

Distributed Systems: Google App Engine session 1

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1 Question 1

1.1 General

To enforce all-or-nothing semantics we made sure to use `EntityTransactions` in the `confirmQuotes` method. Because of the use of `EntityTransactions` we do rely on JPA. This makes sure that either all quotes for a user are confirmed, or none at all. We did end up enabling XGT, because it is possible that a user wants to confirm a list of `Quotes` which involves multiple entity groups.

1.2 Limitations

The use of cross-group transactions brings along a couple of limitations. One of them is the amount of entity groups that can be operated on within one transaction (25). In the case that a user wants to confirm a list of quotes that involves more than 25 entity groups, the transaction will fail. This does not seem like an unthinkable scenario, but right now we do not know how to circumvent this (other than starting a new transaction for each quote to confirm).

2 Question 2

Taking into account the obvious shortcoming of our design, this would also not work for the client profile scenario. For example: billing all clients could possibly involve thousands of users, which would greatly exceed the limitations given above. To ensure data modification in this case, we would just use normal transactions.

3 Question 3

Transactions provides built-in concurrency control, while using application logic does not. In a large-scale Cloud application, we would prefer the fastest method, which is not to use cross-group transactions but to use optimistic concurrency.