Mini project
Persistence

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Intended Learning Outcome

By the end of the mini project you will be able to:

- Analyze and model a problem domain for use in a database-backed system.
- Design a database model from the domain model using transformation rules.
- Design a database that satisfies the requirements for good design (normalization).
- Produce SQL-scripts that create and populate a database.
- Design, document, and build a software system using a three-layered open architecture and the DAO pattern for data access.
- Work effectively in team.

Working Methods

The assignment is to be solved in group. To ensure the highest possible quality of the solution it is important that you work at UCN where issues can be discussed with group members and lecturers. If you experience problems in the team working process, contact a lecturer before the problems get out of hand.

You must use one of your (group members) database located on kraka.ucn.dk. You must use SVN for version control.

About the mini project

The plan for the mini project is the following:

Day 1	Introduction to mini project, start producing artifacts for day 2.
Day 2	Milestone (system development review): Working papers about mock-ups, domain models, interaction diagams, test cases, relational models together with SQL-scripts for creation of the database are to be reviewed.
Day 3	Work with the assignment.
Day 4	Work with the assignment.
Day 5	Work with the assignment. Hand in by uploading to Wiseflow one pdf document with the artifacts and one zip file with the code. *Check Wiseflow for the exact hand-in time*. Each student has to upload the pdf document and the code.

The system development and programming lecturers will be available most of the days; see your schedule for details.

Artifact and other material to be handed in

The artifacts produced (except the source code) must be collected in one pdf document together with relevant comments.
The following must be handed in:

- Mock-ups.
- Fully dressed use-case description for **order processing** and relevant documentation for that use-case.
- Domain model with comments.
- Interaction diagrams for the fully dressed use-case.
- Selected test cases.
- Transformation of the domain model to a relational model with comments.
- SQL scripts for the creation of the database.
- SQL scripts for the insertion of data into the database.
- Code standard.
- Name of the database and tables located on kraka.ucn.dk.
- Repository path with revision number .

The source code together with the test classes has to be handed in as Eclipse project (zip).

Literature

Elmasri book.
Slides from the previous sessions
A basic example in how to use JDBC is available from previous sessions.

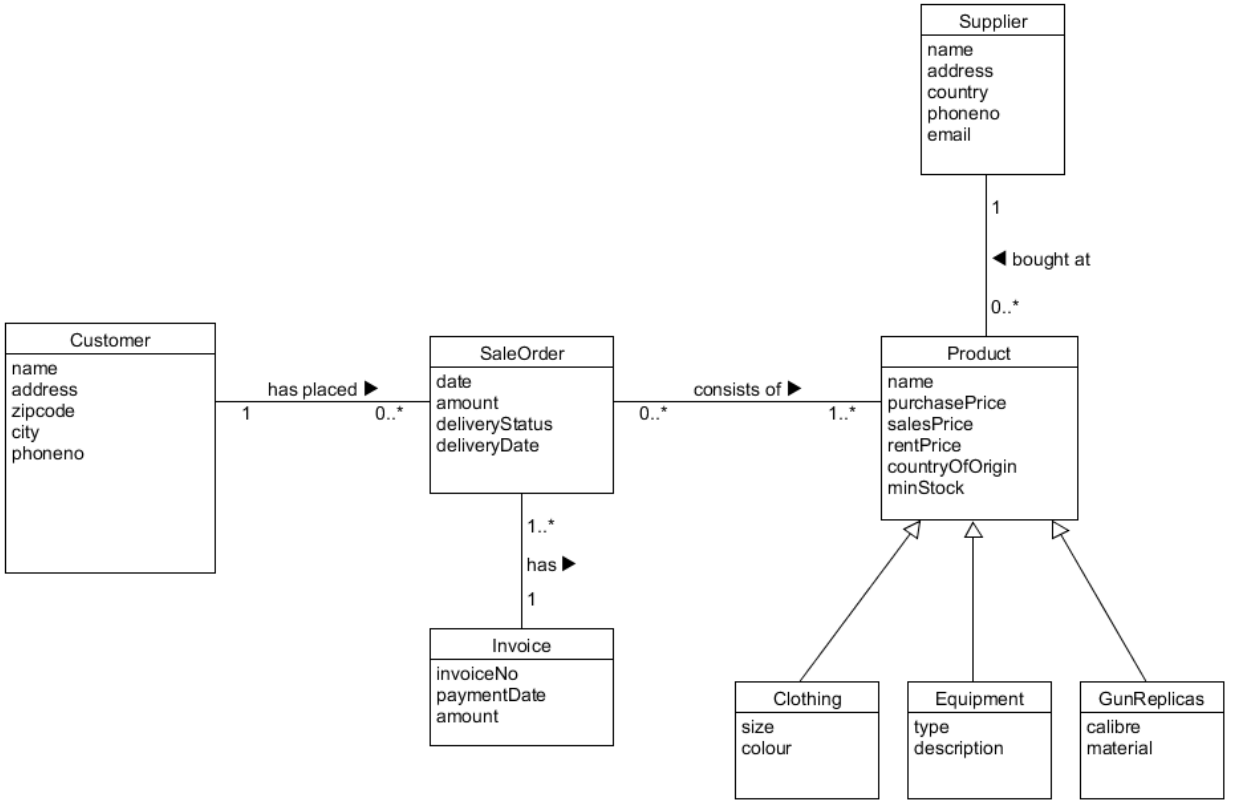
Evaluation

Each group has to present and discuss the developed database program.
The group will present the result of the mini project for about 10 minutes. Questions and feedback from the teacher will follow. Total time will be approximately 45 min. for each team that has more than 3 members, approximately 30 min. for the other teams.
The schedule is in ScheduleEvaluationPersistence.pdf.

Assignment

From the case “Western Style Ltd.” your assignment is to create part of a computer system. This assignment gives you the opportunity to build a system in Java using a relational database.
The domain model is not complete/correct, so if you should discover some errors/mistakes. It is your job to make the necessary adjustments (in the model). In the first version of the system, you may want not to implement the specialisation hierarchy modelling different products.

1. Design a relational model based on the domain model (mapping/transformation).
2. Write SQL script(s) for creation of the database and insertion of data.
3. Implement CRUD operations for the Customer and Product.
4. Describe, design, implement and test the use case for order processing.



Western Style Ltd.

Western Style was established in 1994 by Hanne and Børge Pedersen. The company consists of one store which is located in Viborg and furthermore the company attends festivals, markets and concerts where they promote their range of products. The concept of the company arose when Hanne and Børge attended square dance lessons and found it difficult finding stylish cowboy clothing for the dancers. First they started importing clothing only but later on also many other western related items. In the year 2012 the company was turned from a startup (sole proprietorship) into a private limited company (Ltd) with a stock capital of DKK 500.000,-

In the beginning it was especially the US/American market, who was the main supplier, but the company has expanded substantially, including the field/area of suppliers, and today many items come from Hungary and Poland and Børge still visits trade fairs to find new relevant and competitive suppliers. Børge and Hanne are responsible for purchasing new products to the assortment, while inventory control and keeping supplies in stock is done by other employees in teamwork.

During the years the company has grown from being a spare time business to becoming a company with 6 employees in addition to the owners. Kent Andersen is the accountant and furthermore manages debtor and credit control. Nina Munkholm is responsible for running the store on a daily basis and makes the work plans, holiday planning and coordinates who participate in some of the arrangements in the outside world. So far sales have been limited to the Danish market and foreign tourists visiting Denmark, but the objective is to expand somewhere in the future.

The additional 4 employees manage service and sale/sales promotion along with packing and dispatching of merchandise all over the country. Today, many orders are made from societies, who place their orders

from the catalogue the company put out 2 times a year. Furthermore advertising is done in dailies, magazines and trade journals.

Closer analysis and categorization of the costumers have not been done but most are square-dancer clubs, line-dancer clubs, western clubs, riding clubs with western riding disciplines and private persons. Clubs that purchase for more than DKK 1.500,- receive a discount, while private persons who buy for more than DKK 2.500,- get their delivery free of charge. If the customer didn't reach the free of charge limit, they'll have to pay an additional DKK 45 for freight. Orders are usually placed by phone or mail order. After that the order is delivered from stock and an invoice and a delivery note is printed to go with the purchase.

Stock control is done by count/manually and furthermore there is a transportable remote warehouse where it is possible to store. Control is done by stock count and besides there is a transportable remote warehouse, given that the company has a van used for markets and festivals and sometimes this warehouse needs refilling. A computer system for updating the warehouse directly is desired, in that way it would be possible to control what needs filling up.
Western Style have received several inquiries from potential business associates who wish to establish similar companies/shops other places in Denmark and in other Nordic countries. As a result a potential expansion, of other shops or some sort of franchising, is presently taken into consideration.

Presently the product range consists of

Cowboy hats
Cowboy boots
Cowboy clothing
Denims
T-shirts
Shirts
Ponchos
Vests
Leather Jackets
Dresses
Skirts
Oilskin Jackets
Chaps
Overalls
Ties
Earrings
Necklaces
Belts and buckles
Pistol Belts
Gun Replicas
Sheriff uniforms and equipment
Jewellery
Scarves
Gifts, Candlelight's, Ornaments,
Gift Boxes, Key Rings
Decorations
Flags
Personalized Licence Plates
Zippo Lighters
Money Clips
Bags
Western and Country music CDs

From these there is a selection of items which can be rented in connection with completion of cultural events.

IT-systems

The company's IT-equipment has been updated continuously and presently consists of a network with a server, 2 PCs which are placed as point of sale terminals (POS) in the store/shop and 1 PC which is used for the daily accounting and payroll administration along with budgeting done in spreadsheet (used by the accountant, Børge and Hanne). Moreover there is a PC for making general calculations, discount calculations and inventory control (used by Nina, Børge and Hanne). One of the shop assistants has an education as IT-administrator and attends to super user assignments. Among others he takes back-ups of all transactions each Friday. The programs used are MS Office, MS Windows.