Software Construction & Development (SE3001)

November 04, 2024
Course Instructor
Affan Rauf

Sessional-II Exam

Total Time (mins):	60
Total Marks:	40
Total Questions:	2

~~Roll No~~

Signature

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Attempt all the questions in the space provided. Attempt Q2a on page 8. You can detach the last sheet for your convenience. However, it must be submitted back.

CLO 2: Implement software design patterns as a part of software construction activity

Q1: Consider a scenario in a Hotel Reservation System where a room reservation request is processed. The sequence diagram on page 7 demonstrates the process of reserving a room. Write all the Java code you can infer from this SD. **[20 marks]**

(14)

```
Public Class Hotel {
    guestList    guestL;
    roomCatalog   C;
    guest         g;
    room          r;        reservation  rs;

    (guest g = guestL . getGuest(questId);)
    (room id = r . getRoom(room id);

    Hotel ( ) {
    }

    reserveRoom ( guestId, roomid, CheckInDate, CheckOutDate) {
        guest g = guestL . getGuest(guestId); room = c.get...
        if ( r . checkAvailability(CheckInDate, CheckOutDate = True)

            if ( g . checkPaymentStatus == 'Paid') {
                res = rs.create(guest, room, CheckInDate, Check...
                g . addReserve(res)
            }
    }
}
```
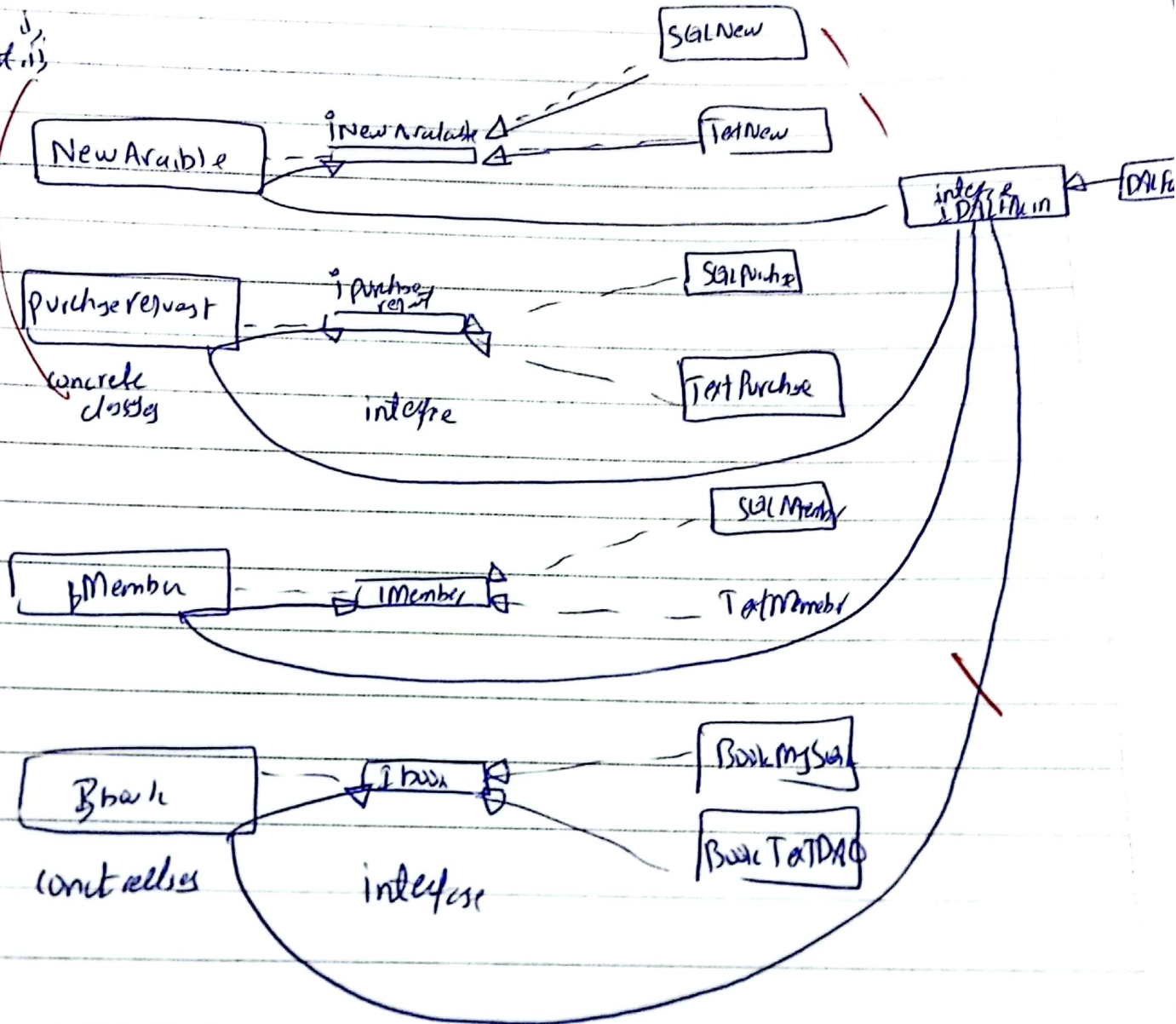
CLO 2 *Implement software design patterns as a part of software construction activity*

Q2: Refer to the partial class diagram of a Library Management System on *page 8*. Add class(es) that will be responsible for i) fetching new books available at a registered vendor and ii) making book purchase requests.

- For the vendor having a MySQL-based data store, the class will connect to the remote database of the vendor, query one table for new books and insert purchase requests in another table.
- However, if the vendor maintains text-file-based data, the class will connect (through SFTP using an IP address & port) to a remote host, fetch new books from new_arriavals.txt and append requests in purchase_request.txt

a) Update the class diagram on *page 8* accordingly. Also show relevant Business Objects and their relationships with the appropriate classes in the updated diagram **[10 marks]**

b) Write Java code for integrating the above two features (i & ii) in the code represented by the above diagram. You may have to define new interfaces/classes. You may have to modify existing interfaces/classes. However, you do not have to write actual logic within methods, and you do **not** have to write all the code for the diagram. Just write code for the new/updated interfaces/classes. **[10 marks]**

Room Reservation

| hotel: Hotel | guestList: GuestList | roomCatalog: RoomCatalog | guest: Guest | room: Room | reservation: Reservation |

reserveRoom(guestId, roomId, checkInDate, checkOutDate)

guest = getGuest(guestId)

room = getRoom(roomId)

availability = checkAvailability(checkInDate, checkOutDate)

[availability == true]

paymentStatus = checkPaymentStatus()

res = create(guest, room, checkInDate, checkOutDate)

addReservation(res)

assignReservation(res)

[paymentStatus == success]

success

[paymentStatus != success]

payment required

[availability == false]

room unavailable

«interface»
IDAOAbstractFactory
+ getMemberDAO():IMember
+ getBookDAO():IBook

«interface»
IBook
+ getAllBooksInSeries(String):Map (String, Boolean)

«interface»
IMember
+ getActiveMembers():List (MemberTO)

Ivendor

vendor text dao

vendor my sql dao

DAOAbstractFactory
- instance: IDAOAbstractFactory
+ getInstance():IDAOAbstractFactory

BookTextDAO

BookMySqlDAO

«Interface»
IDALFacade

MemberTextDAO

MemberMySqlDAO

MySqlDAOFactory

TextDAOFactory

DALFacade