ERHVERVS AKADEMI SYDVEST

Exam project

Computer Science Study

2nd Semester 2015

Subject:	All subjects from 1st Year
Title:	Second-hand Cars
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Handed out:	Monday, May 18th 2015
To be handed in:	Friday, June 12th 2015 no later than 9.59 A.M to Lotte at the administration office.

1. Business description

1.1. Second-hand cars by Mads

Mads Snild has for several years been a second-hand car dealer and about ½ a year ago he took over a special garage with diesel-powered cars, car electronics and Chip-tuning.
At the moment the company is divided up into the following areas: Sales of second-hand cars, garage making sold cars ready, repair of cars – both ordinary and diesel-powered cars and car electronics and finally Chip-tuning

1.2. Sales of second-hand cars.

Up to now, Mads has registered the cars in a spreadsheet, but it has become a little confusing. In addition to this it is also difficult to answer telephone calls from customers, because the system is very slow and doesn't have any facilities for searching. That is one reason why Mads wants a new system, which can full-fill his needs in a better way. An extract of the spreadsheet is shown in enclosure no. 1. Mads also has a simple promoting web-page just containing a few pictures of his company + some data and pictures regarding the current second-hand cars for sale and contact info (phone no etc.).

1.3. Garages

At the moment the company has 3 garages, i.e.: One that is making the cars ready and is working with ordinary repairs, one for repair of diesel-powered cars and one for Chip-tuning. The garages are located in 3 different buildings in the city.

At the garage for ordinary repairs there are 6 employees, at the repair of diesel-powered cars 3 employees, and at the Chip-tuning 2 employees. Each garage has its own foreman.

All employees are able to make the ordinary repairs, while you need further training to make the repair of diesel-powered cars. Furthermore you have to be a specialist to make a Chip-tuning.

Recently Mads noticed when he walked through the garages, that the different groups of employees are spending a lot time drinking coffee and are not making money for the company. There is simply not enough coordination between the different employee groups. In his opinion it is due to poor planning.

Therefore he wants a planning system, in which all employees are used effectively. The system shall, at the same time, take into account where the highest income / profit are. For this purpose the following priority has been made: 1: repair of diesel-powered cars, 2: ordinary repair and 3: Chip-tuning.

As mentioned above, Mads has a continual problem in the co-operation with customs and taxation authorities. He fears further problems when the garages have been included in the company.

That is why he demands, that the system can print an invoice to each customer, based on the carried out repair. In addition it would be nice, if the system could be able to produce a report or a file with the transactions, which can be used at the bookkeeper's office.

1.4. Fitting station

A special garage of his business is a fitting station, where the customer can get tyres mounted.
He offers new car tyres and motorcycle tyres:

- summer, winter and all-season tyres
- motorcycle tyres
- 4x4 tyre

As an extra service he offers a "tyres hotel", where the customer can store the summer tyres during the winter time, and vice versa. The hotel can store tyres for 150 customers.
The tyres are placed in shelves, like **Fejl! Henvisningskilde ikke fundet.**.

Fig. 1 - Tyres shelving

The shelves are ordered in a matrix of (25x3x2), so tyres for 25 cars can be in the "X-direction", 3 in "Y-direction" and 2 in "Z-direction".

Create a numbering system so it is possible to read the exact location (X, Y, Z) from the number. The location number may not be longer than one byte (8 bit) in total. We assume that all employees are able to read and count binary.

There is need for a system, which is able to keep track of all the tyres, and the customers. The tyres hotel is a success, and in the springtime he has to create a list of customers, waiting for room in the tyres hotel.

1.5. E-Business

The basic idea is to build a prototype management system covering sales, garages and fitting station as described above. This is to be seen as a
"back-office" application to a front-end web-page. The system must be designed in a way that enables full integration with the web-page some day in the future.

In version 1 the system is built as a stand-alone JAVA application without web-integration though. But the architecture must be designed in a way that will enable a web-UI to use the same functionalities as the JAVA-GUI in an easy pluggable way.

2. Demands for the new system

Mads has the following demands to this part of a new system:

The new system should as minimum contain the same information as in the spreadsheet.

The system must have a graphical user interface, which shows the information about every car in stock – i.e. year, make, model, motor size, fuel, km, price etc.
Mads also wants a GUI which shows the information about sold cars in an overview table. Somewhat like the information in the enclosed spreadsheet.

When a customer enters the sales room, he often knows what he is looking for, for example: mark, price level, number of years etc.

Therefore Mads wants a search function, in which it is possible to type in search criteria and then get a list of cars, which the customer can take an interest in.

A continual problem for Mads is the co-operation with customs and taxation authorities. As he often is very busy, he does not get his purchase and sales entered correctly. So Mads wants the system to be able to produce a report or a file with the transactions, which can be used at the bookkeeper's office.

2.1. Business objectives

To understand the business better, please describe the information and document flow in the business as well as in the entire supply chain, as far as possible, as it is now.

To understand the planning system better, please describe problems with the organization and the teams at the moment and how this can be handled. Also, please suggest organizational improvements that might lead to better coordination of work.

Mads is also wondering how he can see whether they improve their sales number from year to year. To help Mads you have offered to give him a written discussion on different ways to measure your results. This discussion shall be a part of this report.

2.2. Development objectives

You must build the wanted IT-systems using the UP-process and the OOA-OOD philosophy and methods. It is important that you show application of the latest techniques, ideas, patterns etc. from the lessons in first school year of the study.

Emphasis in the evaluation of the project will be on DESIGN – object design and data design, and you must in your report write about the reasoning behind your designs (advantages, disadvantages, principles etc.), including a discussion of the patterns.

Also emphasis will be put on traceability. There must be a documented "red thread" or consistent connection between the contents of your report.

Further your analysis of the business aspects of the case will be evaluated. You can also suggest organizational improvements that might lead to better coordination of work.

Finally the report must also tell something about your project management. How did you "run the show" and how did you manage to reach the goal/the end?

2.3. Implementation restrictions

The implemented solution must comply with the following two requirements:

- Programming must be done in Java
- The database used must be Microsoft SQL Server

2.4. Hand-ins

A report covering your solution to the project
3 copies of the report are handed-in.

- The report must contain analysis, design, implementation and test materials from your project work. A challenge here is to present the (many) artefacts in a reader-friendly way.
- The report must follow the academy's "Guidelines for report writing" – published on SharePoint.
- The Java code must be presented as ONE PDF file with a TOC for readability reasons
  - The code should also be included as actual code files
- The Transact-SQL code behind scripts, views, stored procedures etc. must also be placed in the PDF file just mentioned above.
- Paper print-out of source code is not needed

Enclosure no. 1.

Year	Mark	Model	Version	Volume of engine	Fuel	Odometer (1.000 km.)	Price of purchase	Selling price	Type	Description	License plate	Date of purchase
1988	Mercedes	250	TD	2,5T	Diesel	560	138.000	159.900	St.car		DP 12.087	09-08-2014
1998	Daihatsu	Terius		1,3	Petrol	7	122.000	139.900	St.car	4x4	HT 66.411	06-04-2015
1994	Ford	Mondeo	CLX	2	Petrol	225	83.000	99.900	Sedan	Servo, c.lock, El-panes, CD, Alu mm	PE 32.600	10-04-2015
1988	VW	Passat	CL	1,8	Petrol	222	86.000	94.900	St.car	16" alu, GT upholstery, Centralistic locked	GN 74.960	04-08-2014
2005	Smart	Fortwo	Passion	0,8	Diesel	89	65000	80000	Cabriolet	Sound system, Alu trim, Leather seats	WQ 45333	11-12-2014