



#ASLI ENGINEERING

Implementing Distributed Transactions



BY

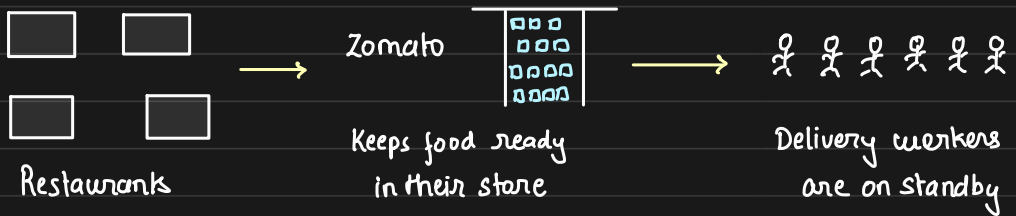
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Implementing Distributed Transactions

Zomato's 10-min Food Delivery

Distributed Transaction: A transaction that spans over multiple physical systems, machines or computers.

Scenario: 10 min food delivery by Zomato



To guarantee that the food is delivered under 10 mins

Zomato should accept order only when

1. Food is available in the store
2. Delivery partner is available to deliver

One order

- One agent
- One food item

A user should not see "Order Placed" if it cannot be fulfilled

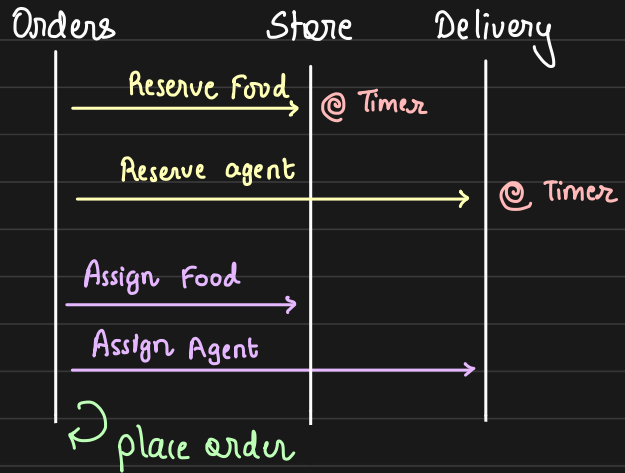
Order 1 ~~~~~ agent 1 [Both were successful]
Order 2 ~~~~~

Two Phase Commit :

Split the entire flow in 2 phases

1. Prepare - Reserve
2. Commit - Assign

Note: To keep things simple we are not implementing timer



Schema: Delivery Service

agents

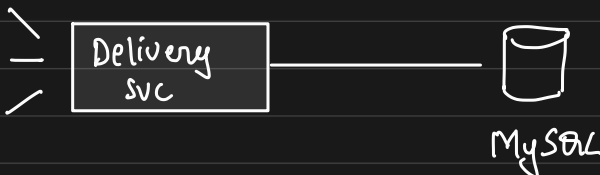
id	is_reserved	order_id
1	false	Null

↑
is reserved

↑
currently serving order

is_reserved = True

↓
agent is reserved
for some order



Schema: Store Service

Individual food items in the store

Food

Packets

id	name	id	food_id	is_reserved	order_id
1	Burger	100	1	False	NULL



API End points : Delivery Service

/ delivery / agent / reserve → reserve a delivery agent

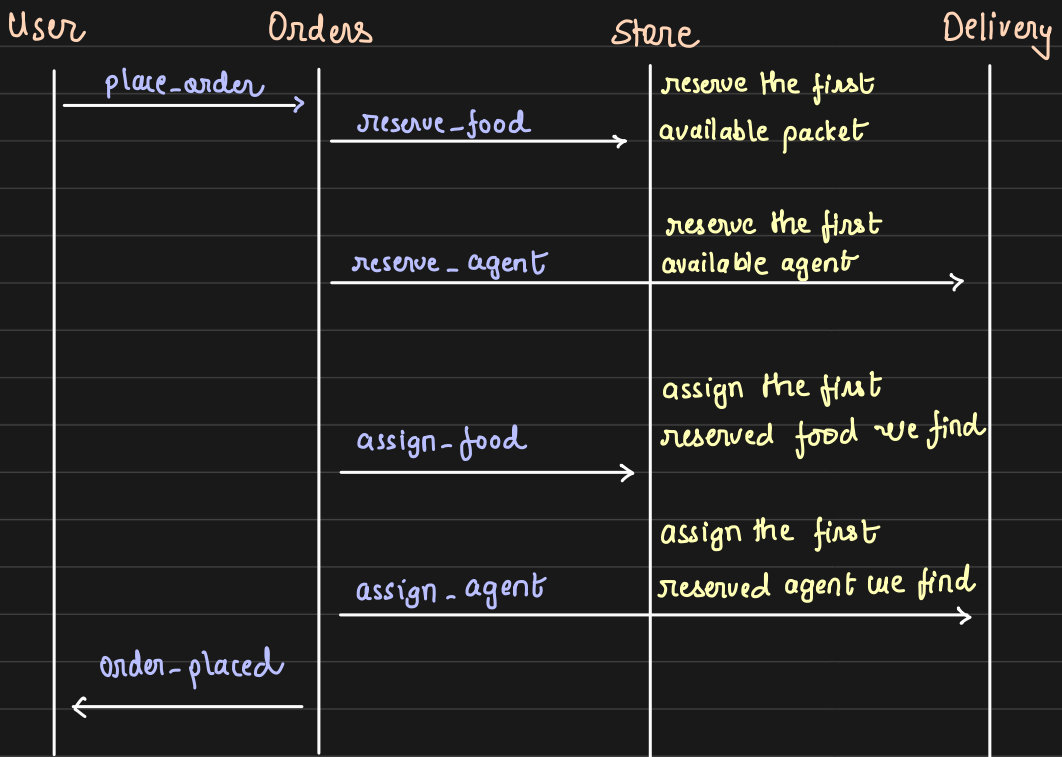
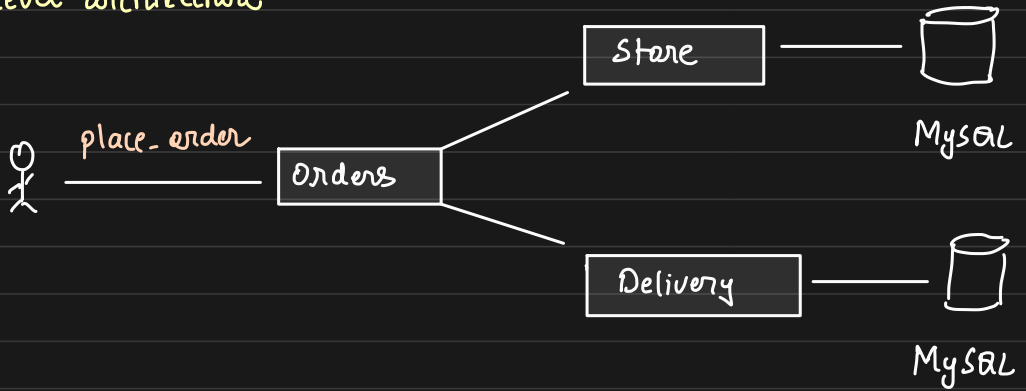
/ delivery / agent / book → assign delivery agent to an order

API Endpoints : Store Service

/ store / food / reserve → reserve a packet

/ store / food / book → assign a packet to an order

High level architecture



Ensuring no inconsistent data

To focus on data consistency

Note: Because we are not implement auto-freeup (timer), once a food packet or an agent is reserved, they remain blocked forever.

But as we get expiry, the problem solves itself.

- Finding & reserving food happens atomically
 - Finding & reserving an agent happens atomically
 - Assigning packet or an agent happens atomically
- Four core updates are individually atomic.
- Consistent transactions has zero impact.
- To place the order, all 4 should succeed
 - If any service fails, orders service will revoke the reservation
 - By adding reservation stage → we ensure we have the necessary capacity