

IN-5130

OBLIG-II 2025:

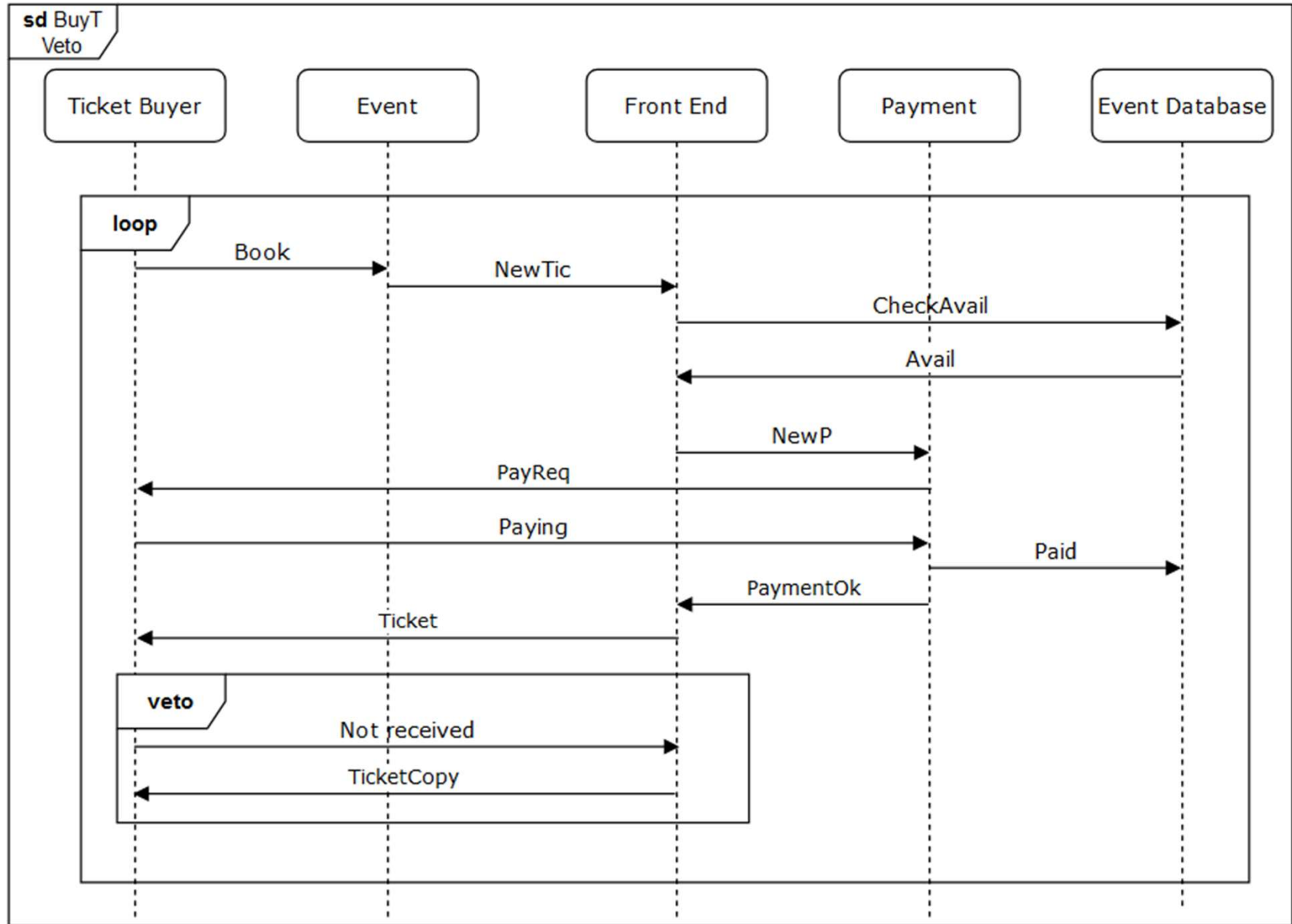
KETIL STØLEN

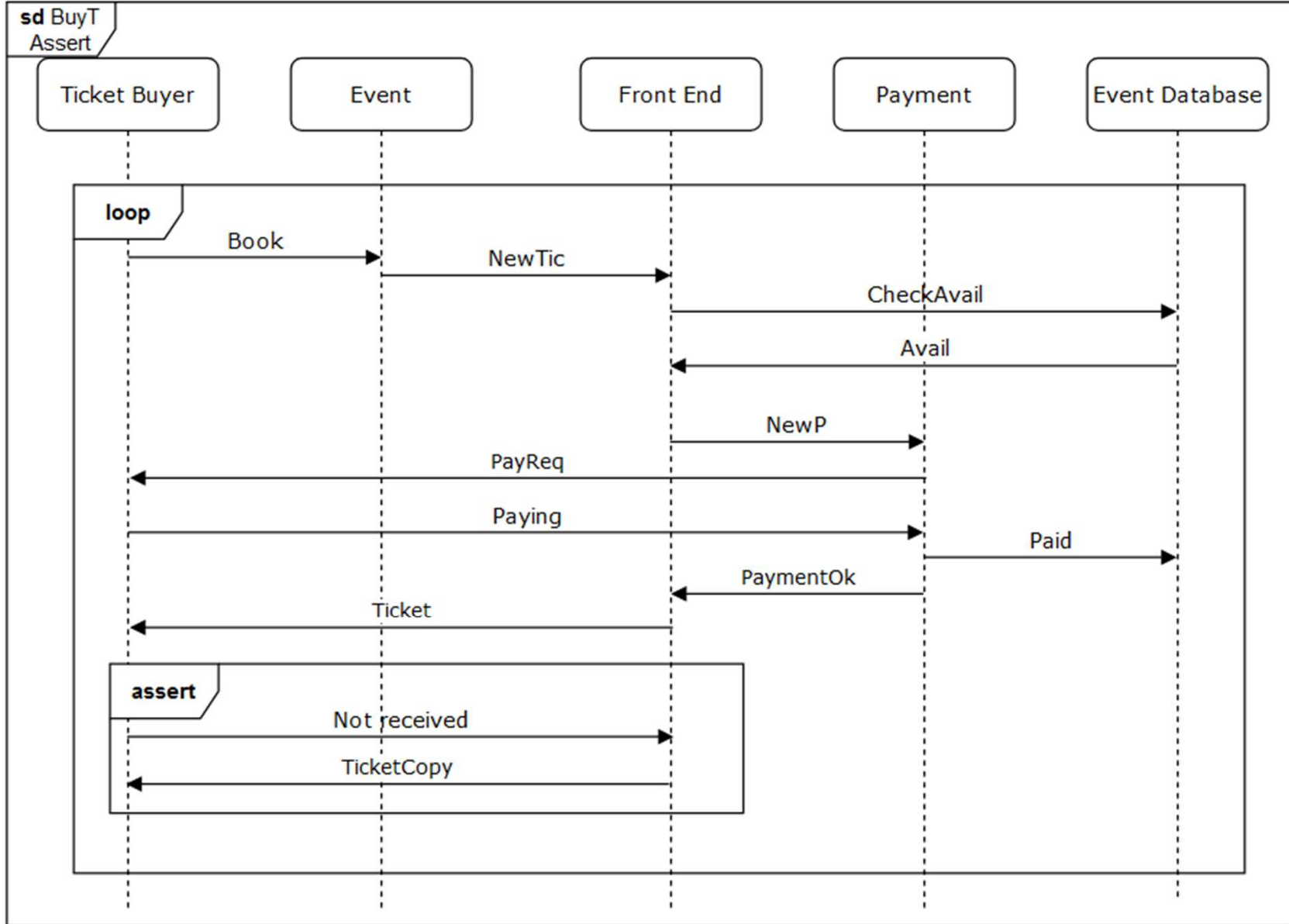
General

- The solution-paper in the form of a single pdf-document should be [be submitted via Devilry](#) by midnight (24:00) October 21. You may work in groups of **maximum three students** or **you may work alone**. This means, one solution may have up to three names. There should be no collaboration or copying **between different groups**. Hence, **each group should solve the exercise independently**.
- The submitted pdf-document should contain the full name of the author/the full names group members.
- In addition: list group-member names in the comment field of Devilry.

General

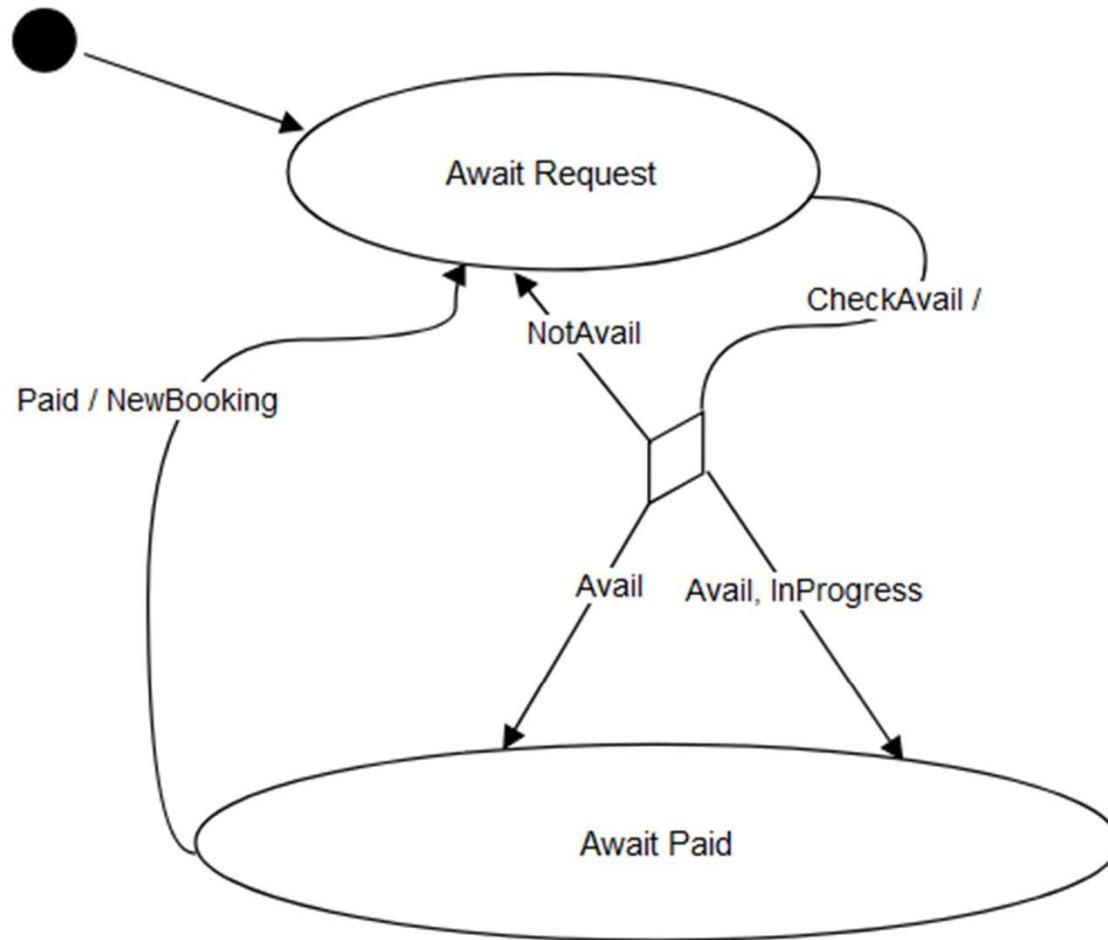
- **PLEASE NOTE THE FOLLOWING REGULATIONS:**
<https://www.uio.no/english/studies/examinations/compulsory-activities/mn-ifi-guidelines.html>





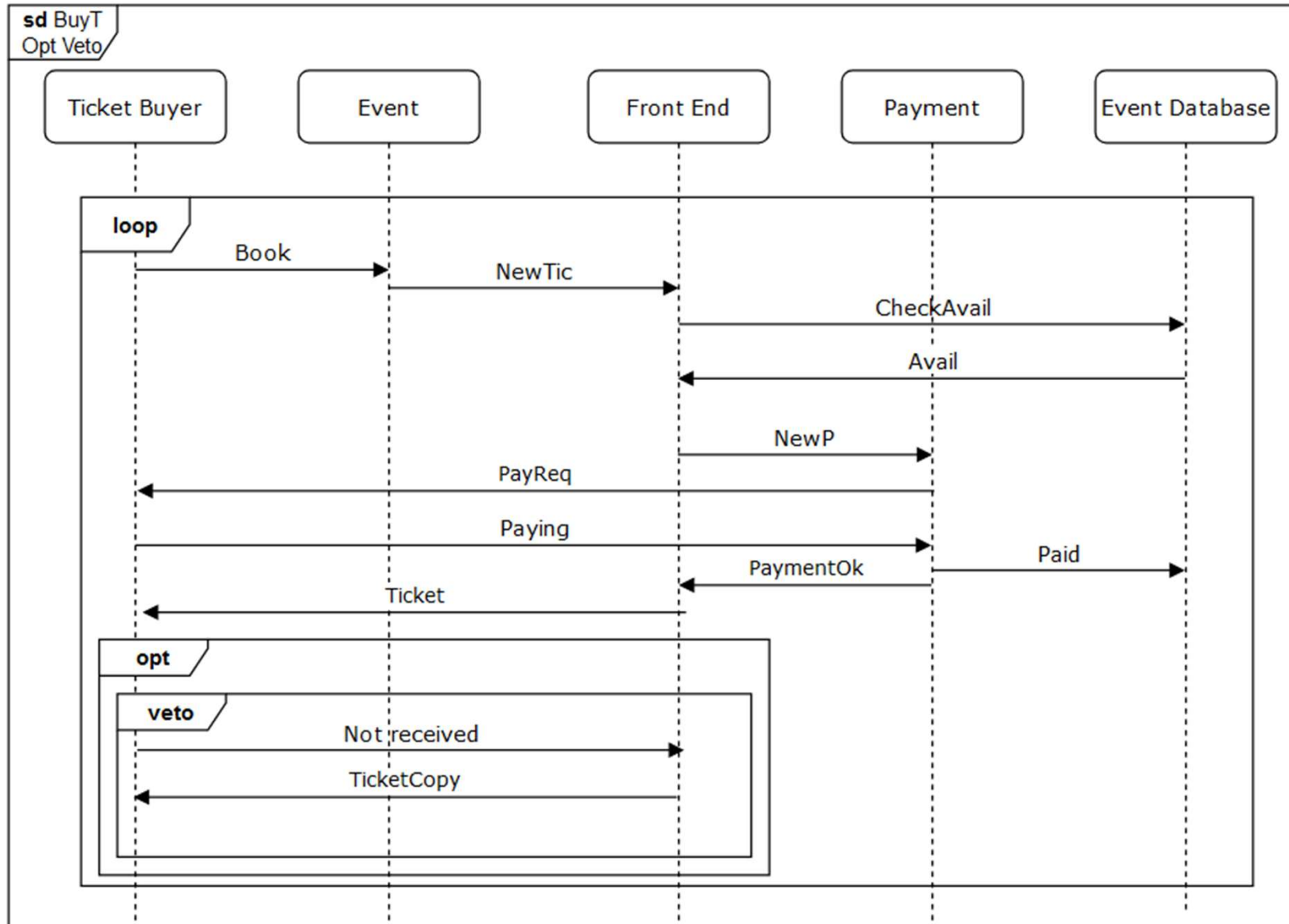
Question 1

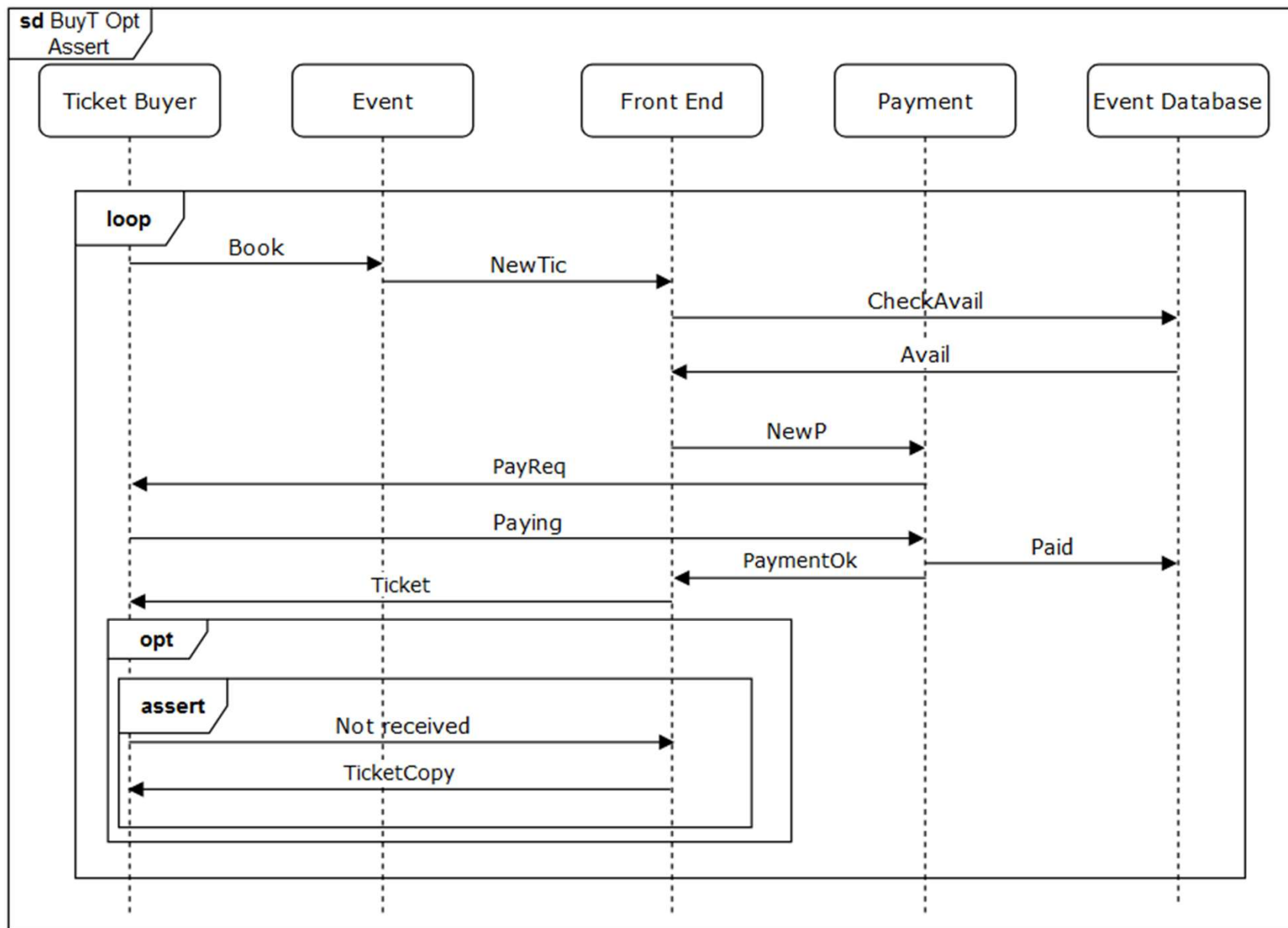
- a. What is/are the possible second event/event(s) in a positive trace of sd BuyT Veto under the assumption that the loop iterates at least once? Explain your answer.
- b. What is/are the possible last event/event(s) in a negative trace of sd BuyT Veto under the assumption that the loop iterates at least once? Explain your answer.
- c. How many positive traces do we get under the assumption that sd BuyT Veto does not iterate more than once? Explain your answer.
- d. What is/are the possible last event/event(s) in a positive trace of sd BuyT Assert under the assumption that the loop iterates at least once? Explain your answer.
- e. What is the minimum length of a negative trace of sd BuyT Assert? Explain your answer.



Question 2

- a) What is the minimum length of a negative trace of sm Event Database? Explain your answer.
- b) How would you alter sm Event Database so that any positive trace of the lifeline Event Database in sd BuyT Veto is also a positive trace of sm Event Database? Explain your answer.
- c) What is/are the possible last event/events of a positive trace of sm Event Database under the assumption that the possible input messages are restricted to those that appear in the diagram (CheckAvail, Paid)? Explain your answer.
- d) What is/are the possible last event/events of a positive trace of sm Event Database in the general case? Explain your answer.
- e) How many traces of length four is a positive trace of sm Event Database under the assumption that the possible input messages are restricted to those that appear in the diagram (CheckAvail, Paid)? Explain your answer.





Question 3

- a. Is sd BuyT Opt Veto a refinement of sd BuyT Veto? Explain your answer.
- b. Is sd BuyT Assert a refinement of sd BuyT Veto? If so, what kind? Explain your answer.
- c. Is sd BuyT Veto a refinement of sd BuyT Assert? If so, what kind? Explain your answer.
- d. Is sd BuyT Opt Assert a refinement of sd BuyT Veto? If so, what kind? Explain your answer.
- e. How would you update sm Event Database so that the updated state machine is a pure narrowing of sm Event Database? Explain your answer.