

Data Modelling Task

Let's imagine that you're working in the food delivery business.

Couriers are one of the most important partners in our business, helping us to bring fast service and deliveries to the final app users.

Couriers could be either individual entrepreneurs, or employed by some company called a "courier fleet". Any particular courier could switch cities of employment (especially, in the summer season) as well as fleet employment.

Courier's typical workflow is the following:

1. Courier enters the app and sets their status to "active". From that point, they're eligible to accept orders.
2. An order from some restaurant is dispatched by system. The courier could either accept or decline the order.
3. If the order is accepted, the courier is going toward the restaurant and waits until the order is prepared by the restaurant.
4. Courier picks up the order and delivers it to the customer.
5. Earnings for the order are added to the courier earnings system balance. Total earnings are sent to the courier bank account on a weekly basis.

Typical courier performance is measured on

- activity basis (time spent in app, first / last activity, DAU/WAU/MAU, retention metrics),
- earnings basis (courier earnings per order),
- per-order basis (delivery time, number of accepted/declined orders dispatched to courier),
- per-fleet basis (number of couriers employed, provided working hours),
- per-city and per-country basis.

Your task is to design and present a data model for the courier and related entities that would support the described courier performance analysis. You're free to make assumptions about the database/data warehouse technology and other instruments available for the task.

What will be the main complexities and obstacles to creating data marts for courier-related entities? Let's imagine that the monthly amount of food delivery orders is around 5-10M entities and around 100 users will be querying those data marts daily.

We expect the task solution to be as close to a real-life implementation as possible.

Please include argumentation for your decisions, and refrain from using external aids, including chatbots or language models, during this assessment. We value your original thoughts and creativity in showcasing your skills. Feel free to be creative and demonstrate your emphasis and areas of interest in your submission.