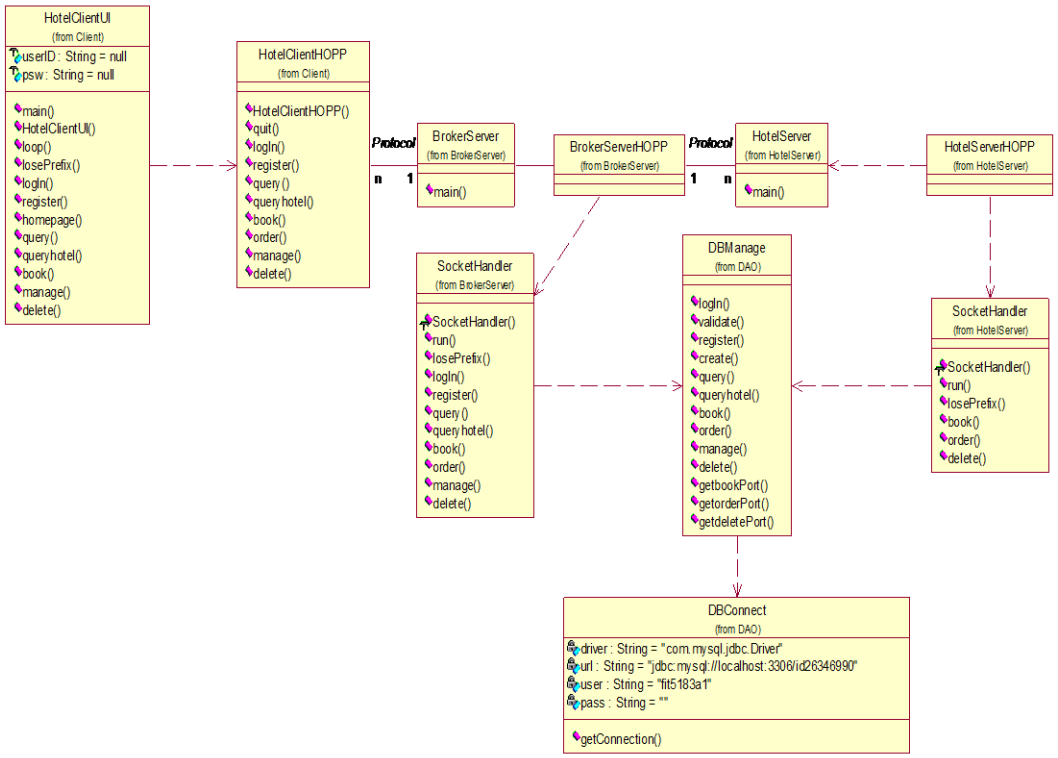

Figure 3: Class diagram

3. System realization

3.1 User interface

3.1.1 Main user interface

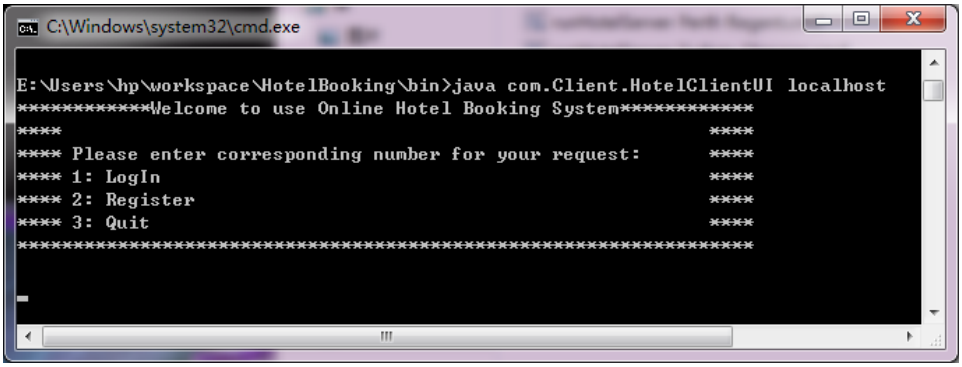

Figure 4: Main user interface

Figure 4 is showing the main user interface of the Hotel Booking System. User can choose to register, login and quit.

3.1.2 Register interface

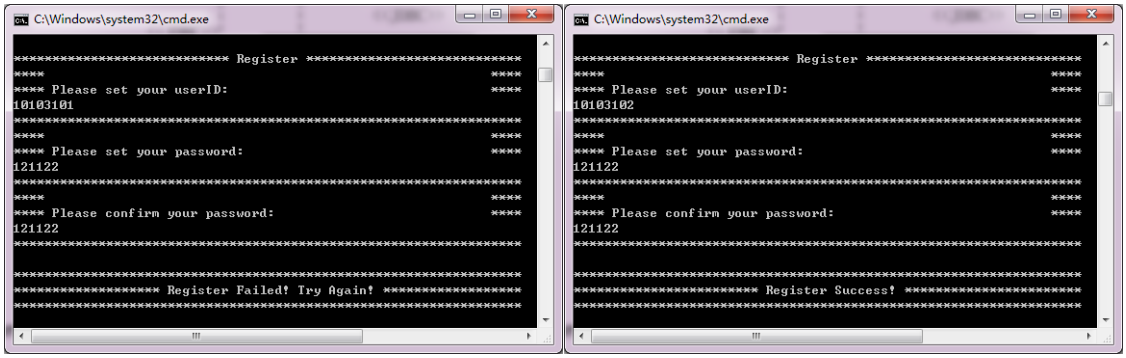

Figure 5: Register interface

Figure 5 is showing the register interface. After submitting the register information, no matter success or not, it will always show the information of the result and return to the main user interface.

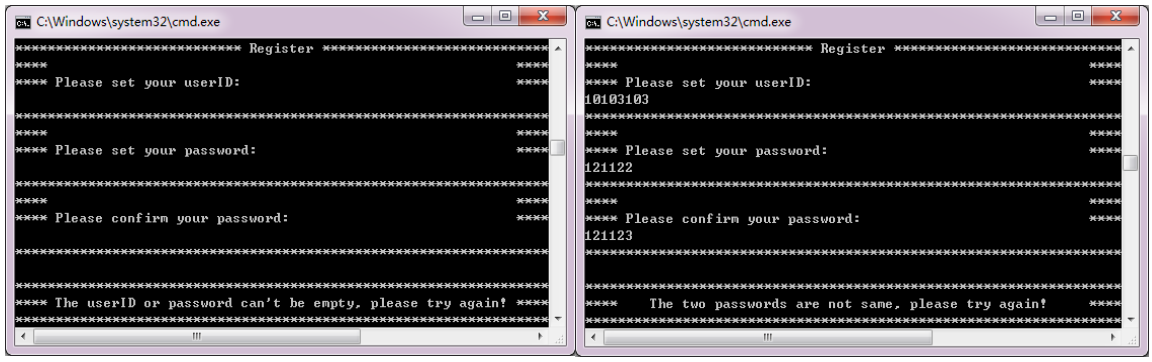

Figure 6: Error message

Figure 6 is showing the error message of the register. When user submitted illegal register information, the system will show the tips of error message to help user to correct it.

3.1.3 Login interface

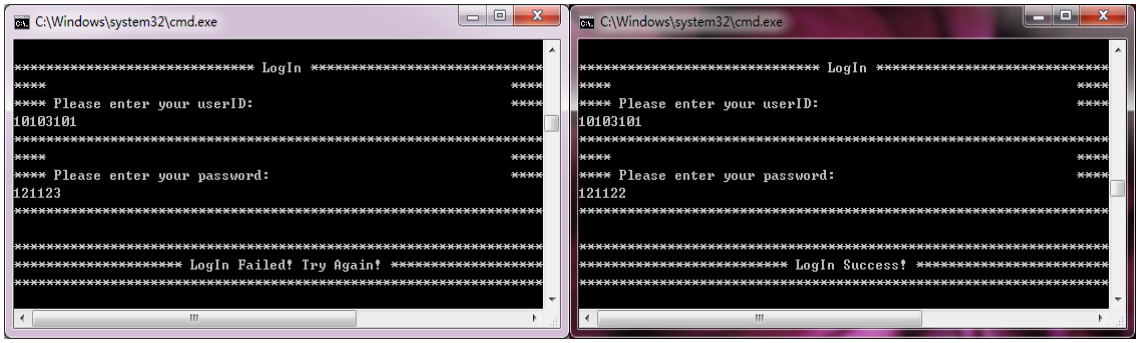

Figure 7: Login interface

Figure 7 is showing the login interface. After submitting the login information, if succeed, it will show the success information and turn into the homepage; if failed, it will show the fail information and return to the main user interface.

3.1.4 Homepage interface

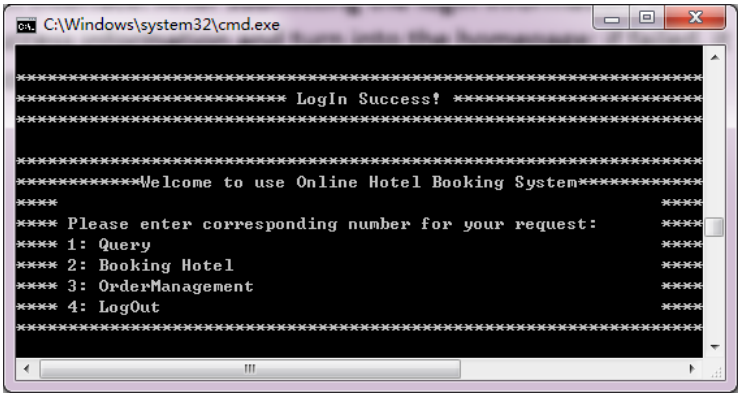

Figure 8: Homepage interface

Figure 8 is showing the homepage interface of the Hotel Booking System. User can choose to query information, booking hotel, order management or logout.

3.1.5 Query interface

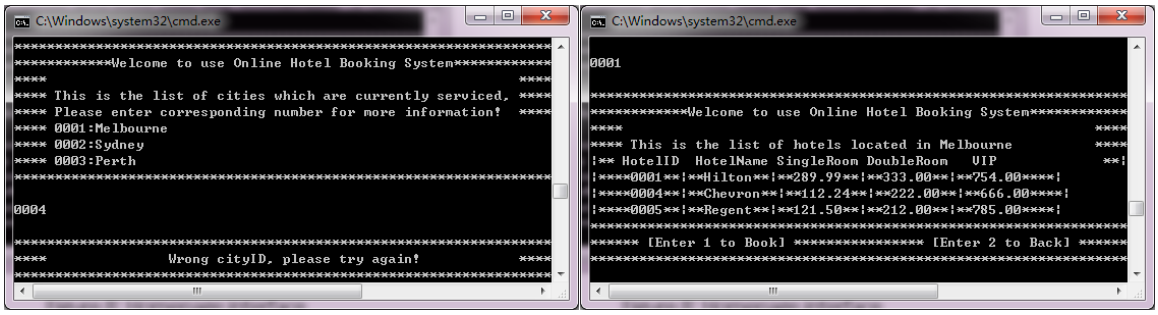

Figure 9: Query interface

Figure 9 is showing the query interface, when user enter this interface, system will show the all available cities and their cityID. When user enter the right cityID, it will list all available hotels and their information in the certain city and user can choose to book hotel or just return to the homepage. If user enter a wrong cityID, it will show the error message and return to the query interface.

3.1.6 Booking hotel interface

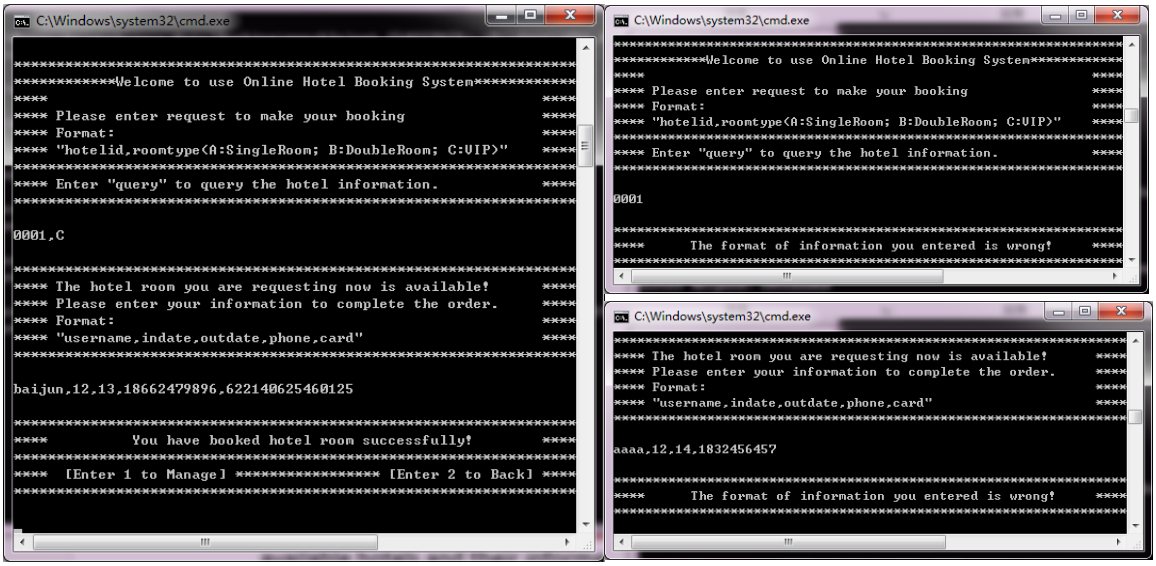

Figure 10: Booking hotel interface

Figure 10 is showing the booking hotel interface, when user enter this interface, system will require user to enter hotel ID and room type to check the vacancy. If there are rooms available, system will require user to enter more information to complete the order. Or, it will show information that the quested room is full and return to booking hotel interface. Whenever user submit wrong format of booking information, the system will show the error message and return to the booking hotel interface.

3.1.7 Order management interface

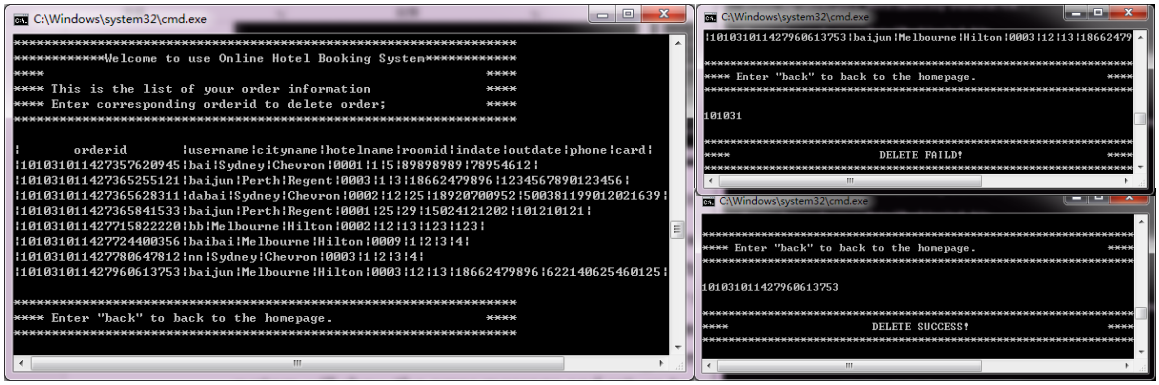

Figure 11: Order management interface

Figure 11 is showing the order management interface, when user enter this interface, system will list all order information of current user. User can choose to type in “back” to return the homepage, or to type in order ID to delete that order. When deleting order, if user submitted wrong order ID, the system will show error message and return to order management interface, or it will show success message and return.

3.2 Server interface

3.2.1 Broker server interface

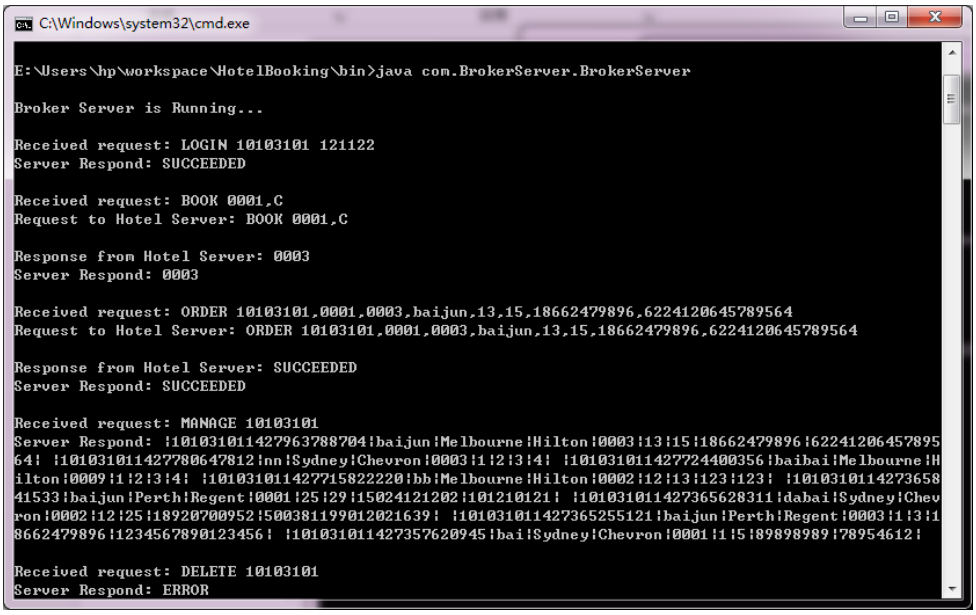

Figure 12: Broker server interface

As figure 12 shows, the broker server keeps receiving request and returning response after started. When receiving “BOOK”, “ORDER” and “DELETE” requests, which are referring to the hotel server, it will first forwarding request to the targeted hotel server. After receiving response from hotel server, it then return the response to the client.

3.2.2 Hotel server interface

Figure 13: Hotel server interface

Similar to the broker server, as figure 13 shows, the hotel server keeps receiving request and returning response after started. The difference is that it only receive requests from the hotel server and return response to the broker server. It never communicate with client directly.

3.3 Deployment diagram

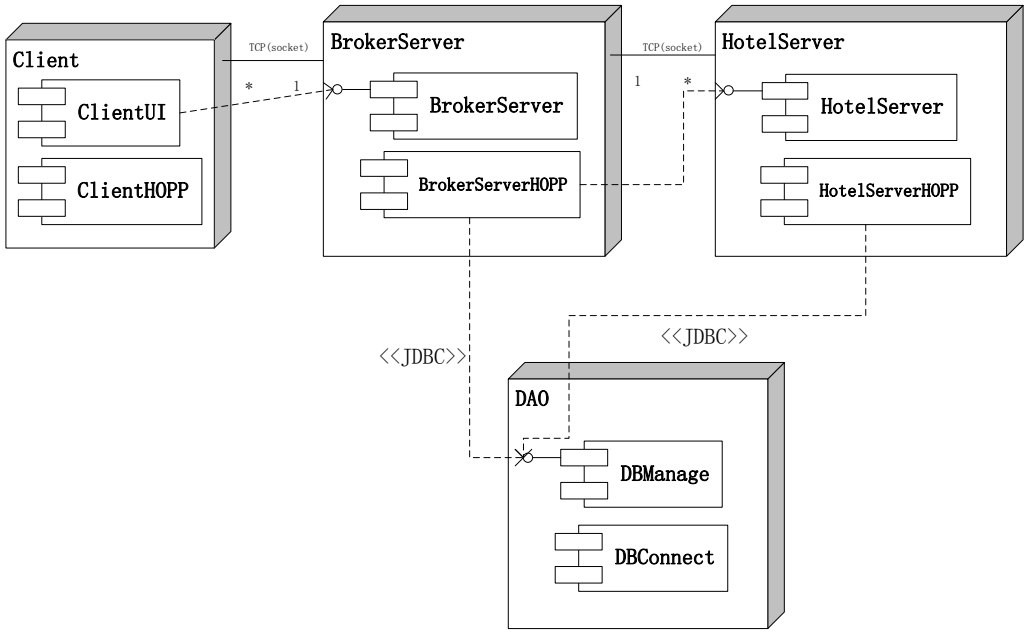

Figure 14: Deployment diagram

Figure 14 is showing the deployment diagram of the Hotel Booking System. The communication between Client and Broker Server is based on the TCP socket, which is the same as the Broker Server and Hotel Server. In practice, the database should be divided into different parts and deployed on different servers where it should be. However, to simplify it, here we assume that all servers use one database.