

## Kaj's Cars

### Case description without system definition

You are to make object-oriented analysis and design of a computer system for a car rental company, Kaj's Cars.

The system must support the work activities related to rental, booking and maintenance of cars in Kaj's cars. These work activities are carried out by Kaj and a group of part-time employees with very different qualifications, including their level of computer literacy. The work activities are centered around the lease agreement for the rental of a single car. The cars are divided into different price groups. The customers are divided into private and corporate customers. The system will be accessed on a PC at the counter in the office, and its purpose is to provide overview of the cars in stock and support the handling of all details related to a rental agreement.

The business processes in Kaj's Cars are assumed to be retained. Based on interviews with the owner, Kaj, the business processes can be described as follows:

System developer: Can you start by explaining to me how your rental works?

Kaj: When a customer comes in, we'll find out what price group is desired. So I check whether there is a free car for the time period, the customer wants. If we find one, then I begin to bring information into the lease. For that I need the customer's driving license. Besides, we agree on the time period and any insurance, you can choose to insure your car and passengers. Finally, I note which car in the price range that the customer gets. Before delivery, the customer has to pay a deposit equal to the price, I expect that the rental will cost. Fuel is not included, because we always encourage customers to refuel the car themselves before handing in the car - it's cheaper for them and easier for us. The final thing is that we instruct the customer if he does not know the car in advance.

System developer: Deposit? Does that mean you use cash?

Kaj: In most cases we don't any longer. But we still use the expression for some reason. the customer can make a cash deposit or pay with Dankort. But we prefer to register a credit card instead. It also eases the final settlement. It's odd, though, how some customers still prefer cash.

System developer: What if the customer wants to reserve a car at a later date?

Kaj: Most customers book in advance. We even encourage them to - it is really annoying when we cannot find a suitable car for a customer. If it is one of the "good" customers we usually handle it by giving him a more expensive car to the desired car price. Our goal is that we should never say no - especially to our great regular customers, it is usually business customers.

System developer: do you provide the business customers with other special treatment?

Kaj: Our business customers have a kind of account so they only have to pay once a month for all the cars they have rented in the month, we've tried before settling for every rental, but too many of them was somewhat irritated about it. So, we went back to the monthly payment. And then they also get a Christmas present for our contact person in the company - the best customers get such a basket with wine and fruit. It does cost, but in return they come back. It is administered by each of our departments, or stations, as we call them. They have their own circle of business customers, and then determines themselves, who gets a Christmas gift. The stations negotiates discounts with the customers themselves as well.

System developer: Can you describe your cars for me?

Kaj: Yes, we have made it as simple as possible. We have four price groups, which we call A, B, C and D. D is the most expensive, for example a big BMW or Mercedes, and A is the cheap rice cookers, as a Mitsubishi.

System developer: Now let me understand this correctly. Normally you call and make a reservation, and the reservation becomes a rental when the customers pick up the car?

Kaj: Yes, that's correct. Sometimes, however a reservation do get cancelled, but fortunately it is rare. When the customer comes and picks up the car, we write up the final details in the lease and give him a car in the group, he ordered.

System developer: the customer then returns the car, after which you settle the account?

Kaj: Well, it depends. Some come during opening hours. In these cases we check the petrol and check the car for any dents - it is however rare - the ones with dents usually come in after we close. If the vehicle is returned after closing, we draw the amount from their credit card and send them the receipt via letter or e-mail. We send them a check or an invoice with transfer instructions if they have made a deposit. But as I said, only ordinary people; business customers do not pay until at the end of the month. They do not pay any deposit either, only if they come into a credit record or if we have bad experiences with them. If it is a new company, we always make a credit check on them.

System developer: You talked about that some customers making dents. How do you handle that?

Kaj: If a car is damaged, it must be sent to the workshop for repairs as soon as possible. We run strictly in accordance with service intervals during maintenance. But if there is a bump, we normally do not wait; customers do not like to drive around in dented cars, and they treat them also nicer if they look decent. We plan the maintenance well in advance, so we do not send all the A'erne the workshop on the same day, we have to take the reservations into account. But when the cars brake down, we cannot plan.

System developer: What happens if the car breaks down far away?

Kaj: We have two offices in Aarhus and Esbjerg, and then this head office in Aalborg. So the nearest one is often not so far away. They will then pick it up and have a look at what is wrong. If it is too far or it is out of working hours, we have an agreement with Falck. If it is something serious, it is send to a workshop as soon as possible. Otherwise, we even do smaller things on our own workshop.

System developer: Does this mean that the cars can be rented out somewhere and end up somewhere else?

Kaj: No, hardly ever. A customer cannot drop it off somewhere else - it gives far too much hassle. We have tried that, but decided not to. So it is only if the car breaks down close to another station. Then they are told to deal with it, and then they normally keep the, if there isn't a lack of that kind of cars where it came from. We sometimes move a car between two offices. Cars are a fashion phenomenon - suddenly every one in Aarhus wants a BMW, and then two months later they have to have a Volvo. So we try to cope by moving cars between offices as needed.

System developer: How do you buy the cars?

Kaj: We only buy new cars - we don't want old, shabby wrecks; always new cars. Maybe we can see that there is an increasing need for Class C cars, and that the other stations don't have too many either. So we buy one, and we usually get it about a month later, if there are no supply problems. We also agree on a delivery date, so we can start booking the car immediately. We usually sell the old cars when they have run about 100,000 kilometers. At this point they start needing repairs, and I think it is too much trouble, we never know what we have, if they constantly break down.

System developer: What do you do if you do not have enough cars?

Kaj: We never say no. If we don't have the car, we acquire it. It happens, that someone cancels, which solves the problem. Otherwise we get a car from one of the other departments. If it goes wrong, we give them a more expensive car - then they are happy. Especially our business customers.

System developer: You have mentioned movements sometimes. Can you explain that?

Kaj: Yes, we may decide that we send a C car to Århus from here. We can plan something like that in advance so that they can start reserving it in Århus and so we that only reserve it until it must go. So we send it down there, and they have it.

System developer: I think I have understood most of it. But I will probably return later if I am missing some details.