



Full-stack Lead Tech Test v4

Key points to test:

1. Scalability and performance - efficient db interaction, concurrency and parallel processing
2. Problem solving skills
3. Code quality and organisation

Code Section: TypeScript Trading platform Project

Overview:

Implement a trading platform where sellers can post and update **Deals** and buyers can retrieve them. When a **Deal** is posted to the platform, a new deal alert should also be sent to all the buyers who are authorised to see the seller's **Deals**.

Requirements:

- Sellers and Buyers can connect to this platform via a REST API
- Buyers should only be able see the deals of the sellers they are authorised to
- Buyers would need to get updates from any authorised sellers about any deals changes via a webhook, for example price change or status (sold, available)

Data Structures:

```
/// Deal
{
  "name": "Name",
  "seller": "REF",
  "total_price": 100,
  "currency": "gbp",
  "discount": { // optional
```

```
    "type": "flat or percentage",
    "amount": 100
  },
  "status": "available or sold",
  "items": [
    {
      "id": "ref",
      "name": "Bundle",
      "price": 100
    }
  ]
}
```

Key considerations:

- Please use Typescript, you can use the web server technology you think is most suitable (Express, Fastify, Nest, Koa etc. - up to you)
- Pick a database technology that you think is suitable (as long as you can justify it's up to you). It needs to be able to handle thousands of concurrent reads and writes
- Please write tests that cover the main flows and ideally at least some edge cases
- Please add a README - this doesn't have to have lots of information but should include brief instructions on how to:
 - Run the API locally
 - Run the tests

No-Code Section: System Design

How would you deploy the system above? It needs to meet the following requirements:

- Updates to Buyers need to be delivered at least once

- Latency between receiving an update and sending it out to Buyers should be as low as possible

In the future this platform would need to be able to accept bids from buyers and send them invoices upon sale end. How would you implement it?

What other challenges do you see with this system? How would you approach them?