

UNIVERSITY OF OSLO

Faculty of Mathematics and Natural Sciences

Exam in INF5150 / INF9150
Day of exam: 30. november 2012
Exam hours: 14:30 – 18:30 (4 hours)
This examination paper consists of 6 page(s).
Appendices:
Permitted materials: All written material

Make sure that your copy of this examination paper is complete before answering.

NB: This exam text is only given in English since the course has been given in English this year. The candidate may, however, choose to answer in Bokmål or Nynorsk if he or she prefers.

The Historical Picture mobile app context

The context of the modeling exercise is the same as that of Obligatory exercise in modeling 2012.

- You have a smart phone with an app "HistPict"
- HistPict will let you retrieve historical pictures from the place you are
 - The app will use the GPS to get where you are
 - It will look up in a database of historic pictures
 - The database will return a URL to a picture
 - The picture can be shown on the smart phone
- In the Oblig 1 we simulated this situation through the environment known from the ICUx models
- Oblig 1 was an enhancement of ICU3

The diagrams in the questions on Modeling are suggestions in a solution for that obligatory exercise.

1 Modeling (35%)

The sequence diagram in Figure 1 shows the behavior of the ICUSystem relating to the Historic Picture application. This Interaction is decomposed from the icusystem lifeline of the enclosing context and that is why the combined fragments go beyond the Interaction frame.

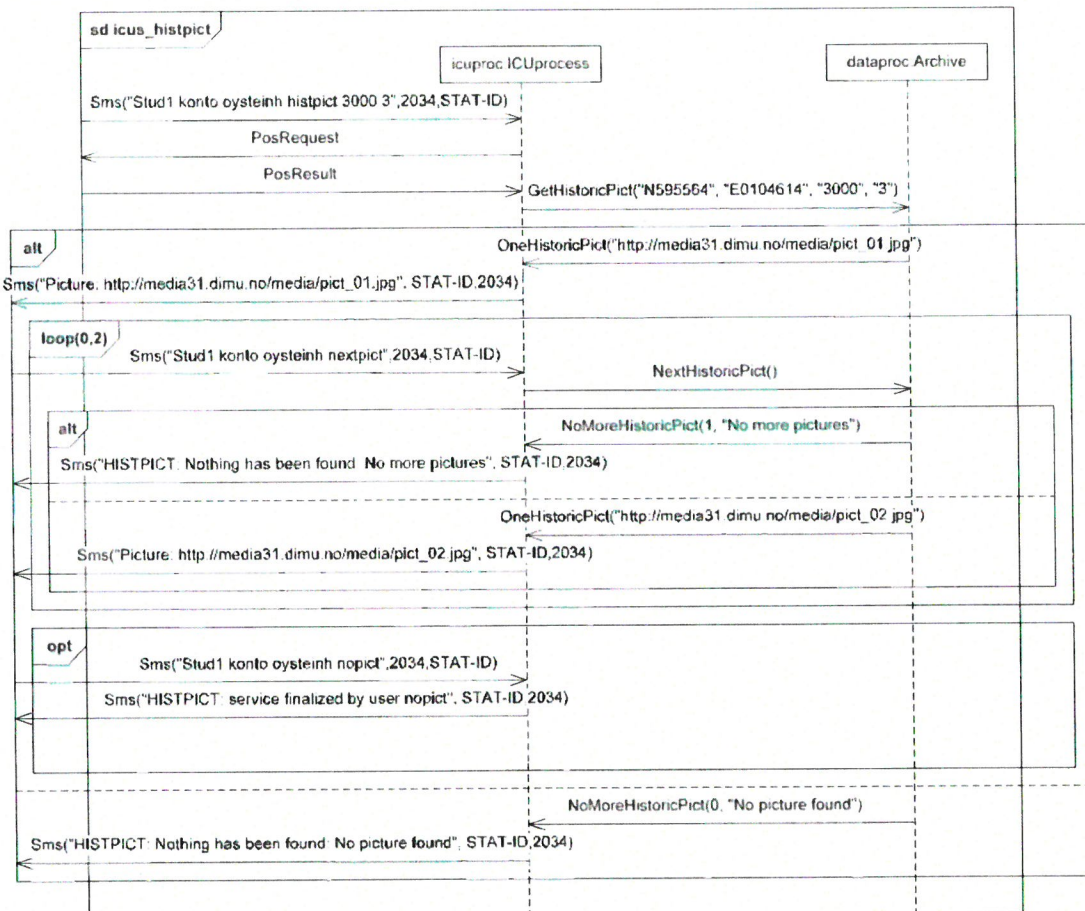


Figure 1 ICUSystem behavior

The loop in Figure 1 means that the behavior of that combined fragment can occur 0,1 or 2 times corresponding to the loop running either no times, once or twice since the user has asked for maximum 3 pictures.

1a First Events of Sequence diagram *icus_histpict*

Observe the sequence diagram in Figure 1.
What is the first event (or events) in that diagram?

You must explain your answer.

1b Last Events of Sequence diagram *icus_histpict*

Observe the sequence diagram in Figure 1.
What is the possible last event(s) of that diagram?

You must explain your answer.

2 STAIRS (35%)

The traces corresponding to Figure 1 may be classified into positive, inconclusive and negative.

2a) What is the minimal number of events in a trace that is inconclusive with respect to the sequence diagram in Figure 1. Explain your answer.

2b) What is the minimal number of events in a trace that is positive with respect to the sequence diagram in Figure 1. Explain your answer.

Consider only the loop construct in Figure 1; in other words, ignore everything before and after the loop construct.

2c) How many positive traces is described by the loop construct? Explain your answer.

Consider again the full sequence diagram in Figure 1. Replace "opt" with "loop(0,2)". Refer to the result as *icus_histpict_2*.

2d) Is *icus_histpict_2* a refinement of *icus-histpic* in Figure 1? If so, is it a supplementing or narrowing? Explain your answer.

Consider again the full sequence diagram in Figure 1. Replace "opt" with "~~neg~~". Refer to the result as *icus_histpict_3*.

2e) Is *icus_histpict_3* a refinement of *icus-histpic* in Figure 1? If so, is it a supplementing or narrowing? Explain your answer.

Consider again the full sequence diagram in Figure 1. Replace both occurrences of "alt" with "xalt". Refer to the result as *icus_histpict_4*.

2f) How many interaction obligations does *icus_histpict_4* describe? Explain your answer.

2g) Is *icus_histpict_4* a refinement of *icus-histpic* in Figure 1? Explain your answer.

← veto

