Now this is GraphQL

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Goals

Objective: Build a solution to help Anakin and his pit crew view and modify podracing performance metrics

You will walk away knowing the answers to the following:

- What is GraphQL?
- How is GraphQL different from REST?
- How do I write a schema?
- How do I get and receive data?
- How fast does Anakin's Podracer go?

Setting up

- Project cloned locally

- Open terminal run the following commands: `npm install` and then `npm start`

- Open code in IDE of your choice

- Navigate to `localhost:4000` in your browser (won't work just yet)

What is GraphQL?

A query language for your API which empowers the client to have complete control over the data it receives and sends

REST vs GraphQL

REST

REpresentational State Transfer

- Uses constructs that should be familiar to those who have used HTTP
- HTTP status codes
- Language agnostic
- Stateless, all state is managed by the client

Common REST use case

`/podracers/<1>`

```
{
 "podracers": [
   {
     "name": "Anakin Skywalker",
     "location": "tattooine",
     "species": "human",
     "height": "172",
     "mass": "77",
   }
 ]
}
```

`/podracers/<1>/wins`

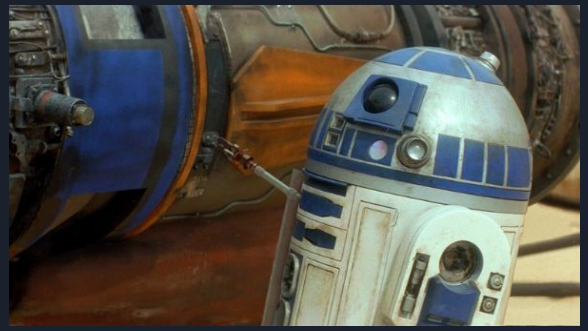
```
{
 "podrace_wins": [
   "The Boonta Classic",
 ]
}
```

`/podracers/<1>/stats`

```
{
 "podracer_stats": {
   "length": "11",
   "top_speed": "254",
   "average_fuel": "18"
 }
}
```

Code can be found here: `rest.md`

GraphQL



- Uses syntax that describes how you ask for you data
- Client specifies what it needs, gets nothing else
- Data is defined by types
- Easy to iterate / update API because client controls the data it gets

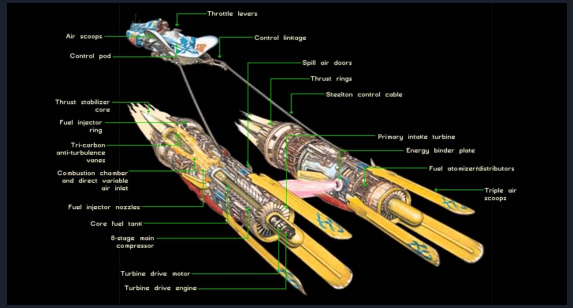
Common GraphQL use case

```
query {
 getSinglePodracer(id: "2"){
    name
    location
    height
    mass
    podrace_wins {
      title
    }
    podracer_stats {
      length
      top_speed
      average_fuel
    }
 }
}
```

```
{
 "getSinglePodracer": {
    "name": "Anakin Skywalker",
    "location": "tattooine",
    "height": "172",
    "mass": "77",
    "podrace_wins": [
      { "title": "The Boonta Classic" }
    ],
    "podrace_stats": {
      "length": "8",
      "top_speed": "276",
      "average_fuel": "29"
    }
 }
}
```

Code can be found here: `graphql.md`

Schema



- The blueprint that defines the data type of each object
- Defines the shape of queries for your data

Next, let's create a "Podracer" type!

Code can be found here: `schema.js`

Queries

- How you ask for and receive data

- A string that is sent to a server that is interpreted and that returns JSON to client

- Traverses related objects and fields

Next: let's make a queries to get all Podracers or a specific Podracer!

Code can be found here: `schema.js`

GraphQL queries can be found here: `graphql.md`

Mutations

- Used to change data (create, update, delete)
- Do not use Query when makes server-side data changes

Next: let's add the ability to create a new Podracer!

Code can be found here: `schema.js`

GraphQL mutations can be found here: `graphql.md`

Resolvers

- Function that returns a value for specified type or a field in *a schema*
- Generates a response for a query or mutation
- Contains four arguments:
    - Parent - result returned from resolver on parent field
    - Args - arguments passed to the query
    - Context - a value provided to each resolver
    - Info - a value that holds field-specific info for current query

Next: let's write resolvers for our queries and mutation!
This will allow our queries and mutation to be executed.

Code can be found here: `resolvers.js`

Wrapping up

- GraphQL is a query language for your API

- GraphQL gives a complete description for your data

- A *Schema* describes the type and shape of your data

- A *Query* is used to retrieve data from your API

- A *Mutation* is used to create, update, or delete data from your API

- A *Resolver* is a function that is used to issue a *Query* or a *Mutation*

Q & A