Orientation Session

Topic: Introduction & Basic Overview of TypeScript & GraphQL

Date: 04/09/2023 - 4PM

Presented By: Nifty IT Solution

Welcome & Agenda

Who are we?

Introduction To Online Internships

The concept of online internships.

The importance of React.js, TypeScript, and GraphQL in modern web development.

Pre requisites

Job Experience

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Agenda

Typescript

- What is Typescript?

- Why do we need Typescript?

- Advantages of Typescript

1

Agenda

GraphQL

- Introduction to GraphQL

- Benefits of GraphQL

- Combining TypeScript with GraphQL

2

React JS?

How many of you know React?

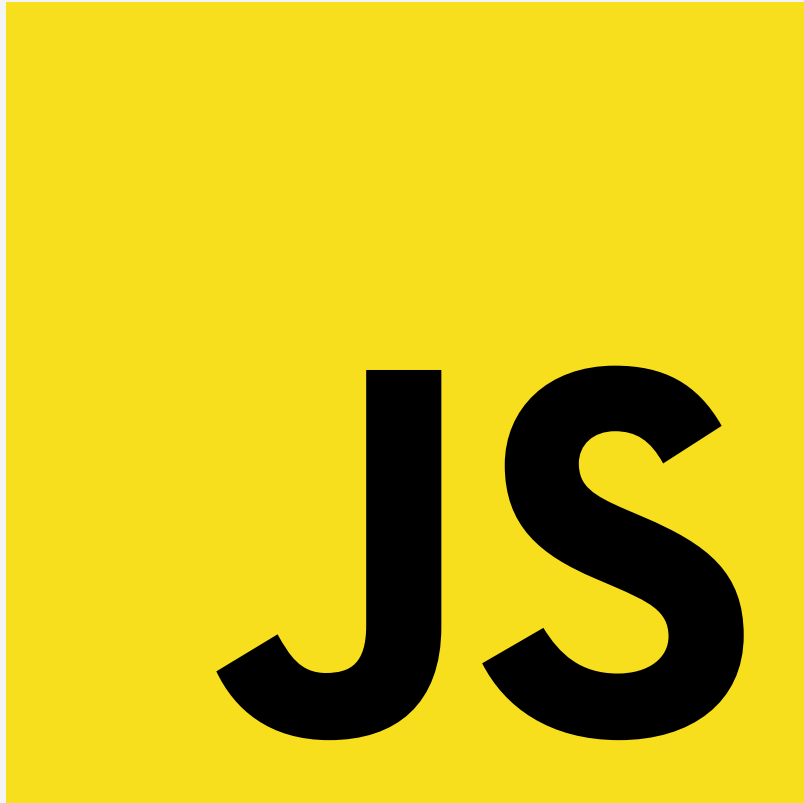https://forms.clickup.com/3450636/f/399rc-54044/NN2DFZH2G95SHMQO8Z

What is Typescript?

TypeScript is a superset of JavaScript that adds optional static typing.

Everything in JavaScript is also in TypeScript. TypeScript extends the capabilities of JS.

Why do we need Typescript?

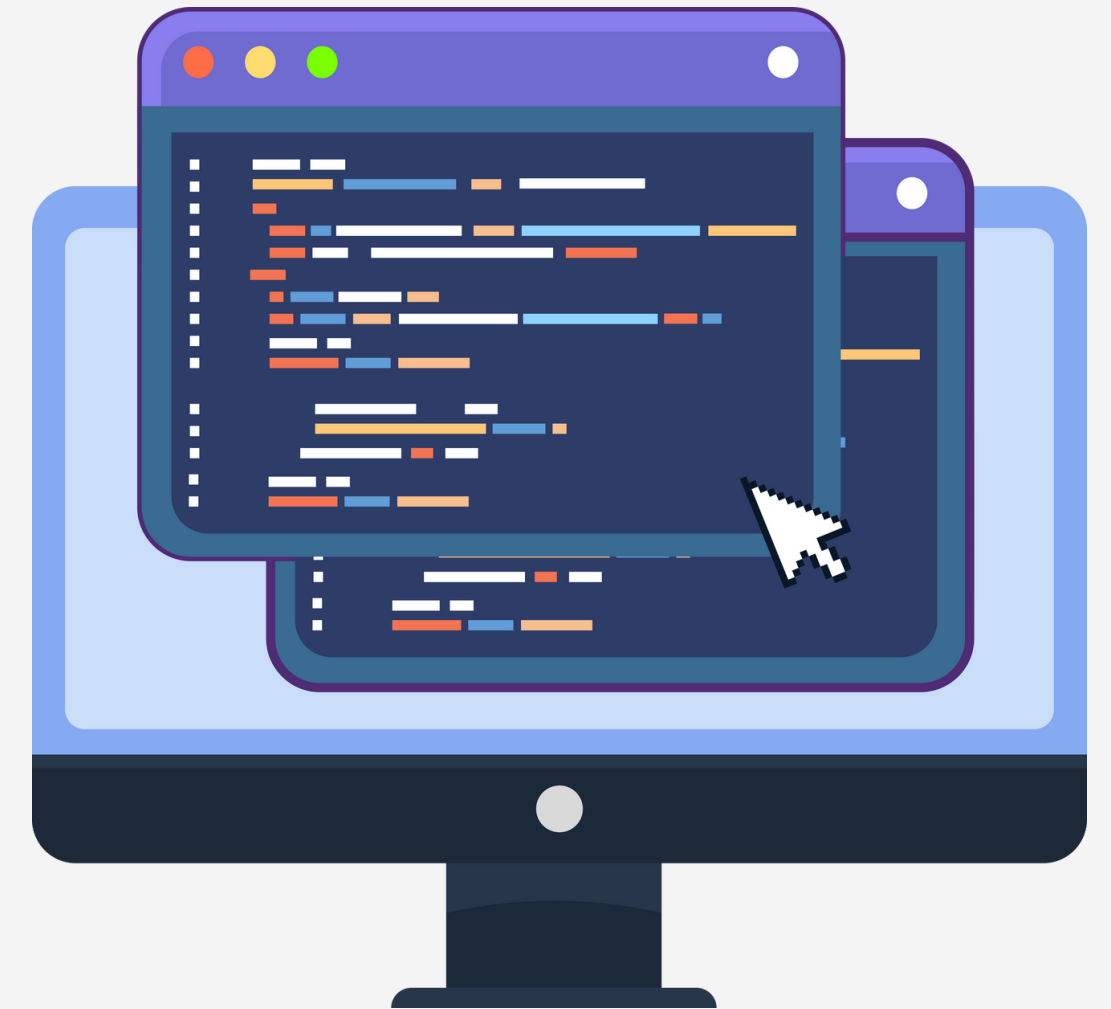"As a system evolves, its complexity increases unless steps are taken to reduce it."

JavaScript was not designed to deal with the level of complexity required to meet today's needs.

```ts
export interface Student {
  name: string;
  lastName: string;
  age: number;
  grade?: number;
}

export const someStudent: Student = {
  name: "lorem",
  lastName: "ipsum",
  age: 26,
  grade: 97
};
```

Advantages of Typescript

- **Type Safety**: Catch errors early during compile-time.

- **Improved IDE Support**: Autocomplete, refactoring, and more.

- **Better Code Organization**: Interfaces, namespaces, and more.

- **Enhanced OOP Features**: Classes, interfaces, generics.

- **ESNext Features**: Use next-gen JavaScript features today.

GraphQL

How many of you know RTK?

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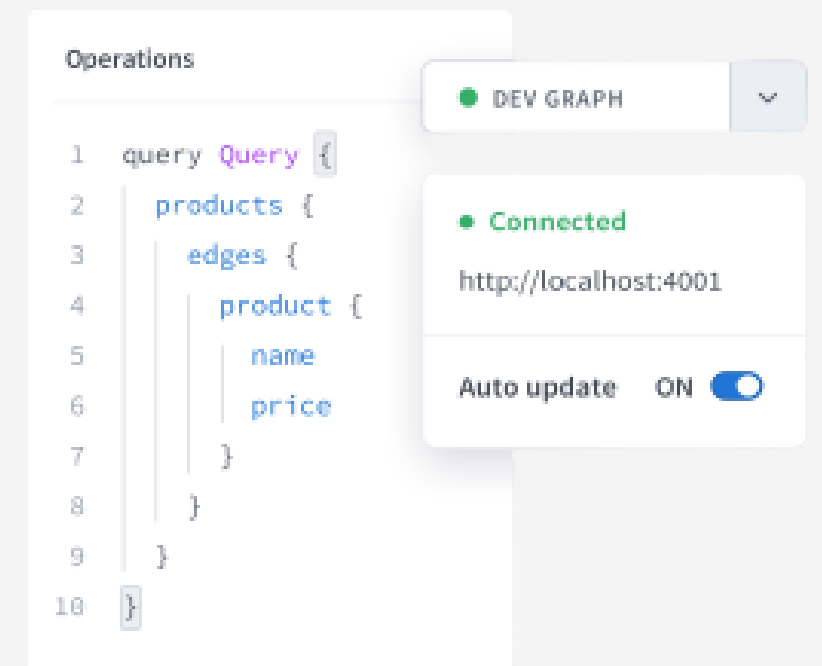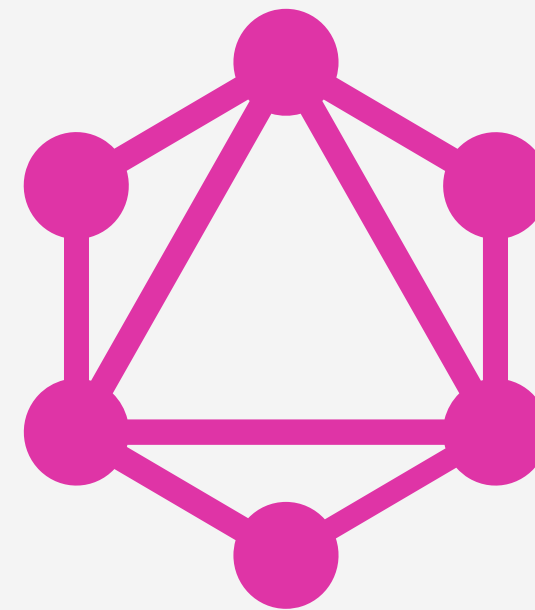
Introduction to GraphQL

GraphQL is a query language for APIs, and a runtime for executing those queries using a type system.

Note: GraphQL allows clients to ask for exactly the data they need, nothing more, nothing less.

Images: GraphQL logo and a snippet of GraphQL query.

Benefits of GraphQL

- **Precise Data Retrieval**: Ask for what you need, get exactly that.

- **Strongly-Typed Schema**: Know what data is available and in which format.

- **Single Endpoint**: Unlike REST, GraphQL typically exposes a single endpoint for data retrieval and mutations.

- **Reduced Over-Fetching & Under-Fetching**: Efficient data fetching, optimized for performance.

- **Aggregated Data From Multiple Sources**: Fetch data from multiple sources with a single query.
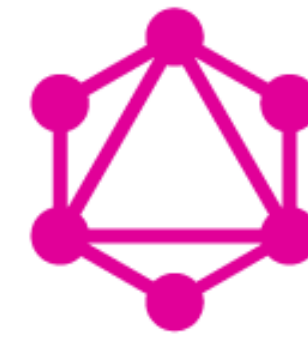
REST API

REST REQUEST

GET https://sample.com/person/1

REST JSON

```
{
   "firstName": "John",
   "middleName": "Andrew"
   "lastName": "Smith",
   "email": "jas1992@gmail.com",
   "relationshipStatus": "single"
}
```

VS

GraphQL

GRAPHQL QUERY
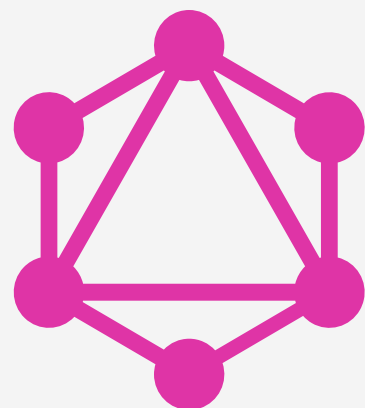
```
{
person {
      firstName
      lastName
    }
}
```

GRAPHQL JSON

```
{
   "data": {
     "person": {
       "firstName": "John",
       "lastName": "Smith",
     }
   }
}
```

Combining Typescript with GraphQL

- **Type Safety**: Ensure that the data from GraphQL matches the expected type.

- **Generated Types**: Tools can generate TypeScript types from GraphQL schema.

- **Enhanced Developer Experience**: Leveraging TypeScript and GraphQL together makes for a robust development experience.

- **Predictable State Management**: With tools like Apollo Client.

Real-World Examples & Projects

Here, we can showcase some real-world applications that use React.js, TypeScript, and GraphQL.

Conclusion

Emphasize the importance of combining TypeScript's type safety with GraphQL's efficient data fetching.

Encourage interns to experiment and practice during the internship.

Note: The combination of TypeScript and GraphQL paves the way for efficient, robust, and maintainable applications.

Do you have any questions?

Feel free to reach out!

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