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Developing RESTful Web Services with Java

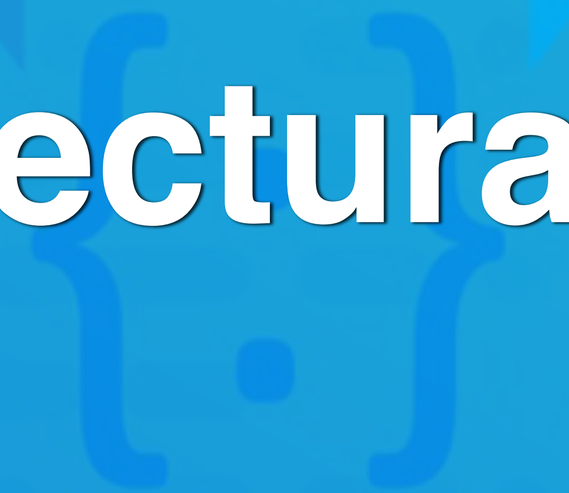
Chapter 5: RESTful As An Architectural Style

Eğitmen:

Akın Kaldıroğlu

Çevik Yazılım Geliştirme ve Java Uzmanı

RESTful As An Architectural Style



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RESTful

- **REST** stands for **REpresentational State Transfer**.
- It is introduced by Roy Fielding's in his doctoral thesis *Architectural Styles and the Design of Network-based Software Architecture* in 2000.
- In his thesis he mainly made a research regarding how to apply the architecture of web to applications.
- And he developed an architectural style that he called **REST**.

Architectural Style

- Roy Fielding defines **architectural style** in his doctoral thesis as follows:

  An architectural style is a coordinated set of architectural constraints that restricts the roles/features of architectural elements and the allowed relationships among those elements within any architecture that conforms to that style.

Constraints

- Roy Fielding later lists following constraints on REST architectural style:
  - Client-server
  - Stateless
  - Cache
  - Uniform Interface
  - Layered System
  - Code on Demand, which is optional.

Resource and Representation - I

- The key abstraction of information in REST is a resource.
- REST uses a resource identifier to identify the particular resource involved in an interaction.
- REST components perform actions on a resource by using a representation to capture the current or intended state of that resource and transferring that representation between components.
- A representation is a sequence of bytes, plus representation metadata to describe those bytes.

Resource and Representation - II

- A given representation may indicate the current state of the requested resource, the desired state for the requested resource, or the value of some other resource, such as a representation of the input data within a client's query form, or a representation of some error condition for a response.
- The data format of a representation is known as a media type.

Stateless - I

- All REST interactions are stateless.
- That is, each request contains all of the information necessary for a connector to understand the request, independent of any requests that may have preceded it.
  - A connector is one of server, client, cache, etc.

Stateless - II

- This restriction accomplishes four functions:
  - No need for connectors to retain application state between requests, thus reducing consumption of physical resources and improving scalability;
  - Allowing parallel processing without requiring that the processing mechanism understand the interaction semantics;
  - Allowing an intermediary to view and understand a request in isolation
  - It forces all of the information to be present in each request.

Uniform Interface - I

- About uniform interface Fielding says, REST is defined by four interface constraints:
  - identification of resources;
  - manipulation of resources through representations;
  - self-descriptive messages; and,
  - hypermedia as the engine of application state.

Uniform Interface - II

- REST is resource-based.
- Each resource is idendified by a URI.
- For example if a **`GET`** with an id is sent to a conversion URI then a conversion with given id is returned.

```
@Path("greetings")
public class GreetingResource {
   …
   @GET
   @Path("{language}")
   public String getGreeting(…) {…}
}
```

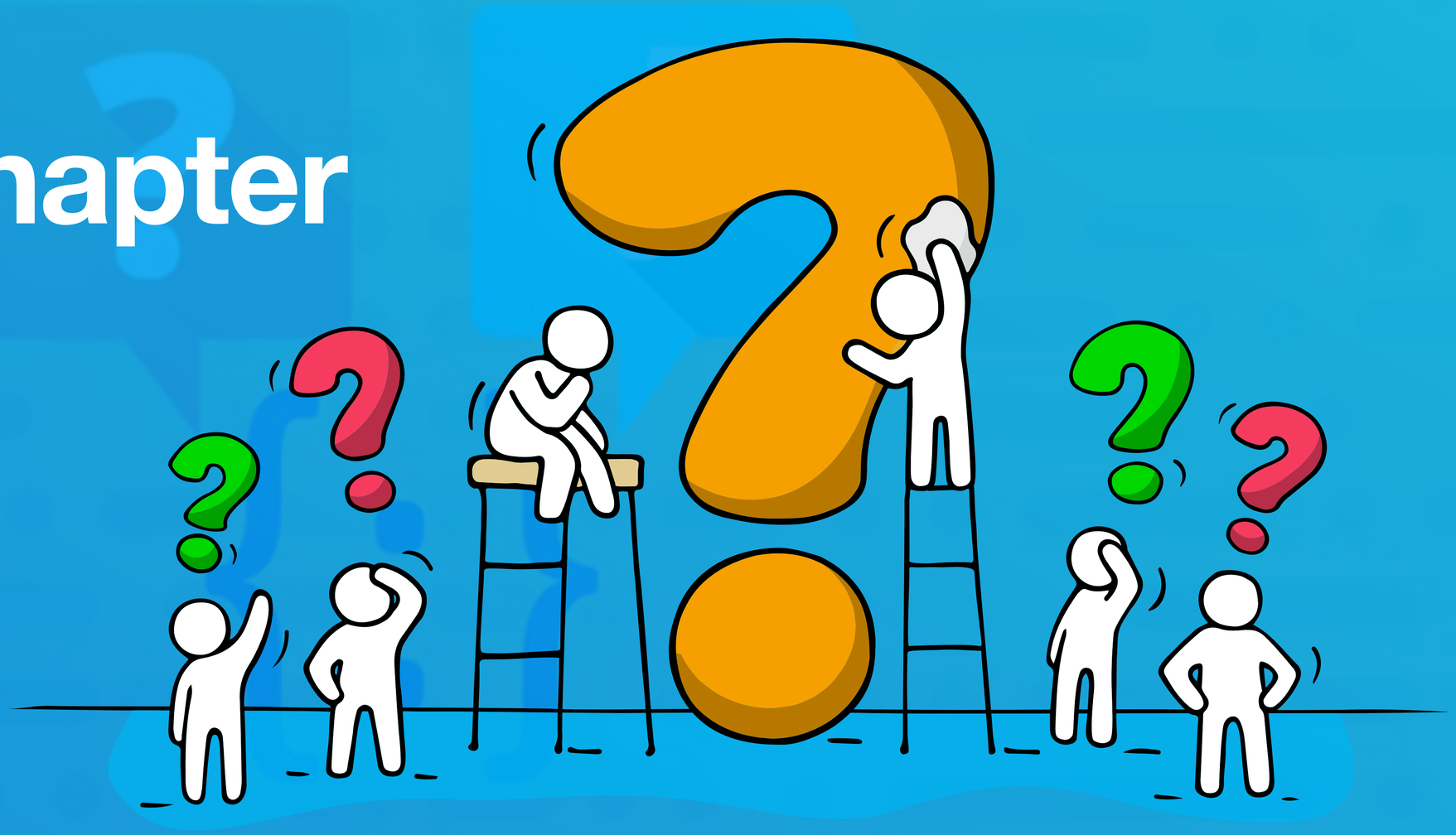
```
@Path("greetings")
public class GreetingResource {
   …
   @POST
   @Path("{language}/{greeting}")
   public Response createGreeting(…)
}
```

Uniform Interface - III

- What is transfered to the client is a representation of the conversion resource.
- But whether the representation is in the same format as the raw source, or is derived from the source, remains hidden behind the interface.

End of Chapter

Time for Questions!



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