

Lab for Software Engineering

Cinema Management Application

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1 Analysis

1.1 A1

1.1.1 Requirements & Domain-Knowledge

Requirements

- R1 Customers can create an account by providing an e-mail address and a password. If an e-mail address which is already associated with an account is provided, account creation fails.
- R2 Customers can log in by providing their e-mail address and their password.
- R3 A logged in customer can log out.
- R4 A customer can browse available showings, ascendingly sorted by date.
- R5 A logged in customer can book tickets by selecting the showing from the browsing list and selecting the desired seats. A showing can only be booked up to 15 minutes before it starts.
- R6 Staff can add new showings to the database by providing the required data.
- R7 Once a showing starts it is marked as "archived".
- R8 Archived showings are visible to staff, but not to customers.
- R9 Staff can cancel showings. When a show is cancelled all customers who booked tickets for it are notified via e-mail and the showing is then deleted.
- R10 Showings which took place a year ago or longer are automatically removed from the database.
- R11 When a showing is deleted its associated bookings are also deleted.

Facts

- F1 A showing consists of the title of the movie, its duration, the date, the hall number and unique ID.
- F2 A hall consists of a number of rows, a number of seats per row and a unique hall number.
- F3 Only one person at a time can sit in a seat.

Assumptions

- A1 A web application is a good choice for implementing the desired functionality and all customers are able to use it.
- A2 Customers only provide e-mail addresses they can access.
- A3 Customers will stay up to date with the list of available showings.
- A4 Every booking is paid via an external service.
- A5 Staff will only add showings which take place in the future.

8,1

G-10/10

1.1.2 Contextdiagram

Where do you store the shows and the customer data?

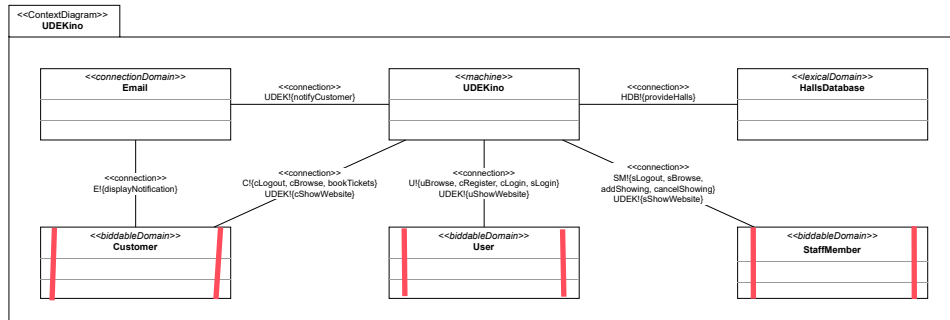


Figure 1.1: Contextdiagram

1.2 A2

We can derive the following problem diagrams

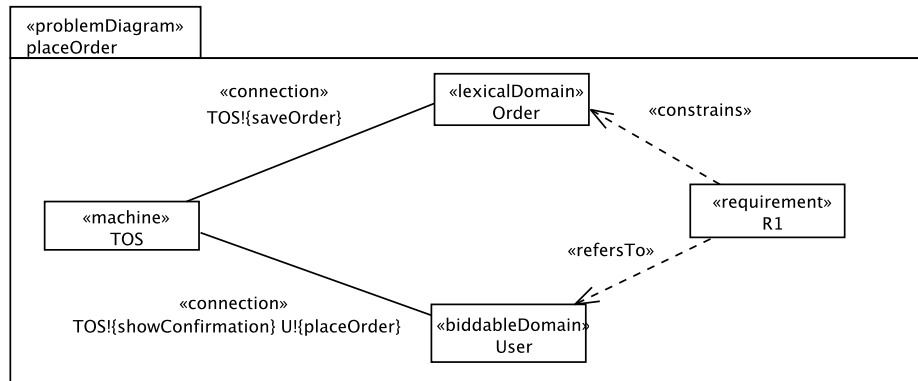


Figure 1.2: Problemdigram for R1

1.3 A3

1.4 A4

1.5 A5

A short OCL example:

```
1 context Person inv: self.alter >=0
2
3 pre alter >30
4 post alter=alter@pre+1
```

1.6 A6

Examples of a life-cycle using the math-environment:

$$LC_{guest} = (Browse^+; [Book])^*$$

2 Design

2.1 D1

2.2 D2

2.3 D3

2.4 D4

State diagrams with tikZ:

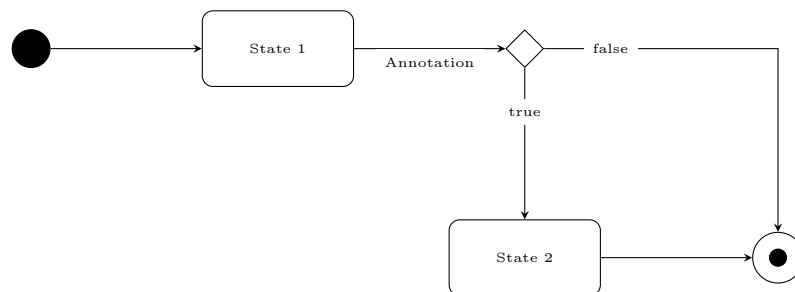


Figure 2.1: Zustandsdiagramm Person 1

3 Implementation & Testing

3.1 I

3.2 T1

3.3 T2

3.4 T3

4 Glossary

Table 4.1: Glossary

Name	Type	Description	Source
A			
addShowing	phenomenon	a staff member submits a new showing to the machine for entry into the database	CD
B			
bookTickets	phenomenon	a customer books tickets for a showing	CD
C			
Customer	biddable domain	a customer of UDEKino; a user who has logged into a customer account	CD
cBrowse	phenomenon	a customer browses available showings	CD
cLogin	phenomenon	a user attempts to log into a customer account	CD
cLogout	phenomenon	a customer attempts to log out	CD
cRegister	phenomenon	a user attempts to create customer account on UDEKino	CD
cShowWebsite	phenomenon	the machine shows a website to the customer	CD
D			
displayNotification	phenomenon	the customer's e-mail client displays a notification e-mail to the customer	CD
E			
Email	causal domain, connection domain	an e-mail service offering to deliver e-mails	CD
F			
G			
H			
HallsDatabase	lexical domain	a database containing the cinema halls, provided by the cinema operator	CD
I			
J			
K			
L			

Table 4.1: Glossary

Name	Type	Description	Source
M			
N			
notifyCustomer	phenomenon	the machine notifies the customer via e-mail	CD
O			
P			
provideHalls	phenomenon	the halls database provides the halls data to the machine	CD
Q			
R			
S			
sBrowse	phenomenon	a staff member browses available showings	CD
sCancelShowing	phenomenon	a staff member attempts to cancel a showing	CD
sLogin	phenomenon	a user attempts to log in as a staff member	CD
sLogout	phenomenon	a staff member attempts to log out	CD
sShowWebsite	phenomenon	the machine shows a website to the staff member	CD
StaffMember	biddable domain	a member of cinema staff; a user who has logged in as staff	CD
T			
U			
uBrowse	phenomenon	a user browses available showings	CD
UDEKino	machine	the machine to be developed	CD
User	biddable domain	a user of the application who is not logged in	CD
uShowWebsite	phenomenon	the machine shows a website to the user	CD
V			
W			
X			
Y			
Z			