Building a GraphQL API in .NET 6

and consume it with Playground

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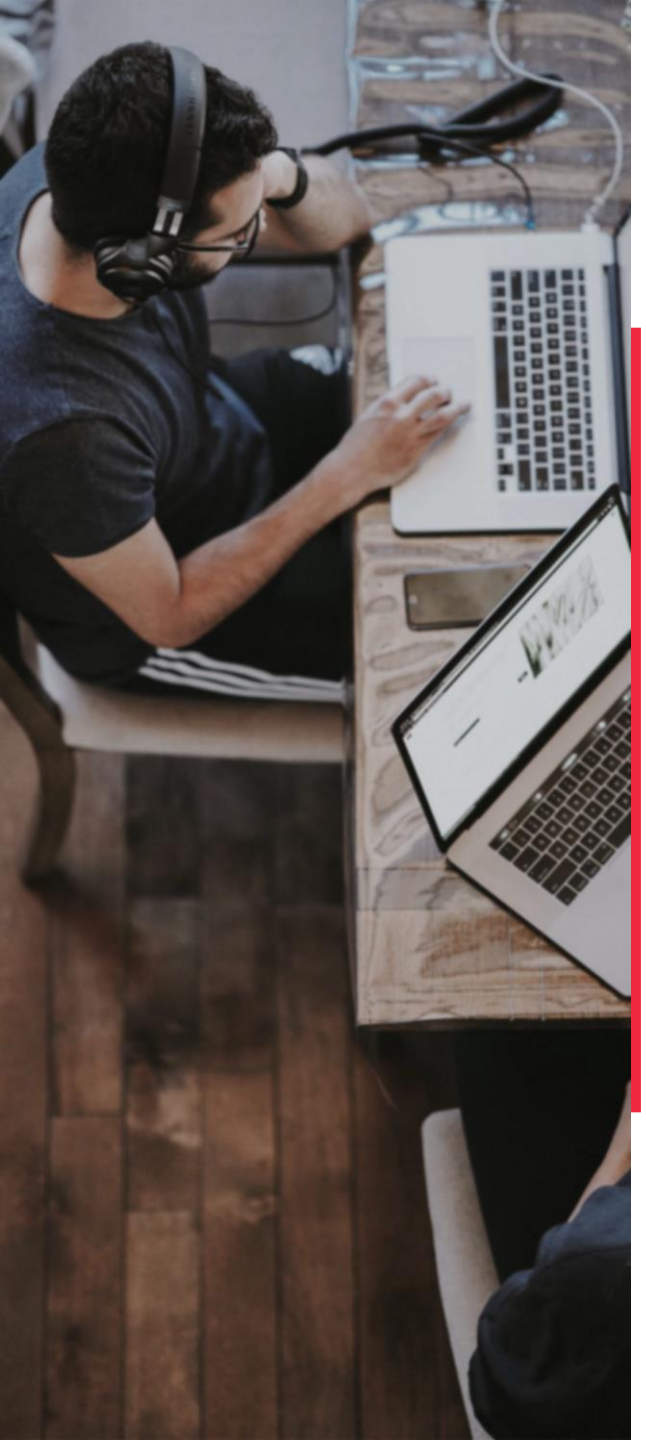

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Content Overview

- What is GraphQL?
- Who is using GraphQL?
- REST vs GraphQL
- Starting with GraphQL
- Creating a GraphQL API
- Consuming a GraphQL API

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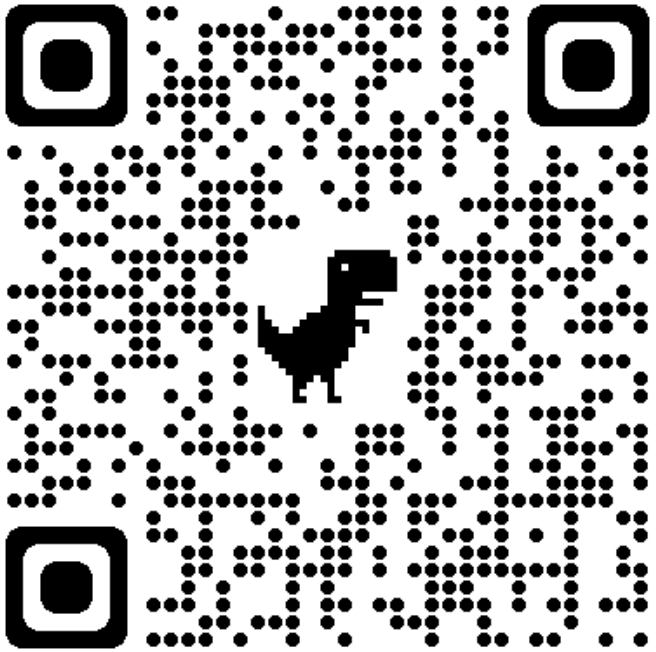
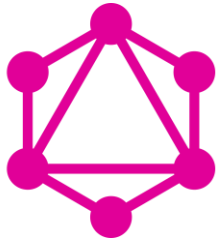
Where is the code?



https://bit.ly/RoccoGraphql



GraphQL

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Was created by Facebook in 2012

Open-sourced in 2015.

Is a query language for your API.

Provides flexibility and efficiency in client-server communications.

Huge community involvement

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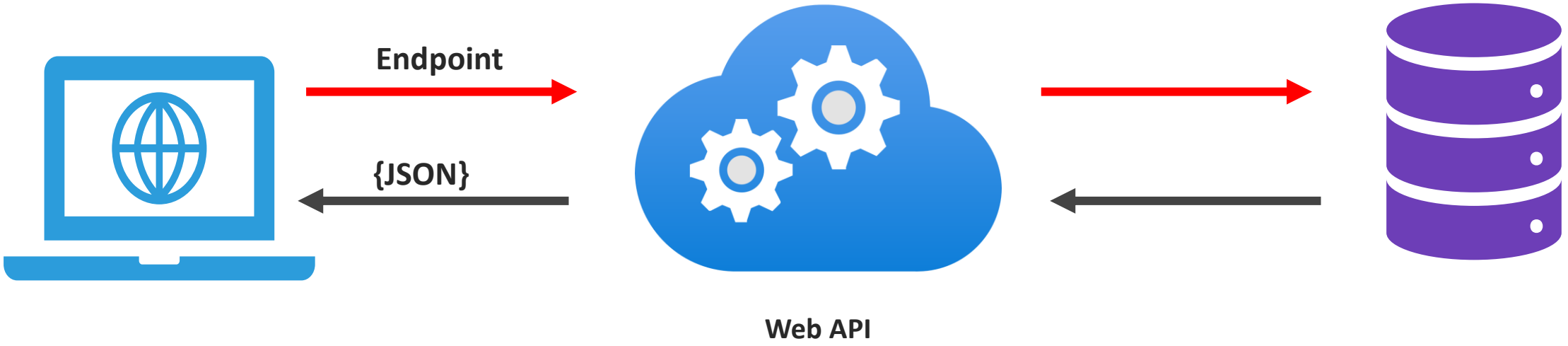
Before GraphQL



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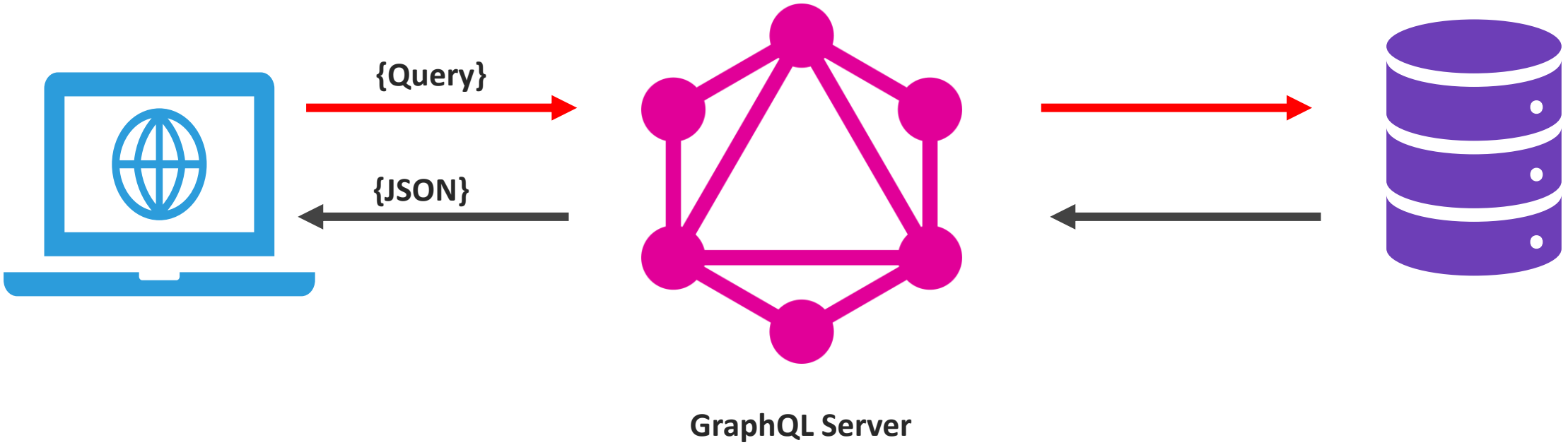
Using GraphQL



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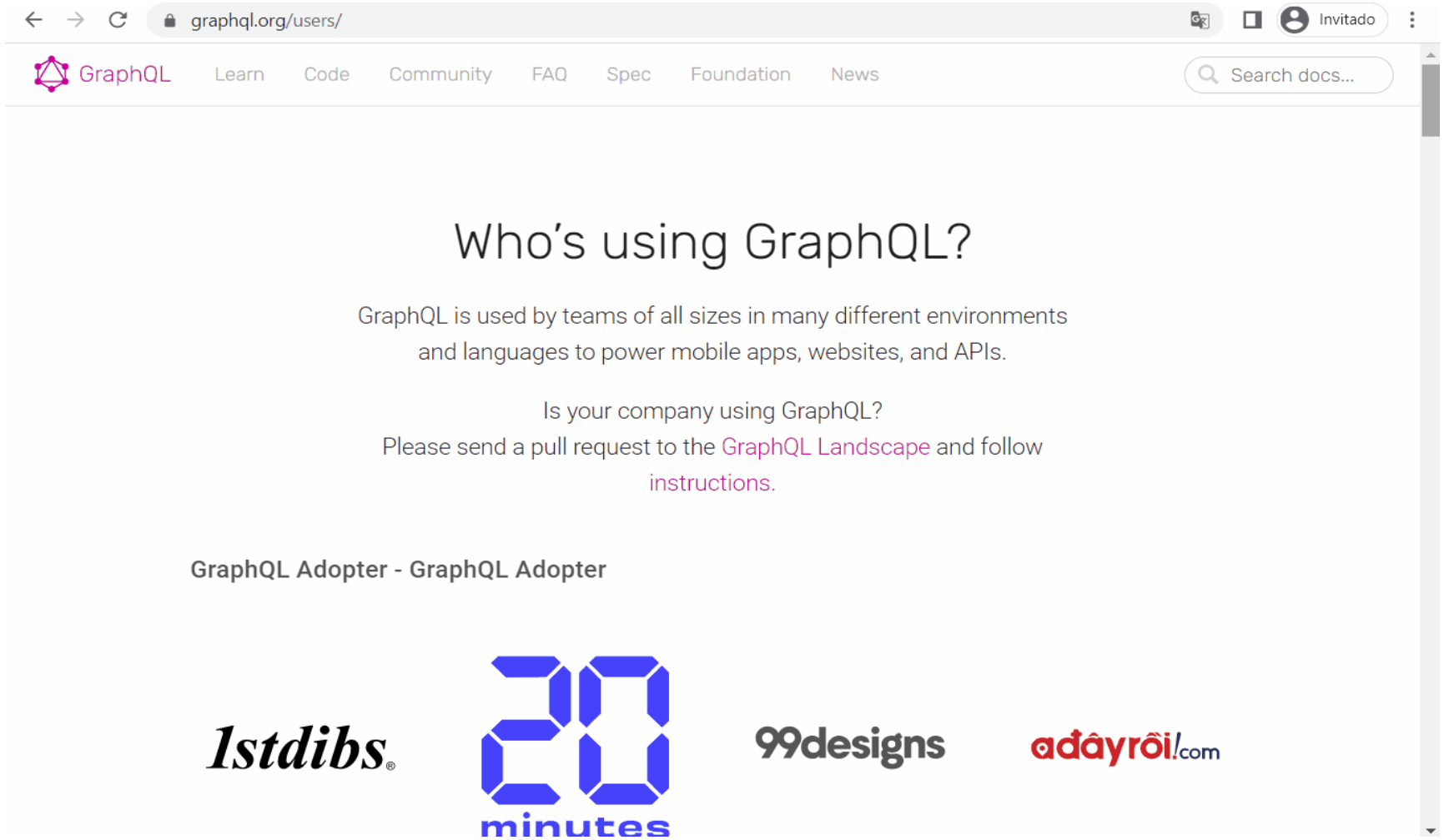
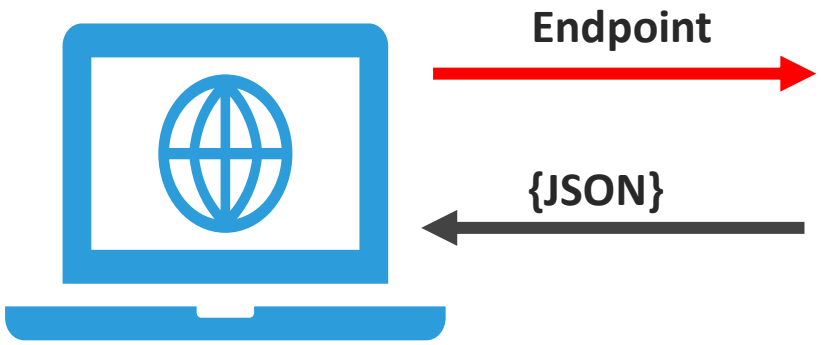
Who is using GraphQL?

Who is using GraphQL?



https://graphql.org/users

REST



Requirements

Display

- Company
  - Name
- Employees
  - Name

REST: Get Companies

/api/companies

{JSON}

Web API

```
[
    {
      "id": "c9d4c053-49b6-410c-bc78-2d54a9991870",
      "name": "IT_Solutions Ltd",
      "address": "583 Wall Dr. Gwynn Oak, MD 21207",
      "country": "USA"
    },
    …
]
```

REST: Get Employees

/api/companies/<id>/employees

{JSON}

Web API

```
[
    {
      "id": "80abbca8-664d-4b20-b5de-024705497d4a",
      "name": "Sam Raiden",
      "position": "Software developer",
      "age": 26
    },
    …
]
```

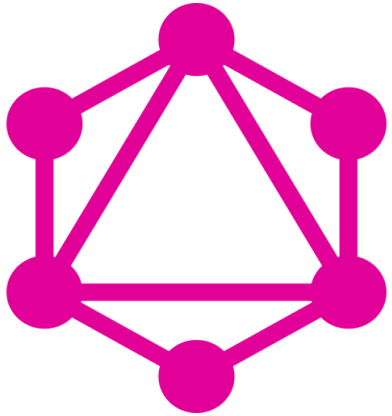
GraphQL

```
{
    companies {
      name
      employees {
        name
      }
    }
}
```

{ Query }

{JSON}

```
[
  {
    "name": "IT_Solutions Ltd",
    "employees": [ {"name": "Sam Raiden"   },
                   …
                  ]
  }
  …
]
```



GraphQL Server

REST vs GraphQL

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REST

Multiple round trips

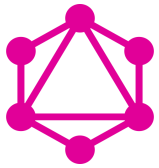
Over fetching / under fetching data

Frontend teams rely heavily on backend

Caching is built into HTTP spec

Large community

Learning curve: Moderate



GraphQL

One single request to collect the data

You get only what you ask for

Frontend and backend teams can work independently

Requires additional libraries (Apollo)

Growing community

Learning curve: Difficult

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GraphQL: Core Concepts

Fields

Types

Queries

Schemas

Mutations

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GraphQL: Fields

```
{
    companies {
      id
      name
      address
    }
}
```

Fields

GraphQL: Types

```
type Company {
    id:       ID
    name:     String
    address:  String
}
```

Type

Data types

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GraphQL: Schema

```
schema {
    query: CompanyQuery
    mutation: CompanyMutation
}
```

GraphQL: Query

```
type CompanyQuery {
    companies: [Company]
    company(id: ID!): Company
}
```

GraphQL: Mutations

```
type CompanyMutation {
    createCompany(company: companyInput!): Company
}
```

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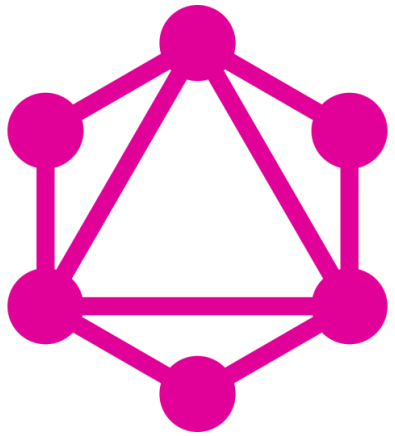
GraphQL SDK for .NET

Popular Libraries

- GraphQL-DotNet
  - Open Source (100+ Contributors)
  - 1.5M NuGet Downloads

- Hot Chocolate
  - Open Source (25+ Contributors)
  - 95k NuGet Downloads



Demo: GraphQL + Playground + .NET 6

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Summary

- A GraphQL API uses queries.
- Returns specified data structure.
- Provides flexibility and efficiency in client-server communications.
- Schemas help to define what can be queried.
- Playground is a client for a GraphQL

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More information

- GraphQL Official documentation
- GraphQL Playground Repository
- GraphQL for .NET
- Demo repository

Questions

?

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