

# **Chap 2.4 – Example: Requirements Specification »Seminarmangement«**

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# The requirements specification is an extension of the requirements document produced in the planning phase

1. Goal of the development
2. Operating environment
3. **Product environment**
4. Functional requirements
5. Product data
6. Non-functional requirements
7. **Global test cases**
8. System models
  - a) Scenarios
  - b) Use cases
  - c) **Object model**
  - d) **Dynamic models**
  - e) **User interface: screen sketches, navigation paths**
9. Glossary (definitions of terms used)

Green: new chapter

Black: more precisely  
stated

# Requirements Specification »Seminarmangement«

## ■ Version history

Version	Author	QS	Date	Status	Comment
2.1	Balzert		03/2020	accepted	
2.2	Balzert		10/2020	accepted	a)
2.3	Balzert		10/2021	accepted	b)

a) /F115/ added

b) /F15/, /F125/, /F135/, /F185/, /D65/ added,  
/F130/, /D10/ completed  
/D30/, /D70/ changed

# Requirements Specification »Seminarmangement«

## 1 Goal of the development

- The company Teachware shall be enabled to manage its seminar offerings with computer support.

### 1.1 Mandatory Requirements

- Management of seminars
- Management of customers (participants, prospective participants)
- Generation and mailing of invoices
- Queries:
  - When is the next seminar X?
  - Which employees of company X have participated in seminar Y?

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## **1.2 Optional Requirements**

- Extended query capability
- Statistics
- Support for backup
- Reusability of customer and seminar management

## **1.3 Exclusions**

- no integrated bookkeeping (Existing bookkeeping system receives copy of invoices and monitors payments; returns information on late payments)

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## 2 Operating environment

- The product supports the management of customers and seminars of company Teachware.
- In addition, several queries shall be supported

### 2.1 Application area

- commercial

### 2.2 Target user groups

- Employees of Teachware:
  - customer representatives
  - seminar representatives

### 2.3 Operating conditions

- Office

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## 3 Product environment

- The product runs on a personal computer

### 3.1 Software

- Operating system: Windows 10, Windows 11, and successors

### 3.2 Hardware: PC

### 3.3 Orgware

- network connection to bookkeeping system

### 3.4 Product interfaces

- Copy of invoice is stored in a file, to which the bookkeeping system has access.
- Late payments are reported by the bookkeeping system.

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## 4 Functional requirements

### 4.1 customer management

- /F10/  
Entry, change, and deletion of customer data (participants, prospective clients)
- /F15/  
Entry, change, and deletion of companies that send employees to seminars
- /F20/  
Registration of customer with check ...
- /F30/  
– whether already registered
- /F40/  
– whether the desired seminar is offered

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- /F50/
  - whether seminar seats are available
- /F55/
  - whether payments were prompt
- /F60/
  - Mailing of confirmation of registration
- /F70/
  - Cancellation of customer with check ...
- /F80/
  - whether registered
- /F90/
  - whether cancellation 4 weeks or more before seminar (then charge cancellation fee or supply alternate participant).

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- /F100/
  - whether cancellation was less than 4 weeks before seminar (charge 100% of fee or supply an alternate participant)
- /F110/
  - whether Teachware has cancelled the seminar (no fee in this case)
- /F115/
  - Notification of participants, if Teachware cancels a seminar
- /F120/
  - Entry, change, or deletion of seminar bookings.

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- /F125/  
Companies shall be able to book in-house seminars
- /F130/  
Generation of address stickers for mailings to customers and companies
- /F135/  
Circular letters sent to customers and companies
- /F140/  
Bookkeeping shall report late payments via a provided function.

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## 4.2 Seminarmanagement

- /F150/  
Entry, change, and deletion of seminar events and seminar types
- /F160/  
Cancellation of seminar events
- /F170/  
Recording of seminar events
- /F180/  
Entry, change, deletion of lecturers and assignments of lecturers to seminar events and seminar types.
- /F185/  
mailing circular letters to all lecturers

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- /F190/  
Generation of participant list for a seminar event (seminar title, date from -- to, location, lecturer(s) first and last name, company)
- /F200/  
Generation of certificates for all participants (salutation, first name, last name, date from -- to, seminar title, location, content summary, lecturer).

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## 4.3 Generation of invoices

- /F210/  
when confirming booking, generate invoice for mailing
- /F220/  
Store copies of invoices in a file which can be accessed over the network by the bookkeeping system using a function.

## 4.4 Queries

- /F230/  
When is seminar X scheduled next?
- /F240/  
Which employees of company Y have participated in seminar X?

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- /F250Opt/

Further query types should be possible:

- Which 10 companies generated the largest income in a given fiscal year?
- Which seminar types had the most participants in a given fiscal year?

## 5 Product data

### 5.1 Customer data

- /D10/

The following data shall be stored for a customer

- Customer nr., name (Mr/Ms, title, first name, last name), address (street, nr., zip code, city, phone, fax, e-mail, P.O.box), birthdate, function, income, short message, notes, Info-material, customer since).

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- /D20/
  - If a customer is employed by a company, the following data shall be stored about the company:
    - short name; company name; address(..); phone, fax; department, short message, notes, income received, customer since
- /D30/
  - Is a customer or a company in payment default, the following data shall be recorded:
    - date of unpaid invoice, total of invoice.

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## ■ 5.2 Seminar data

### ■ /D40/

For every seminar event, the following data shall be recorded:

- Event number, duration (in days), from, to, begin first day, end last day, location (hotel/company, address, room), public (yes/no), net fee, cancellation fee, min/max number of participants, current number of participants, took place (y/n).

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- /D50/

For every seminar type, the following data shall be recorded:

- short title, title, learning goal, teaching method, content overview, daily schedule, duration, learning materials, target group, prerequisites, net fee, min/max number of participants

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- /D60/
  - For each lecturer, the following shall be recorded:
    - Person number, name, address, phone, fax, e-mail address, birthdate, biography, daily rate, short message, notes, lecturer since
- /D65/
  - The system shall record, if a lecturer teaches a seminar event
- 5.3 Booking data
  - /D70/
    - For every booking of a seminar event by a customer or a company, the following data shall be recorded
      - when registered, when confirmed, when invoice issued, when canceled, when note sent.

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## 6 Nonfunctional requirements

- /NF10/  
Functions /F180/ und /F190/ shall not take longer than 15s, all other functions shall not take longer than 2s
- /NF20/  
Capacity shall be maximally 50,000 customers and maximally 10,000 seminar events
- /NF30/  
Up to 5% of customers may be behind with their payments

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- /NF40/  
Reliability: The system shall experience no more than one outage per week. During normal business hours, the system shall be unavailable no more than 1 h per month.
- /NF50/  
Usability: After a training of 4h, users should not commit more than 2 errors per day on average.
- /NF60/  
Portability: The product shall use a database complying with the SQL standard and run on Windows 10, 11, and its successors.
- /NF70/  
Adaptability: user interface and database shall be replaceable. The system shall contain no more than 0.1% of platform-specific code.

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## 7 Global Testcases

- Test the following function sequences:
  - /T10/  
Customer registration, entry of data, cancellation, registration again, invoice, late payment
  - /T20/  
Cancellation of seminar event
  - /T30/  
Cancellation of booking, invoice generation
  - /T40/  
Entry of seminar event, invoice generation

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- Check the following consistency conditions:
  - /T50/  
A booking can only be recorded if there exists a customer entry, a seminar event entry and the seminar event is not fully booked.
  - /T60/  
A new seminar event can only be entered if the corresponding seminar type exists.

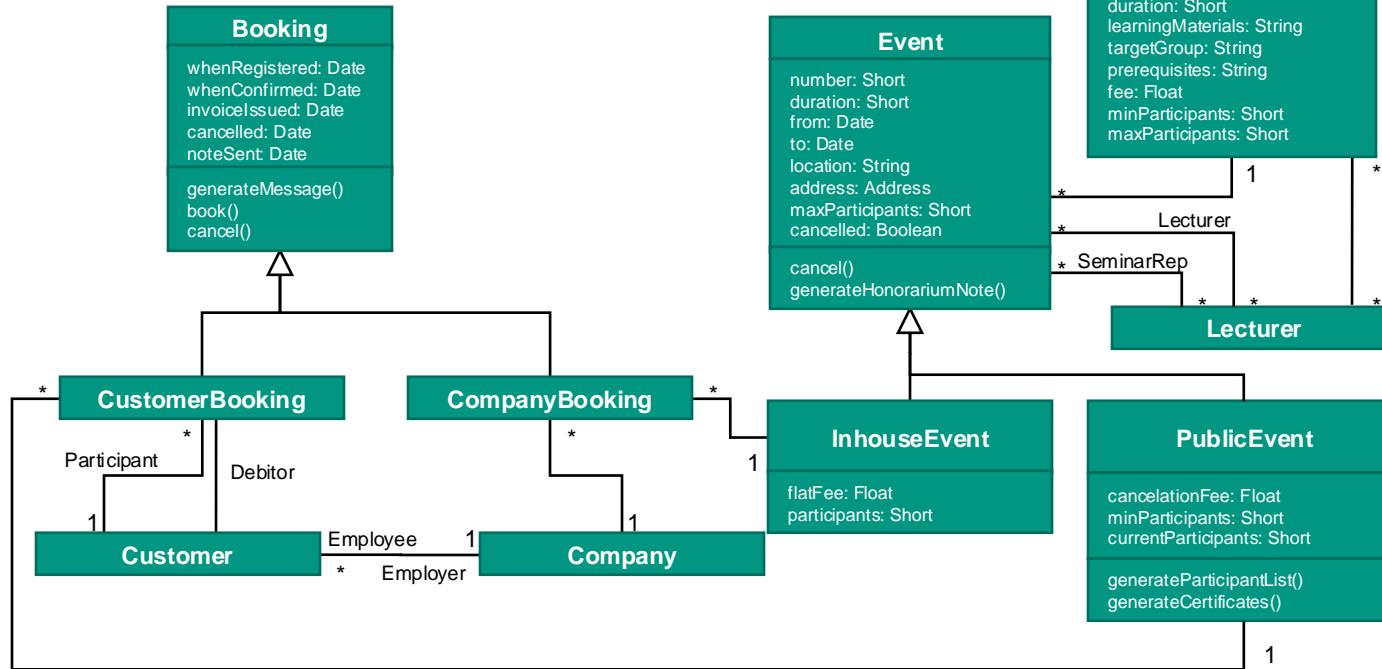
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## 8 System models

- 8a) Scenarios
- 8b) Use cases
- **8c) Object models**
- **8d) Dynamic models**

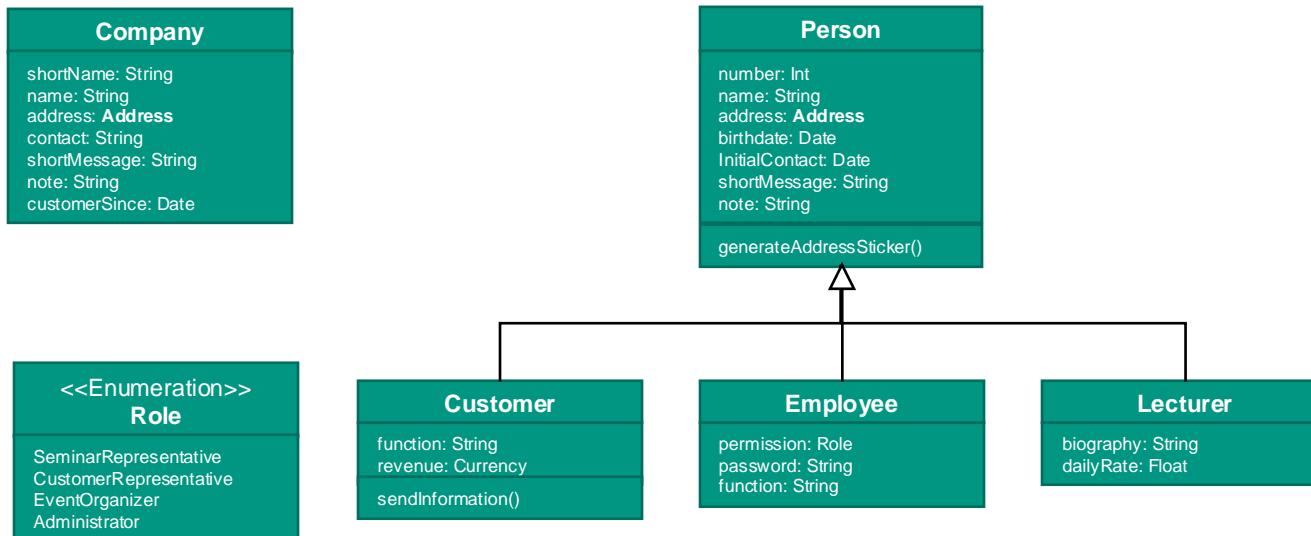
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## Object Model

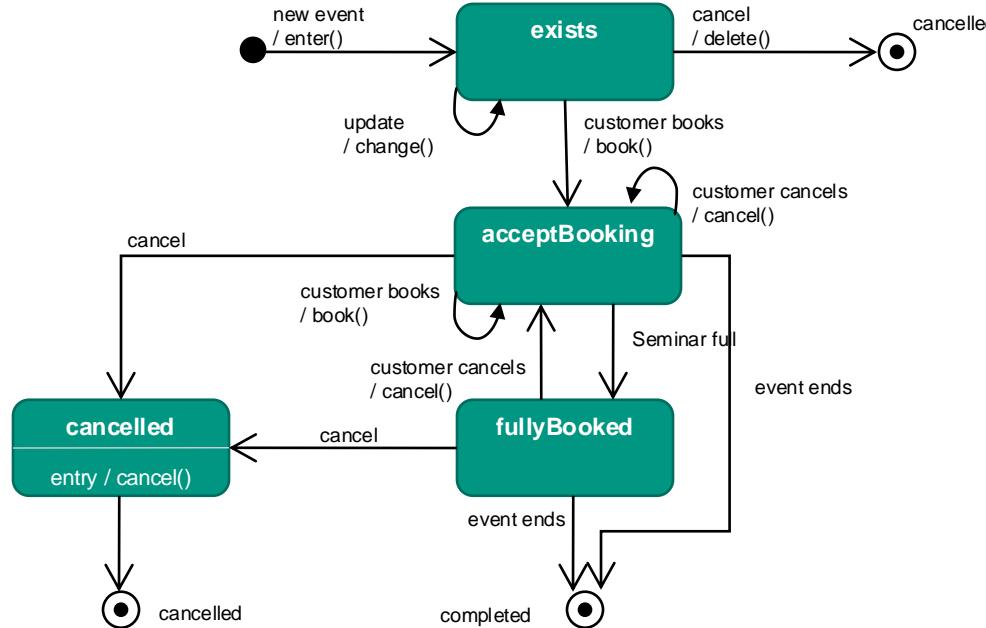


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## ■ UML class diagram continued

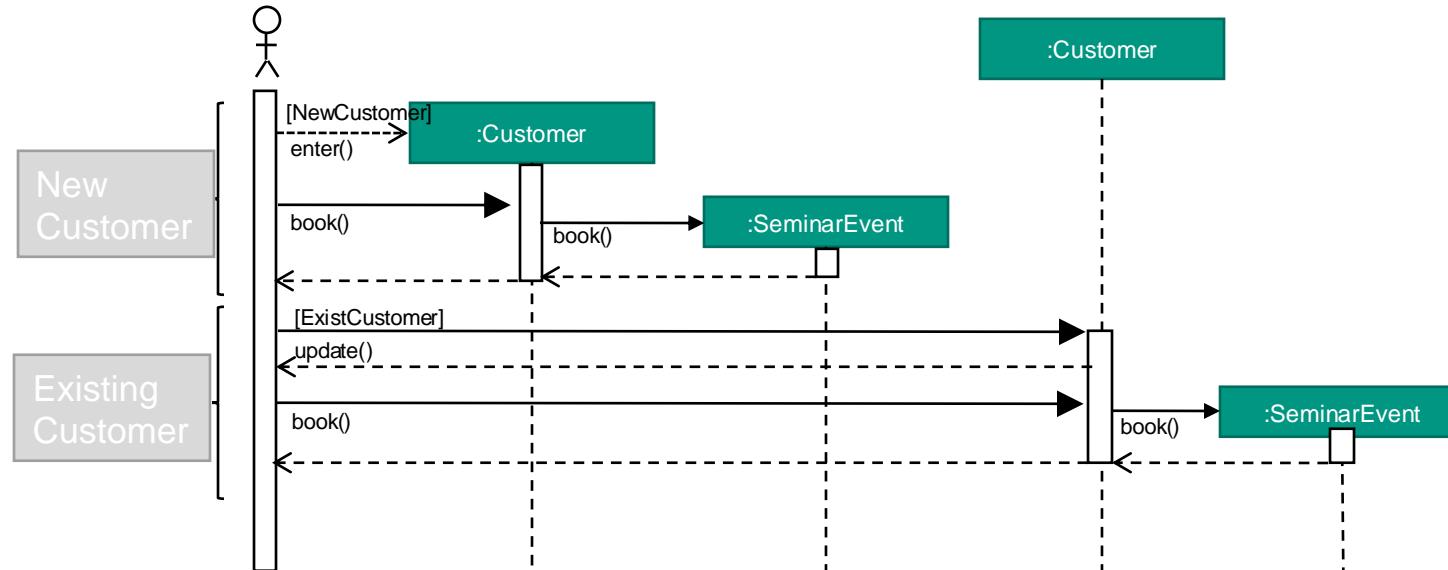


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# Sequence Diagram „Registration of a customer“



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## 8e) User Interface

- /B10/ The user interface shall be operated by mouse and menus
- /B20/ The user interface shall also be useable without a mouse.
- /B30/ The user interface shall be compliant with DIN 66234, part 8
- /B40/ There are two different views:
  - the view of the customer representative and
  - and the view of the seminar representative.
- /B50/  
Customer representative may use functions /F10/ to /F130/ and /F230/ to /F250/  
Customer representative may access only the data relevant for the above functions. Other data shall be protected.
- /B60/  
Seminar representative may use functions /F150/ to /F200/ and /F250/  
Seminar representative may access only the data relevant for the above functions. Other data shall be protected.