Welcome to the Programming Challenge!

This exercise is designed to see how you think about problems, structure your ideas, and translate them into a clear design. Take it as an opportunity to showcase your problem-solving maturity and creativity. There's no single "right answer" - what matters most here is how you approach the problem and communicate your design.

In Part 1, the client does not focus on any coding but instead focuses on design thinking — particularly schema and system design. The main objective is to evaluate the maturity of your problem-solving approach, rather than your ability to write code. You may use AI tools for assistance, but please be transparent if you do; in such cases, the company will adjust Part 2 of the interview accordingly.

Programming Challenge

For this challenge you are asked to design and partially implement a simple Brokerage Application which would allow users to invest in stock market or cryptocurrencies (your choice).

- Part 1 can be done comfortably within one day at home and should be sent back to the company.
- Part 2 will be done live during the interview via screen share.

Due to time constraints it does not have to be very complicated, but the deliverable should address as many of the requirements listed below.

Requirements / Stories

1. Users will need to sign up and create user accounts.
2. Users need to be able to link their bank accounts in order to deposit and withdraw funds.
3. Users need to be able to buy and sell instruments such as stocks, bonds, cryptocurrencies, etc.
4. Users need to be able to see current and historical performance of their investment portfolio.
5. Brokerage Application needs to integrate with exchanges in order to:
   a. Load a list of available instruments and their prices.
   b. Execute trades (buy/sell).

Part I – Design

The focus for this part is on high-level application and data model design.
The expected deliverable is a description of major application components and workflows. This should cover internal application components, databases, integration points with 3rd parties (exchanges).
Data models should support listed requirements including entities common for such applications such as user authentication, profile management, etc.
Write the interfaces and the “shell” of the application with models and placeholders for implementation, that would greatly improve the effectiveness of the Part II.

Part II – Implementation

To be done live during the interview via screen share, based on the design provided in Part I.