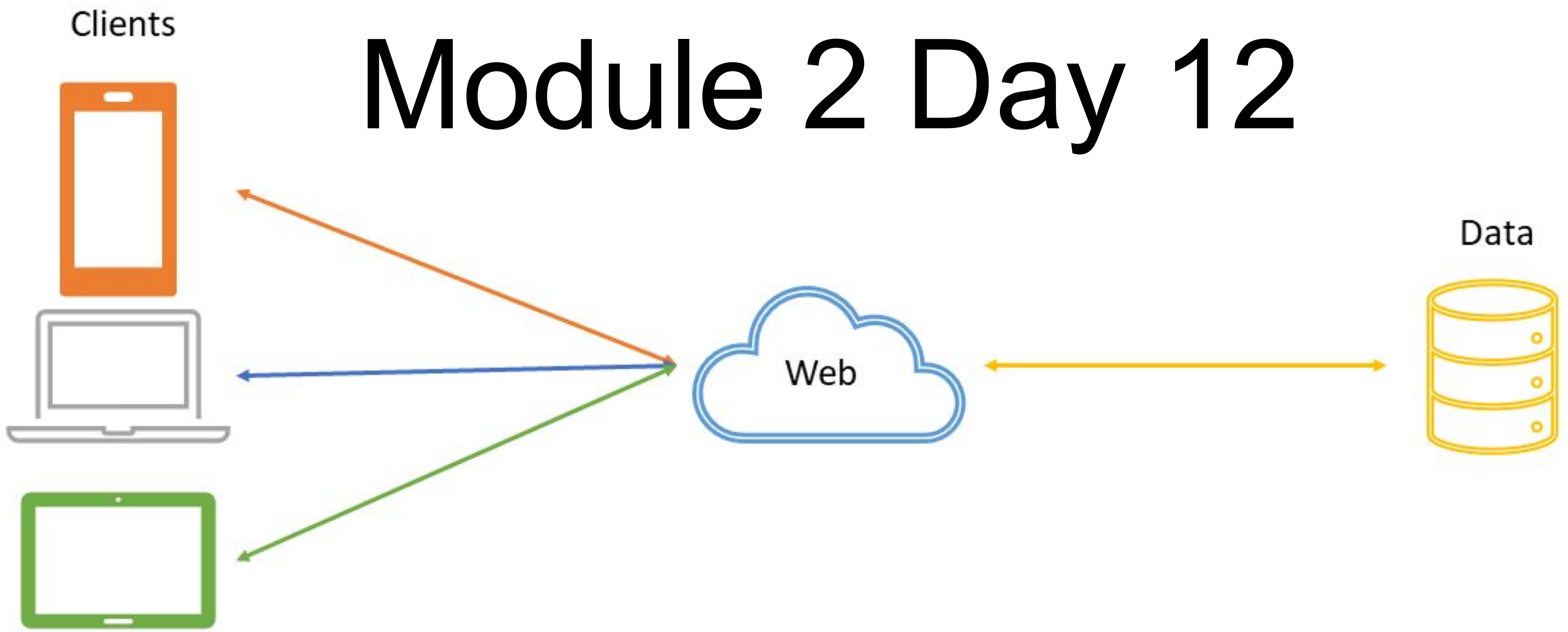
Module 2 Day 12



HTTP Web Services: Post, Put, Delete

Module 2 Day 12
Can you ... ?

- Explain the purpose of: IP Addresses, DNS, Ports, HTTP, TLS
- Identify and explain the purpose of the main components of HTTP, including:
    a. Methods, Resources
    b. Headers, Request Body
    c. Status Codes, Request / Response (Stateless)

- Explain the steps of a typical HTTP request between a web browser and a server
- Explain what POST, PUT, and DELETE requests are used for
- Explain distinctions between 2xx, 4xx, and 5xx Status Codes
- Make an HTTP requests using Postman and inspect the results
- Explain what JSON is and how to use it in a Java
- Make an HTTP Requests to a RESTful web service using Java and process the responses

More Request Types

In the last lecture we saw GET’s, which simply read the data. Today we will deal with request types that might potentially change the application’s data permanently:

- **POST**: Ideally suited for inserting new data into the data source.
- **PUT**: Ideally suited for updating an existing record within a data source.
- **DELETE**: Ideally suited for removing an existing record from the data source.

For the POST & PUT requests we are converting an object to data

Implementing a POST

Suppose the documentation for the API specifies POST as well :

(POST) *http://localhost:3000/hotels/{id}/reservations*

```
String API_BASE_URL = "http://localhost:3000/"
RestTemplate restTemplate = new RestTemplate();
HttpHeaders headers = new HttpHeaders();
headers.setContentType(MediaType.APPLICATION_JSON);

// Where reservation is an object of type Reservation.
HttpEntity<Reservation> entity = new HttpEntity<>(reservation, headers);
restTemplate.postForObject(BASE_URL + "hotels/" + reservation.getHotelID() + "/reservations", entity,
Reservation.class);
```

Note that POST requests have both a body and a header!

Let’s implement the POST

Implementing an PUT

Suppose the API’s documentation states that there is a PUT endpoint:
(PUT) http://localhost:3000/reservations/{id}

Using a REST template we can implement the following:

```
String API_BASE_URL = "http://localhost:3000/"
RestTemplate restTemplate = new RestTemplate();
HttpHeaders headers = new HttpHeaders();
headers.setContentType(MediaType.APPLICATION_JSON);

// Where reservation is an object of type Reservation.
HttpEntity<Reservation> entity = new HttpEntity<>(reservation, headers);
restTemplate.put(BASE_URL + "reservations/" + reservation.getId(), entity);
```

Implementing an PUT

Sometimes requests require that a body and a header be sent along as well. The HttpEntity object helps us captures these pieces of information:

```
HttpHeaders headers = new HttpHeaders();
headers.setContentType(MediaType.APPLICATION_JSON);

// Where reservation is an object of type Reservation.
HttpEntity<Reservation> entity = new HttpEntity<>(reservation, headers);
restTemplate.put(BASE_URL + "reservations/" + reservation.getId(), entity);
```

- Here we have a header consisting of an instance of the HttpHeaders class.
- We also have a body, which will just be an instance of a Reservation class.

Implementing a DELETE

Assuming that the API’s documentation states that there is a DELETE endpoint:
(DELETE) http://localhost:3000/reservations/{id}

… using a REST template we can implement the following:

```
String API_BASE_URL = "http://localhost:3000/"
RestTemplate restTemplate = new RestTemplate();

// Where id is an int:
restTemplate.delete(BASE_URL + "reservations/" + id);
```

Let’s Create the PUTs & DELETEs requests!

Exceptions and Error Handling

There are 2 exceptions to be aware of when dealing with APIs:

- **RestClientResponseException** - for when a status code other than a 2XX is returned.

- **ResourceAccessException** - for when there was a network issue that prevented a successful call.

Let’s catch those exceptions