



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

### **Assignment 1 (10 points)**

In the majority of the cases that a fire department turns out, it appears to be for a false alarm, produced by an automatic fire alarm system. Fire departments complain about this high figure, but they say they cannot do anything about it because law requires them to turn out for every (automatic) fire alarm.

Clarify this situation on the basis of the PSI-theory.

### **Assignment 2 (10 points)**

What is in general the drawback of delegation of authority? Illustrate your answer for the case that the accept/reject step in a purchase transaction of physical goods is delegated by the purchaser to a warehouse employee.

What is a general measure to minimize the drawback?



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

### **Assignment 3 (10 points)**

Characterize the next new services of Watch-it (see assignment 5) as primarily ontological, infological or datalogical (provide a short explanation):

The possibility to find previews of videos on the web site of Watch-it.

The possibility to read reviews by customers of watched videos on the web site of Watch-it.

The possibility that a person has more than one membership at the same time.

The possibility to keep the membership card (with bar code) as a file on one's mobile phone.

The possibility to find on the web site of Watch-it the list of (new) titles that are on order.

### **Assignment 4 (10 points)**

Consider the situation that a counter employee of Watch-it (see assignment 5) refuses to rent a video to a customer (i.e. he/she declines the request). The employee can do this on the basis of each of the three validity claims in Habermas' theory. Give an example of each of these cases.



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

### Assignment 5 (60 points)

Video shop Watch-it rents video tapes as well as DVDs to natural persons. Before one is able rent videos, however, one has to become member of the Watch-it Club. It is possible to do this at the counter of Watch-it. After having presented one's personal data, these are entered into a computer application, after which a plastic membership card is produced. It shows the first name and family name of the member, his/her date of birth, and the membership number. There is no charge of a membership fee; requiring people to be member of the Watch-it Club just satisfies some legal obligation. Note: it is not possible for a person to have more than one membership at the same time.

Watch-it has an electronic catalog that is accessible via the web site of Watch-it, as well as via a public computer in the shop. The catalog application also shows the actual number of copies that are available in the shop, for the current date and for the next four days. It is not possible to reserve a video if there is at least one copy available, but one can make reservations for videos that are not available (both via the web site and via the computer in the shop). To do so, one chooses a date at which there will be at least one copy available. Note, however, that there is no guarantee that one will get a copy at the chosen date, since people may return videos late.

To get a copy of a video in the shop, one has to take it from the shelf oneself (the exact location on the shelves can be found via the catalog application) and hand it over to one of the counter employees. The employee then scans the bar code of the tape or DVD as well as the code on the membership card. Next, the rental receipt is printed and put in the box of the tape or DVD by the employee. The money due has to be paid in cash before leaving the shop with the video. Note: one can rent a number of videos at the same time, but these are conceived as separate rentals. The maximum number of videos that can be rented under one membership is 5, and the rental period varies from 1 to 3 days.

Returning a video to the shop is considered to be the request for ending the rental. The counter employee will enter the video as being returned. If the applicable rental period is exceeded, one has to pay a fine of two times the daily rental fee per exceeding day.

#### Sub assignments

1. Produce the Actor Transaction Diagram and the Transaction Result Table of the case Watch-it, based on the information that is provided above. Clarify how you deal with reservations of videos. **(20 points)**
2. Produce the State Model of the case Watch-it, based on the information that is provided in the case description above. **(20 points)**
3. Produce the action rules for dealing with the request of the ending of a rental and for dealing with the corresponding promise. You may use either the DEMO-2 or the DEMO-3 convention to represent action rules. Next, draw the interstriction links in the Actor Transaction Diagram based on these action rules. **(20 points)**



Exam DEMO Professional

31 March 2010

Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---



Exam DEMO Professional

31 March 2010

Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---



Exam DEMO Professional

31 March 2010

Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

### **Assignment 1 (10 points)**

In the majority of the cases that a fire department turns out, it appears to be for a false alarm, produced by an automatic fire alarm system. Fire departments complain about this high figure, but they say they cannot do anything about it because law requires them to turn out for every (automatic) fire alarm.

Clarify this situation on the basis of the PSI-theory.

*Fire departments offer particular services to (the members of) a society. One of them is to extinct fires. As it holds for every service, one has to make a request for it in order to initiate the transaction in which the service is delivered. Consequently, there must be a request by some authorized person (!), addressed to the fire department of a municipality (or other organizational unit), for turning out to the location where the fire is supposed to be. This person may use an automatic fire alarm system to perform the request but he/she remains responsible.*

*So, if the law indeed is formulated in the way firemen tell us, then this formulation should be revised such that it is clear that there is somebody responsible. Next, fire departments could very well charge this responsible person for the costs made in turning out for a false alarm.*

### **Assignment 2 (10 points)**

What is in general the drawback of delegation of authority? Illustrate your answer for the case that the accept/reject step in a purchase transaction of physical goods is delegated by the purchaser to a warehouse employee.

What is a general measure to minimize the drawback?

*The drawback is that the person to whom the authorized person (i.e. the executor of the transaction at hand) delegates the performance of one or more transaction steps, may apply different (social-cultural) norms in dealing with the agenda to which he/she is allowed to respond (EO pp. 194-195).*

*Thus, the warehouse employee may accept goods deliveries that the purchaser would not have accepted.*

*In practice, the possible problems can be minimized by organizing periodically informal meetings of purchasers and warehouse employees. In such situations, the mechanism of secondary communication will take care for the tuning of the norms.*



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

### **Assignment 3 (10 points)**

Characterize the next new services of Watch-it (see assignment 5) as primarily ontological, infological or datalogical (provide a short explanation):

The possibility to find previews of videos on the web site of Watch-it.

*Ontological (this is a new business service) or Infological (customers get access to new information).*

The possibility to read reviews by customers of watched videos on the web site of Watch-it.

*Infological (apparently the reviews were already there, and now the customers can see them).*

The possibility that a person has more than one membership at the same time.

*Ontological (this is a new business rule).*

The possibility to keep the membership card (with bar code) as a file on one's mobile phone.

*Datalogical (the difference is only in the way of storing particular data).*

The possibility to find on the web site of Watch-it the list of (new) titles that are on order.

*Infological (obviously the titles are already on order).*

### **Assignment 4 (10 points)**

Consider the situation that a counter employee of Watch-it (see assignment 5) refuses to rent a video to a customer (i.e. he/she declines the request). The employee can do this on the basis of each of the three validity claims in Habermas' theory. Give an example of each of these cases.

*Claim to truth: the requested video is not in store, so it can not be rented.*

*Claim to justice: the customer is not yet member of the Watch-it Club.*

*Claim to sincerity: a child says that he/she wants to rent in the name of its parent (who is member).*



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

## Assignment 5 (60 points)

Video shop Watch-it rents video tapes as well as DVDs to natural persons. Before one is able rent videos, however, one has to become member of the Watch-it Club. It is possible to do this at the counter of Watch-it. After having presented one's personal data, these are entered into a computer application, after which a plastic membership card is produced. It shows the first name and family name of the member, his/her date of birth, and the membership number. There is no charge of a membership fee; requiring people to be member of the Watch-it Club just satisfies some legal obligation. Note: it is not possible for a person to have more than one membership at the same time.

Watch-it has an electronic catalog that is accessible via the web site of Watch-it, as well as via a public computer in the shop. The catalog application also shows the actual number of copies that are available in the shop, for the current date and for the next four days. It is not possible to reserve a video if there is at least one copy available, but one can make reservations for videos that are not available (both via the web site and via the computer in the shop). To do so, one chooses a date at which there will be at least one copy available. Note, however, that there is no guarantee that one will get a copy at the chosen date, since people may return videos late.

To get a copy of a video in the shop, one has to take it from the shelf oneself (the exact location on the shelves can be found via the catalog application) and hand it over to one of the counter employees. The employee then scans the bar code of the tape or DVD as well as the code on the membership card. Next, the rental receipt is printed and put in the box of the tape or DVD by the employee. The money due has to be paid in cash before leaving the shop with the video. Note: one can rent a number of videos at the same time, but these are conceived as separate rentals. The maximum number of videos that can be rented under one membership is 5, and the rental period varies from 1 to 3 days.

Returning a video to the shop is considered to be the request for ending the rental. The counter employee will enter the video as being returned. If the applicable rental period is exceeded, one has to pay a fine of two times the daily rental fee per exceeding day.

### Sub assignments

1. Produce the Actor Transaction Diagram and the Transaction Result Table of the case Watch-it, based on the information that is provided above. Clarify how you deal with reservations of videos. **(20 points)**
2. Produce the State Model of the case Watch-it, based on the information that is provided in the case description above. **(20 points)**
3. Produce the action rules for dealing with the request of the ending of a rental and for dealing with the corresponding promise. You may use either the DEMO-2 or the DEMO-3 convention to represent action rules. Next, draw the interstriction links in the Actor Transaction Diagram based on these action rules. **(20 points)**



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

**Analysis**

Video shop Watch-it rents video tapes as well as DVDs to natural persons. Before one is able rent videos, however, one has to become member of the Watch-it Club. It is possible to do this at the counter of Watch-it. After having presented one's personal data, these are entered into a computer application, after which a plastic membership card is produced. It shows the first name and family name of the member, his/her date of birth, and the membership number. There is no charge of a membership fee; requiring people to be member of the Watch-it Club just satisfies some legal obligation. Note: it is not possible for a person to have more than one membership at the same time.

*Clearly, we can identify the first transaction kind (T01) named "membership start" with result kind "membership M has been started". The executor is an internal actor role (by convention: A01) called "membership starter". The initiator is an external actor role (CA01), called "aspirant member". Note that there is no talk about ending a membership, so we will not bother about it.*

Watch-it has an electronic catalog that is accessible via the web site of Watch-it, as well as via a public computer in the shop. The catalog application also shows the actual number of copies that are available in the shop, for the current date and for the next four days.

*We identify an external production bank (catalog). However, there is no need to model it.*

It is not possible to reserve a video if there is at least one copy available, but one can make reservations for videos that are not available (both via the web site and via the computer in the shop). To do so, one chooses a date at which there will be at least one copy available. Note, however, that there is no guarantee that one will get a copy at the chosen date, since people may return videos late.

*One may find this policy of Watch-it a bit strange, but so be it. As a general modeling rule, reservations are not separate transactions but, in this case, rental start transactions (T02, see below) with a requested creation time of the transaction result in the future.*

To get a copy of a video in the shop, one has to take it from the shelf oneself (the exact location on the shelves can be found via the catalog application) and hand it over to one of the counter employees. The employee then scans the bar code of the tape or DVD as well as the code on the membership card. Next, the rental receipt is printed and put in the box of the tape or DVD by the employee.

*Two new transaction kinds can be identified. The first one (T02) is called "video rental start" with result kind "video rental R has been started". The executor is an internal actor role (by convention: A02) called "video rental starter". The initiator is an external actor role (CA02) called "renter" (or "customer" for avoiding the ambiguity of "renter"). The second transaction kind (T03) is a more subtle one, which many modelers may forget (and which was also not included in the Library case). It regards the actual taking of the video copy that one wants to rent. Let us call it "video copy pick-up", with result kind "the copy of video rental R has been picked-up". Clearly, the initiator of T03 is A02 (video rental starter), and the executor is CA02 (Note: one could devise a separate external actor role*



31 March 2010

Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

*in order to distinguish between the role of customer and the role of 'picker' but there is no need to do that).*

The money due has to be paid in cash before leaving the shop with the video. Note: one can rent a number of videos at the same time, but these are conceived as separate rentals. The maximum number of videos that can be rented under one membership is 5, and the rental period varies from 1 to 3 days.

*Two new transaction kinds can be identified. The first one (T04) is called "video rental payment" with result kind "video rental R has been paid". The executor is CA02 (Note: one could devise a separate external actor role in order to distinguish between the role of customer and the role of payer but there is no need to do that). Clearly, the initiator is A02 (video rental starter). The second transaction kind (T05) is again a more subtle one, although one could know it from the Library case. It regards the returning of a rented video copy. Let us call it "video copy return", with result kind "the copy of video rental R has been returned". Clearly, the initiator of T05 is also A02 (video rental starter), and the executor is CA02.*

Returning a video to the shop is considered to be the request for ending the rental. The counter employee will enter the video as being returned. If the applicable rental period is exceeded, one has to pay a fine of two times the daily rental fee per exceeding day.

*Two new transaction kinds can be identified. The first one (T06) is called "video rental end" with result kind "video rental R has been ended". The initiator is CA02. Clearly, the initiator is a new internal actor role (A06: video rental ender). The second transaction kind (T07) is "return fine payment", with result kind "the late return fine for rental R has been paid". Clearly, the initiator of T07 is A06 (video rental ender), and the executor is CA02 (Note: one could devise a separate external actor role in order to distinguish between the role of customer and the role of payer but there is no need to do that).*



Name:

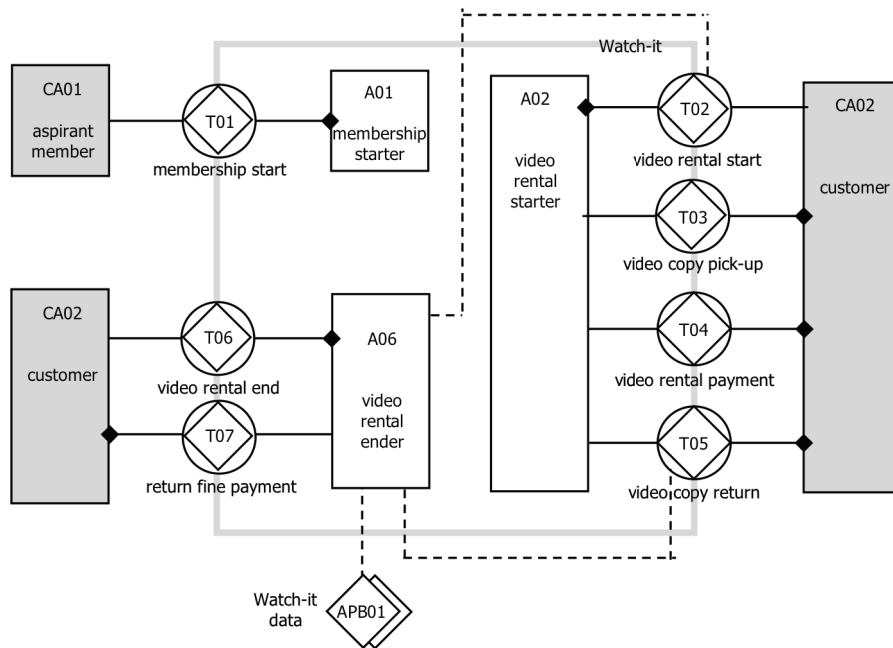
e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

**Solution assignment 1**

*Actor Transaction Diagram*



*Transaction Result table*

| Transaction kind         | Transaction result                                       |
|--------------------------|--|
| T01 membership start     | R01 membership M has been started                        |
| T02 video rental start   | R02 video rental R has been started                      |
| T03 video copy pick-up   | R03 the copy of video rental R has been picked-up        |
| T04 video rental payment | R04 video rental R has been paid                         |
| T05 video copy return    | R05 the copy of video rental R has been returned         |
| T06 video rental end     | R06 video rental R has been ended                        |
| T07 return fine payment  | R07 the late return fine of video rental R has been paid |

**Reservations**

*As said, reserving a video means requesting a T02 with a requested creation time one or more days ahead. Customers are able to do this based on the scheduled availability of video copies. As a response to such a request, A02 will promise. If, in the end, it turns out that the reservation can not be satisfied, A02 has to cancel his promise.*



Name:

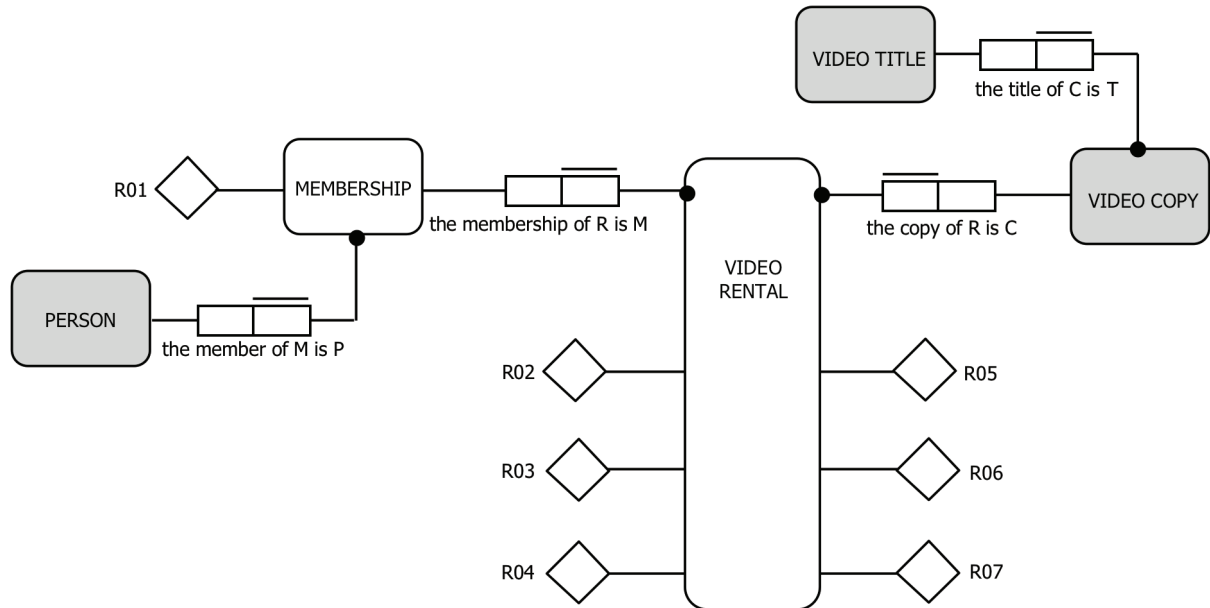
e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

**Solution assignment 2**

*Object Fact Diagram*



*Object Property List*

| Property              | OBJECT CLASS | SCALE    |
|-----------------------|--------------|----------|
| date of birth         | PERSON       | DATE     |
| rental period (#days) | VIDEO COPY   | NUMBER   |
| location              | VIDEO COPY   | LOCATION |
| money due (*)         | VIDEO RENTAL | MONEY    |
| #days overdue (*)     | VIDEO RENTAL | NUMBER   |
| incurred fine (*)     | VIDEO RENTAL | MONEY    |
| daily rental fee      | VIDEO COPY   | MONEY    |
| max copies in rent    | < Watch-it > | NUMBER   |



Name:

e-mail:

ONLY SUBMIT THESE PAGES !!

NO ADDITIONAL PAGES PLEASE !!

---

**Solution assignment 3***Action rules for A06***on** requested T06(R)**if not** accepted T05(R) → decline T06(R)◇ accepted T05(R) → promise T06(R)**fi****no**

When a member wants to end a video rental, it is checked whether the copy has been returned properly. If it is returned properly, the rental en will be promised; if not, the request is declined.

**on** promised T06(R)**if** #days\_overdue(R) > 0 → request T07(R) **with** incurred\_fine(R)

◇ #days\_overdue(R) ≤ 0 →

execute T06(R)state T06(R)**fi****no**

If the video copy is returned late, a fine has to be paid. The amount of the fine is equal to the number of days by which the normal loan period is exceeded times the daily rental fee times 2. Formally:

$$\#days\_overdue(R) = start\_date(R) + rental\_period(copy\_of(R)) - current\_date.$$
$$incurred\_fine(R) = \#days\_overdue(R) \times daily\_rental\_fee(copy\_of(R)) \times 2.$$
*Interstriction links: see ATD of assignment 1*

Apparently the aggregate/composite production bank APB01 has to be added (contains data necessary in the action rules of A06).