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Group 2

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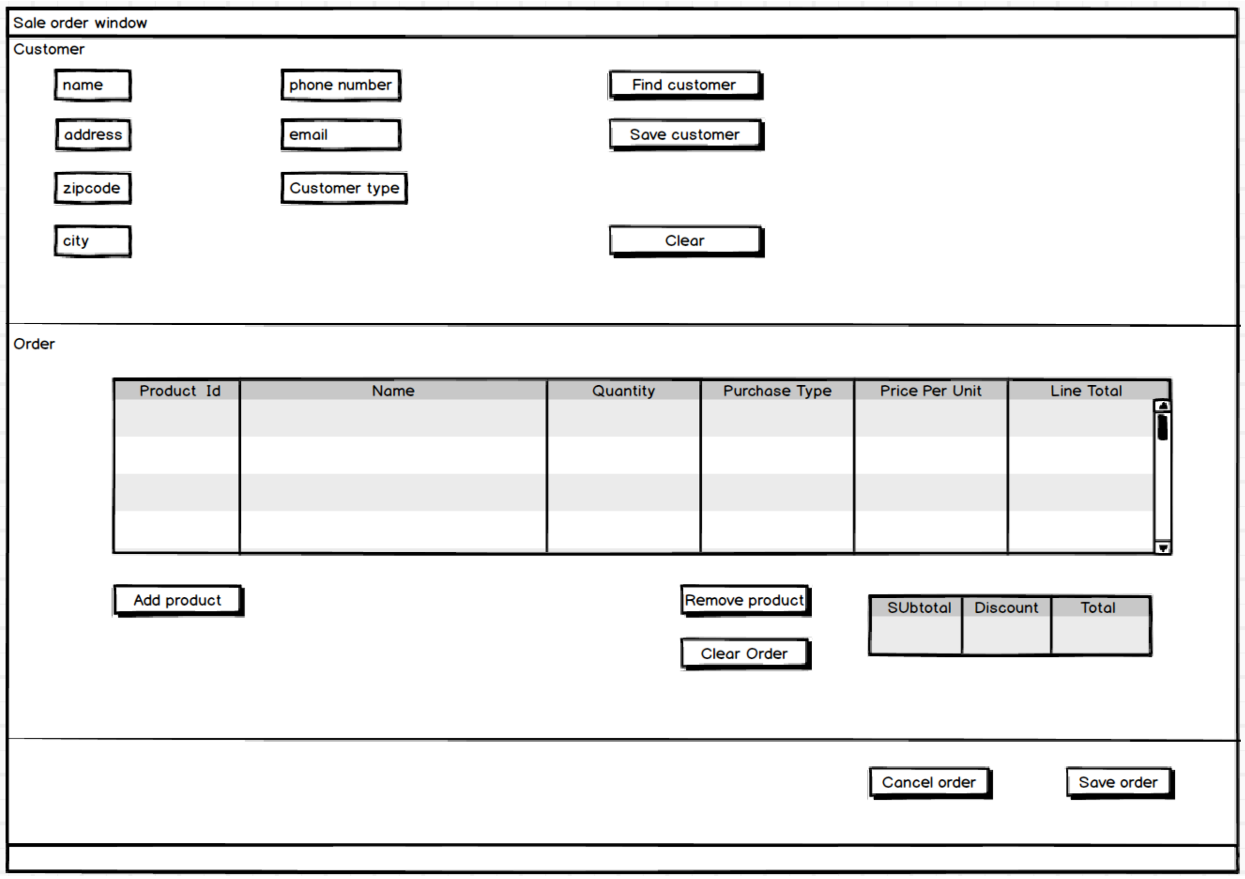
Table of Contents

Mockup


Sale order window
Customer
name
phone number
Find customer
address
email
Save customer
zipcode
Customer type
city
Clear
Order
Product Id
Name
Quantity
Purchase Type
Price Per Unit
Line Total
Add product
Remove product
Clear Order
SUbtotal
Discount
Total
Cancel order
Save order

Fully dressed Use Cases

Use Case Name	Process Sale Order	
Actors	Sales assistant	
Pre-condition	Employee is logged into the system, the system has a stable connection to the database	
Post-condition	Successfully created sale order	
Flow of events	Actor	System response
	1. Customer places an order through phone or email.	
	2. Sales assistant starts a new sale.	3. System creates a new blank sale.
	4. Sales assistant inputs a product id and quantity.	5. System returns product details and subtotal.
	6. Repeat steps 4-5 as necessary	
	7. Sales assistant inputs customer id	8. System returns customer details and links the customer to the sale
	9. Sales assistant either tells the customer over the phone the total and gets confirmation or sends a confirmation email with the sale information.	
	10.Sale assistant prints out an invoice and the delivery note and attaches it to the order.	

Use case: Process Sale Order
Scope: Database Sale Order Processing System
Level: User goals
Primary actor: Sales Assistant
Preconditions: Sales Assistant is logged into the system, an order has been placed by a customer.
Success Guarantee: A Sale order with all the desired products has been created and saved. Discounts are applied according to customer's membership. Stock and inventory are updated appropriately. An invoice is generated and printed out to be sent to the customer.
Main success scenario:

1. Sales assistant creates a new Sale Order.
2. System displays a new blank Sale Order.
3. Sales assistant enters the customer identifier.
4. System displays customer information, name, address, city, zipcode and discount (if any).
5. Sales assistant enters the product identifier and quantity.
6. System displays sale line item with the item description, price, and sub-total. Prices are calculated based on a set of price rules.
   Sales assistant repeats steps 5-6 until order is filled.
7. Sales assistant checks the order is correct and confirms the order.

8. System records the completed sale order, generates an invoice for the customer, and updates the stock accordingly.

Extensions

*a. At any time customer requests to cancel the order.

1. Sales assistant cancels the order.
2. System does not record any information and exits.

3.a. Customer is not in the database.

1. Sales assistant enters the customer details manually.
2. Continue from main success scenario 5.

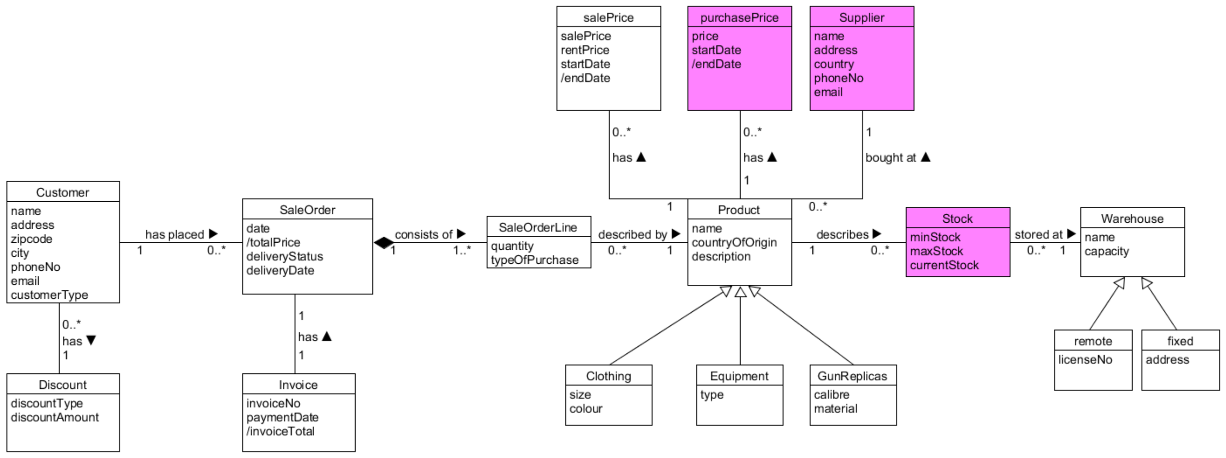
5.a. Product is not found by the system.

1. Sales assistant gives the option to the customer to continue or cancel the order.
    a. Customer tells sale assistant to cancel the order.
        i. Sale assistant cancels the order.
        ii. System does not record any information, product stock remains unchanged, and system exits.
    b. Customer tells sale assistant to continue the order without the product.
        i. Sale assistant continues from main success scenario 5 without the missing product.

5.b. Insufficient quantity of product to fill order.

1. System creates a warning message display insufficient stock.
2. Sales assistant gives the options to the customer to continue with a new quantity or to remove the product from the order or cancel the whole order.
    a. Customer tells the sales assistant to change the quantity of the product.
        i. Sales assistant changes the quantity of the product.
        ii. System displays the updated sale line item.
        iii. Continue from main success scenario 5.
    b. Customer tells the sales assistant to remove the product from the order.
        i. Sale assistant removes the sale line item with the product.
        ii. System displays the updated sale order without the product.
        iii. Continue from main success scenario 5.
    c. Customer tells the sales assistant to cancel the whole order.
        i. Sales assistant cancels the order.
        ii. System does not record any information, product stock remains unchanged and system exits.

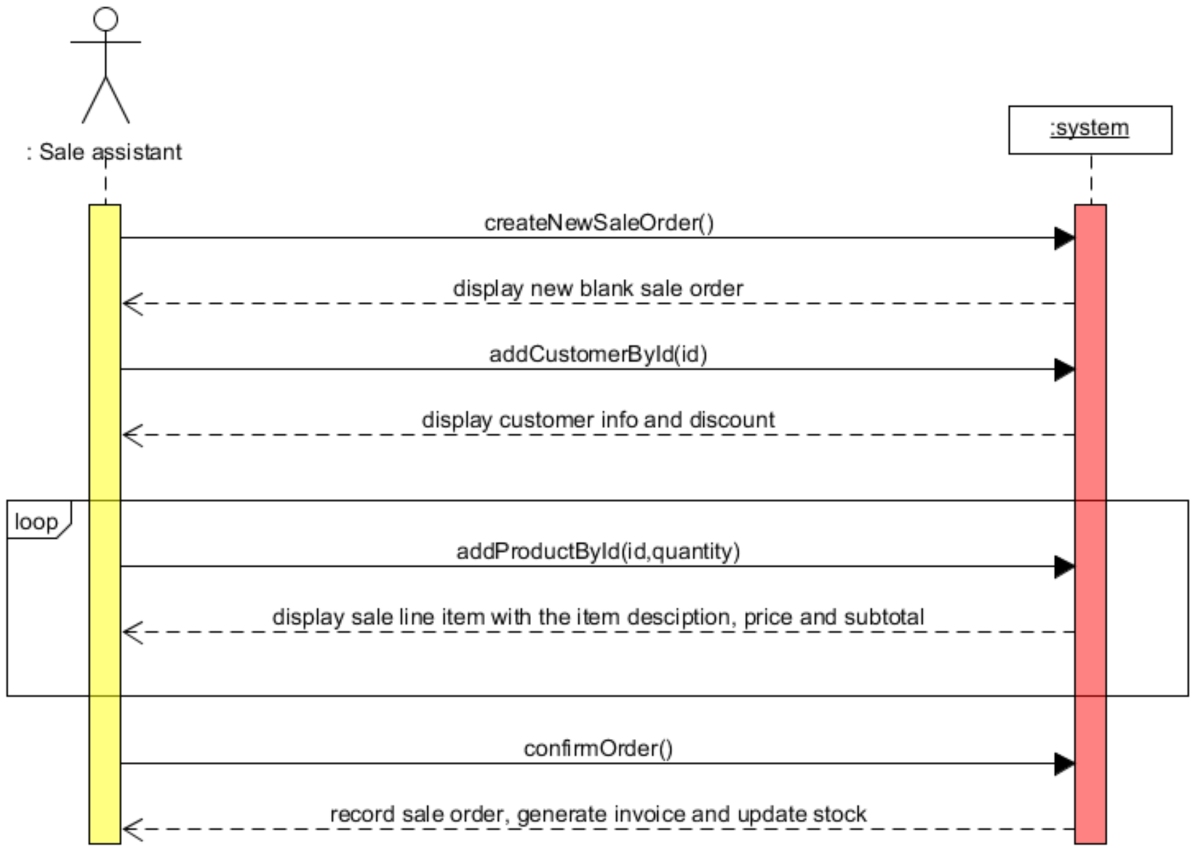
Domain model



Patterns and associations

In the domain model for the creation of Sales an agreement pattern is used. SaleOrderLine has a composite aggregation to SaleOrder which means if SaleOrder is deleted then SaleOrderLine is deleted with it. The hierarchy pattern means that the Product has fields that are common to Clothing, Equipment and GunReplicas and which they will inherit. The same goes for Warehouse and Remote and fixed. The classes PurchasePrice, Supplier and Stock will not be implemented in this iteration because of lack of time.

System sequence diagram – Sale order

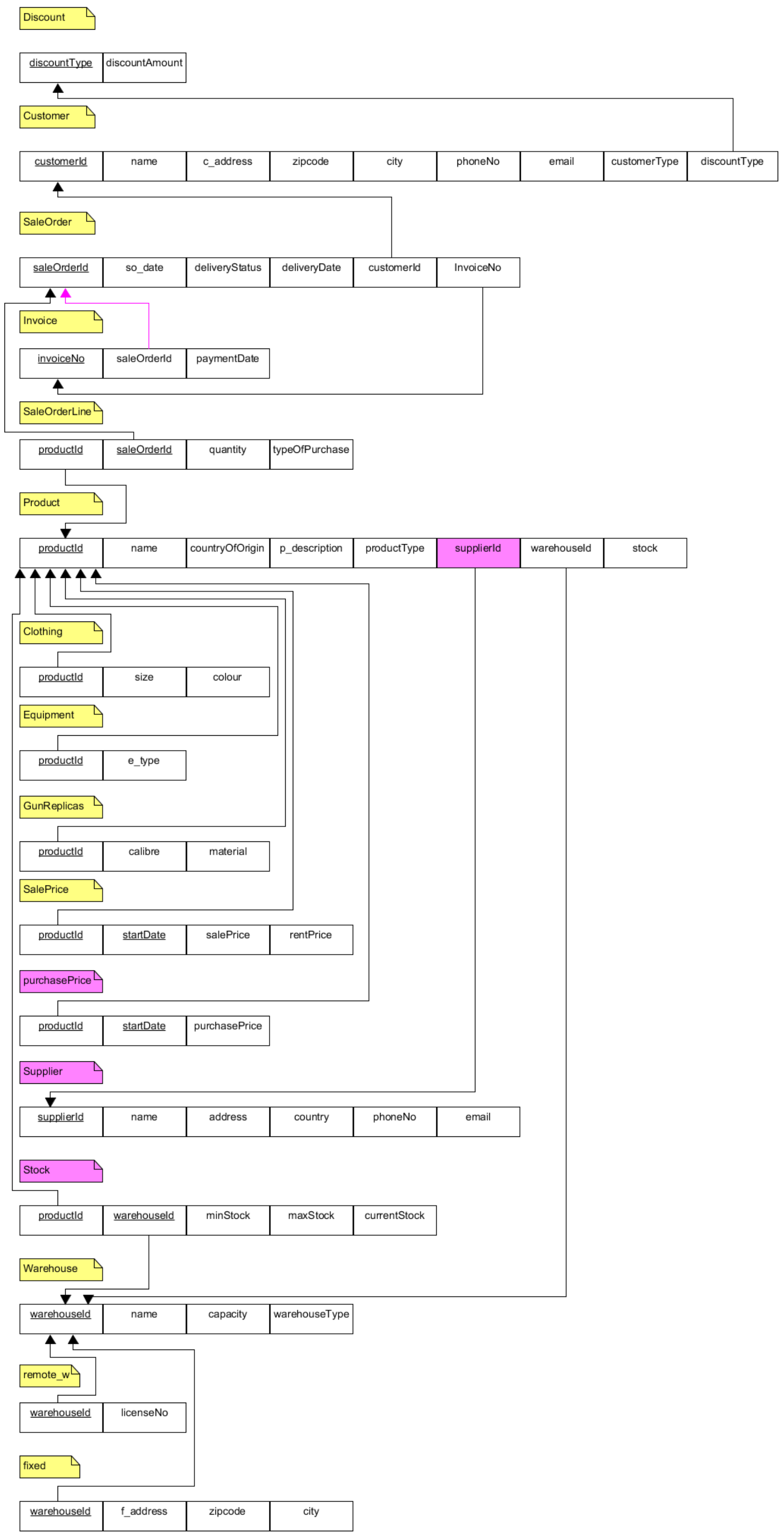

: Sale assistant
:system
createNewSaleOrder()
display new blank sale order
addCustomerById(id)
display customer info and discount
loop
addProductById(id,quantity)
display sale line item with the item desciption, price and subtotal
confirmOrder()
record sale order, generate invoice and update stock

Relational model

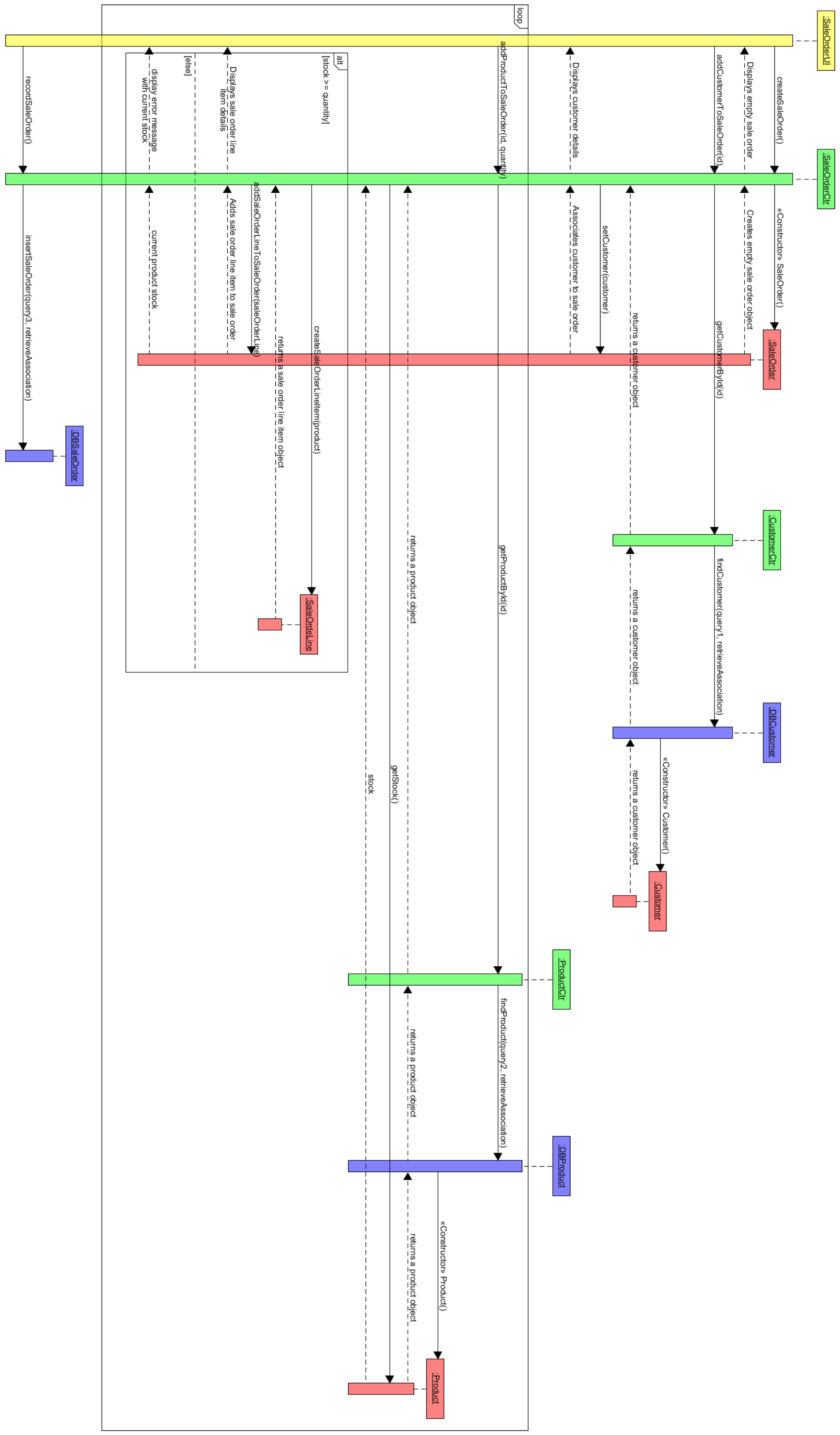
For the transformation of the domain model to a relational model we use the 3NF.

SaleOrderLine has a composite primary key which guarantees its uniqueness.

We decided not to put everything on product and split up the product_type



Interaction diagram


:SaleOrderUI
:SaleOrderCtr
:SaleOrder
:CustomerCtr
:DBCustomer
:Customer
:ProductCtr
:DBProduct
:Product
:SaleOrderLine
:DBSaleOrder
loop
alt
[stock >= quantity]
[else]
createSaleOrder()
«Constructor» SaleOrder()
Creates empty sale order object
Displays empty sale order
addCustomerToSaleOrder(id)
getCustomerById(id)
findCustomer(query1, retrieveAssociation)
«Constructor» Customer()
returns a customer object
returns a customer object
returns a customer object
setCustomer(customer)
Associates customer to sale order
Displays customer details
addProductToSaleOrder(id, quantity)
getProductById(id)
findProduct(query2, retrieveAssociation)
«Constructor» Product()
returns a product object
returns a product object
returns a product object
getStock()
stock
createSaleOrderLineItem(product)
returns a sale order line item object
addSaleOrderLineToSaleOrder(saleOrderLine)
Adds sale order line item to sale order
Displays sale order line item details
current product stock
display error message with current stock
recordSaleOrder()
insertSaleOrder(query3, retrieveAssociation)

System tests

Scenario table

Scenario name	Starting flow	Alternate flow
Scenario 1 – Successful creation of Sale order	Basic flow	
Scenario 2 – Invalid customer id	Basic flow to step 2	Extension 3a
Scenario 3 – Invalid product id	Basic flow to step 4	Extension 5a
Scenario 4 - Insufficient quantity of product	Basic flow to step 4	Extension 5b

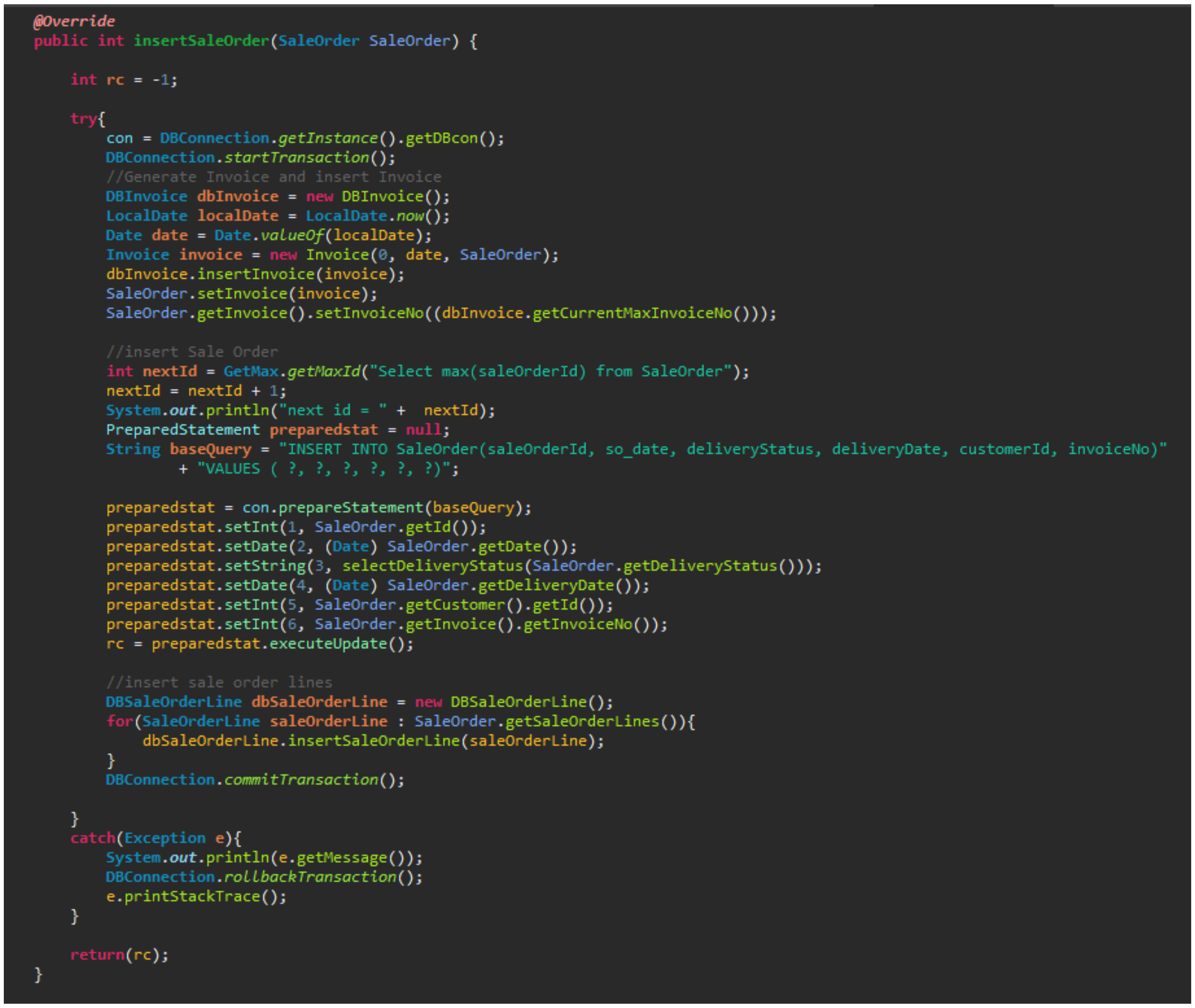
Valid/Invalid table

Test case Id	Scenario	Customer id is valid	Product id is valid	Quantity is valid	Expected result
1	Successful creation of Sale order	V	V	V	Sale order was created and recorded and an invoice was printed
2	Invalid customer id	I	N/A	N/A	Customer is not added to sale order
3	Invalid product id	V	I	N/A	Product is not added to sale order
4	Invalid product quantity	V	V	I	Displays stock error

Real values table

Test case Id	Scenario	Customer id is valid	Product id is valid	Quantity is valid	Expected result
1	Successful creation of Sale order	1	1	1	Sale order was created and recorded and an invoice was printed
2	Invalid customer id	333	N/A	N/A	Customer is not added to sale order
3	Invalid product id	1	999	N/A	Product is not added to sale order
4	Invalid product quantity	1	1	1000	Displays stock error

Code example for inserting a sale order into the database.



```java
@Override
public int insertSaleOrder(SaleOrder SaleOrder) {

    int rc = -1;

    try{
        con = DBConnection.getInstance().getDBcon();
        DBConnection.startTransaction();
        //Generate Invoice and insert Invoice
        DBInvoice dbInvoice = new DBInvoice();
        LocalDate localDate = LocalDate.now();
        Date date = Date.valueOf(localDate);
        Invoice invoice = new Invoice(0, date, SaleOrder);
        dbInvoice.insertInvoice(invoice);
        SaleOrder.setInvoice(invoice);
        SaleOrder.getInvoice().setInvoiceNo((dbInvoice.getCurrentMaxInvoiceNo()));

        //insert Sale Order
        int nextId = GetMax.getMaxId("Select max(saleOrderId) from SaleOrder");
        nextId = nextId + 1;
        System.out.println("next id = " +  nextId);
        PreparedStatement preparedstat = null;
        String baseQuery = "INSERT INTO SaleOrder(saleOrderId, so_date, deliveryStatus, deliveryDate, customerId, invoiceNo)"
                + "VALUES ( ?, ?, ?, ?, ?, ?)";

        preparedstat = con.prepareStatement(baseQuery);
        preparedstat.setInt(1, SaleOrder.getId());
        preparedstat.setDate(2, (Date) SaleOrder.getDate());
        preparedstat.setString(3, selectDeliveryStatus(SaleOrder.getDeliveryStatus()));
        preparedstat.setDate(4, (Date) SaleOrder.getDeliveryDate());
        preparedstat.setInt(5, SaleOrder.getCustomer().getId());
        preparedstat.setInt(6, SaleOrder.getInvoice().getInvoiceNo());
        rc = preparedstat.executeUpdate();

        //insert sale order lines
        DBSaleOrderLine dbSaleOrderLine = new DBSaleOrderLine();
        for(SaleOrderLine saleOrderLine : SaleOrder.getSaleOrderLines()){
            dbSaleOrderLine.insertSaleOrderLine(saleOrderLine);
        }
        DBConnection.commitTransaction();

    }
    catch(Exception e){
        System.out.println(e.getMessage());
        DBConnection.rollbackTransaction();
        e.printStackTrace();
    }

    return(rc);
}
```

Here we have our most important method for this use case the insertion of a sale order into our database.

The method parameters take the a SaleOrder object and we use that to try an insertiong.

In the beginning of the try block we establish a connection and start out transaction (setting autocommit to false)

Next we create an invoice stub to insert into the data first and then we associate the stub to our saleOrder object (so we can insert our invoiceNo value into our database.

After the invoice has been inserted we insert the SaleOrder object using a PreparedStatement to take the attributes from our SaleOrder object and then execute an update to the database.

Finally we call the insertSaleOrderLine method on every saleOrderLine element in our ArrayList of SaleOrderLines.

If all the methods and inserts complete without error, then we commit the transaction. However if an exception is thrown our catch block will rollback the entire transaction.

Code standard

The names of the classes are nouns which start with a capital letter and they are simple and descriptive.

The package names are descriptive. The methods have names which start with a lowercase letter and every internal word starts with an upper-case letter. Our project contains a bunch of blank lines in order to improve its readability. A lot of comments are to be found in the project so as to be easier to understand. We have decided to use one declaration per line also because it improves the readability of the code. We have only imported the packages that is needed and not used any wildcards in order to make sure it is compatible with future java versions, in case its implemented a class in one of the packages we use that has the same name as one of our classes and so anyone that comes later to read the code will know what we used.

Revision number: 45

Database: https://kraka.ucn.dk/svn/dmai0916_2Sem_2