Period 3 GraphQL

Note: This description is too big for a single exam-question. It will be divided up into separate questions for the exam

Explain shortly about GraphQL, its purpose and some of its use cases

En API standard udviklet af Facebook og er open-source.

Pga folk begyndte at bruge deres telefoner mere og mere var man nød til at udvikle noget mere effektivt.

Det er et Query language til API'er

Declaratative data fetching : Kom ind på over / under fetching.

Har kun 1 endpoint.

Explain some of the Server Architectures that can be implemented with a GraphQL backend

1. Man kan connecte en graphql server direkte med en database.
2. Man kan "ligge" graphql som et ydre lag oven på sit allerede eksisterende system.
3. Man kan lave en hybrid af de 2 ovenstående.

What is meant by the terms over- and under-fetching in GraphQL, compared to REST:

Over fetching vil sige at fetche mere data end hvad man egentlig skal bruge, dette kan være et stort problem ved f.eks et REST API. Facebook støtte ind i store problemer når de skulle begynde at hente venner af venner, af venner….

Under fetching vil sige at fetche for lidt data, dette ville resultere at man skulle lave ekstra fetch kald til sit REST api, som giver en dårlig performance.

Explain shortly about GraphQL's type system and some of the benefits we get from this:

SDL = Schema Definition Language.

Det giver os fuld kontrol over vores typer, og giver automatisk validering af indkommende inputs.

Det arbejder utroligt godt sammen med typescript, dog lidt dobbelt arbejde med at definere typer.

Explain shortly about GraphQL Schema Definition Language, and provide examples of schemas you have defined.

Udover at det giver validering og type checking, gør det dejligt let for os som udviklere da via graphiql kan se dokumentation over hele "api'et", alt omkring hvilke queries og mutations der er, og selvfølge også hvilke typer der skal bruges.

https://github.com/Pelle-pr/fullstack-typesript-startcode/blob/main/src/graphql/schema.ts

Provide examples demonstrating data fetching with GraphQL. You should provide examples both running in a Sandbox/playground and examples executed in an Apollo Client

https://github.com/Pelle-pr/fullstack-typesript-startcode

https://github.com/Pelle-pr/Client-startcode

Provide a number of examples demonstrating; creating, updating and deleting with Mutations. You should provide examples both running in a Sandbox/playground and examples executed in an Apollo Client.

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https://github.com/Pelle-pr/Client-startcode

Explain the Concept of a Resolver function, and provide a number of simple examples of resolvers you have implemented in a GraphQL Server.

Man har en resolver til alle sine queries og mutations som er defineret i sit skema.

Resolverens job er så at lave vores database kald, eller fetch kald til eksterne api'er

https://github.com/Pelle-pr/fullstack-typesript-startcode/blob/main/src/graphql/resolvers.ts

Explain the benefits we get from using a library like Apollo-client, compared to using the plain fetch-API

Vi får adgang til Apollos Hooks, som f.eks UseQuery eller useMutation som sørger for at lave vores queries/mutations, som gør det let tracke vores data, loading og error states.

Vi får funktion som hedder gql hvor vi hurtigt kan paste vores query/mutation ind.

Vi får adgang til apollos caching, som er let at konfiguere.

In an Apollo-based React Component, demonstrate how to perform GraphQL Queries, including:

- **Explain the purpose of ApolloClient and the ApolloProvider component**

Se længere oppe for AppoloClient.
ApolloProvider minder om Reacts context.provider som gør at vi kan få adgang til vores Client overalt i koden.

- **Explain the purpose of the gql-function (imported from graphql-tag)**

Den indeholder vores query/mutation

- Explain Custom Hooks used by your Client Code

Se længere oppe for Hooks. (useQuery) (useMutation)

- Explain and demonstrate the caching features built into Apollo Client

In an Apollo-based React Component, demonstrate how to perform GraphQL Mutations?

https://github.com/Pelle-pr/Client-startcode/blob/master/src/components/FindFriend.tsx

Demonstrate and highlight important parts of a "complete" GraphQL-app using Express and MongoDB on the server-side, and Apollo-Client on the client.

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