

Distributed Transactions

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Exercise 4



University
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Foundations of Distributed Systems

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Exercise 8

Hand-in: 2024 December 15 (11:59pm)

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Modalities of work: The exercise is solved in teams of 2 people.

Modalities of the exercise: The solutions to the exercise must be uploaded to ADAM before the deadline. There will be an associated interview after the deadline. Every student is required to schedule an appointment by reserving a slot on <https://xoyondo.com/dp/joop4qxasc0zd4>. Every slot has a capacity of two people and for groups, every group member must sign-up. Please note, that reservations are made on a "first come first served" basis. During the interview, the work and the understanding of the technical background, which includes contents from both the lecture and the assignment, will be evaluated. Therefore, each group member has to attend this interview in order to be awarded points for the exercise. Please be prepared to demonstrate your solutions on your machine! If there is any question or issue regarding the interview, please send an email to yiming.wu@unibas.ch.

Motivation and Application

In this exercise, you will implement a distributed banking application with different system and tools. The example application offers bank transfers from a source account to a destination account. This transfer procedure consists of two basic operations. *Withdraw* will reduce the balance of a given account and *deposit* will increase its balance. In our distributed system setting, a banking transfer may of course involve different database servers.

Question 1: Distributed Transactions with Java (20 points)

The system environment for this exercise will consist of Oracle 21c XE database servers

Distributed Transactions

Hand-in: December 15th
2024,
+ interview (December 17th)

Modality: max 2 people

DBMS

Login credentials have been sent via email. Connection details to v10 and v11 are specified in the exercise sheet.

Please be aware that the servers are reachable only from within the university network, i.e., you need to connect via VPN if you are using eduroam or working from home.

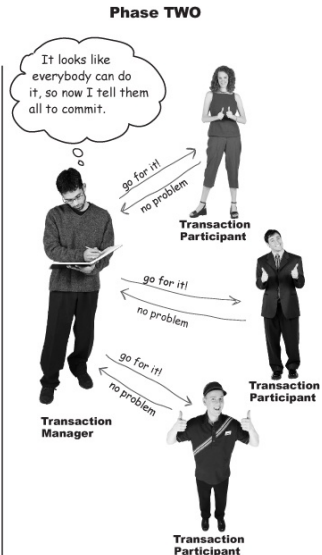
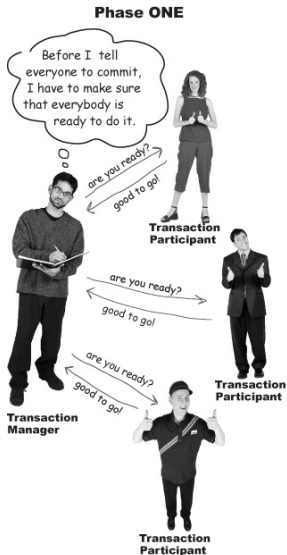
Exercise 4

Goal: Understand how distributed transactions work.

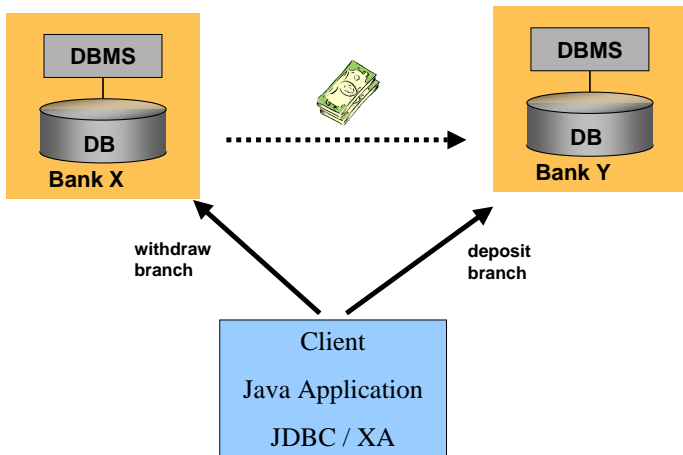
Suggestions

- Read the lecture slides, possibly consider further material
- Use Oracle SQL developer for solving the exercise

Distributed Transactions (2PC)



Question 1: Distributed Transactions with Java



- Unit test (beware: not all cases are tested!)
- See additional material (i.e. source code)

Interview

During the interview, you will be asked questions related to the topic of the exercise (distributed transactions, 2PC, 3PC) and your specific solutions.

- 15 min, scheduled meeting.
- Understanding of the code **and** the topic.
- Each group member has to attend the meeting.
- All team members must be able to answer the questions.
- Each team member has to register.

Register for the interview (“first come first served”) on

<https://xoyondo.com/dp/jpop4qmxmcbxdv4>

(Remember: Each team member has to register on their own!)

Questions?

yiming.wu@unibas.ch