Software Testing – Session 8

Agenda

Backend Testing

SoapUI

Backend testing

What is back-end?

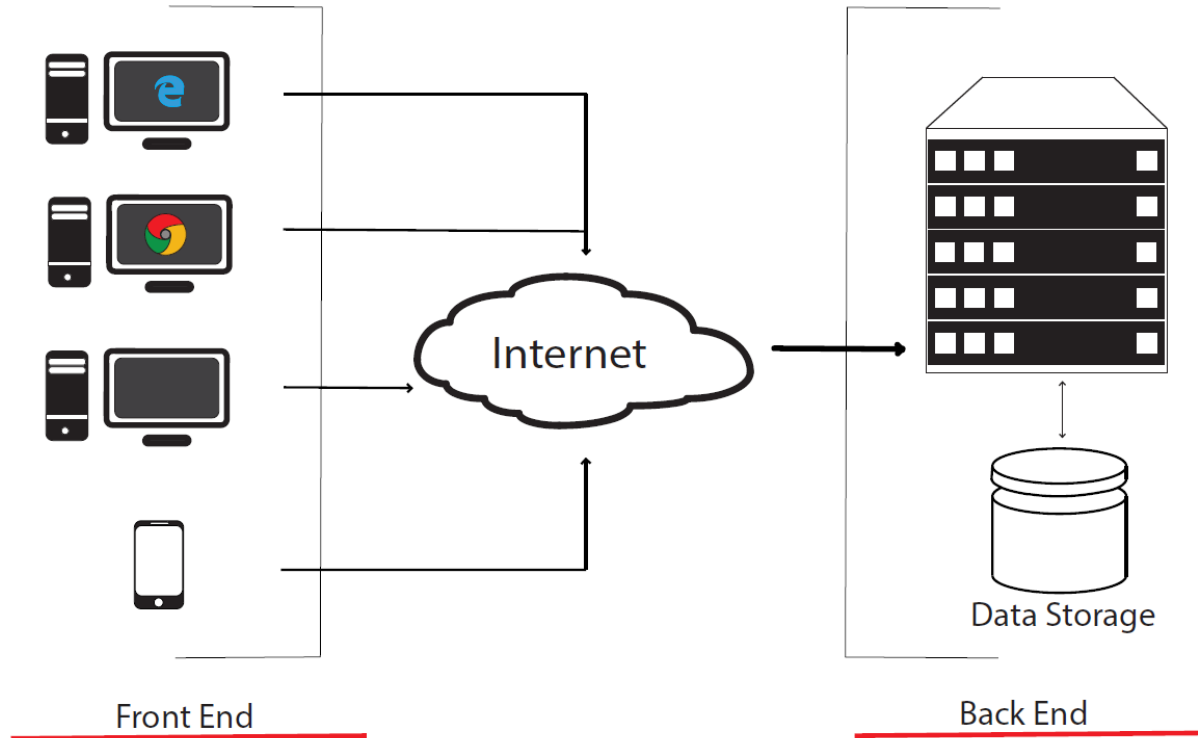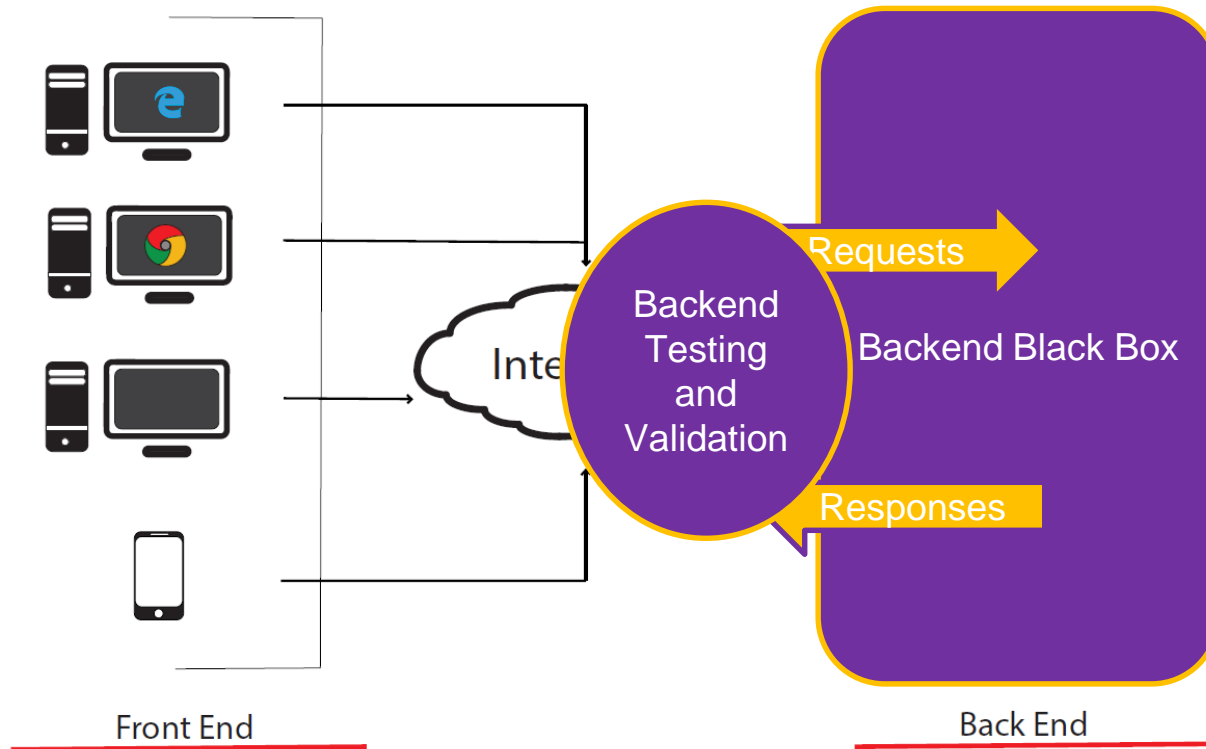Front End   Internet   Back End — Data Storage

Where and how do we test?

# API – Application Programming Interface

What?
Is a set of functions and procedures for building software and applications. Through APIs the features or data of an operating system, application, or other service are accessed and used.

Why?
- Efficiency
- Time-To-Market
- Integration
- Frontend design variation

Examples?
- **Google Maps API**
- YouTube APIs
- Flickr API
- Twitter APIs
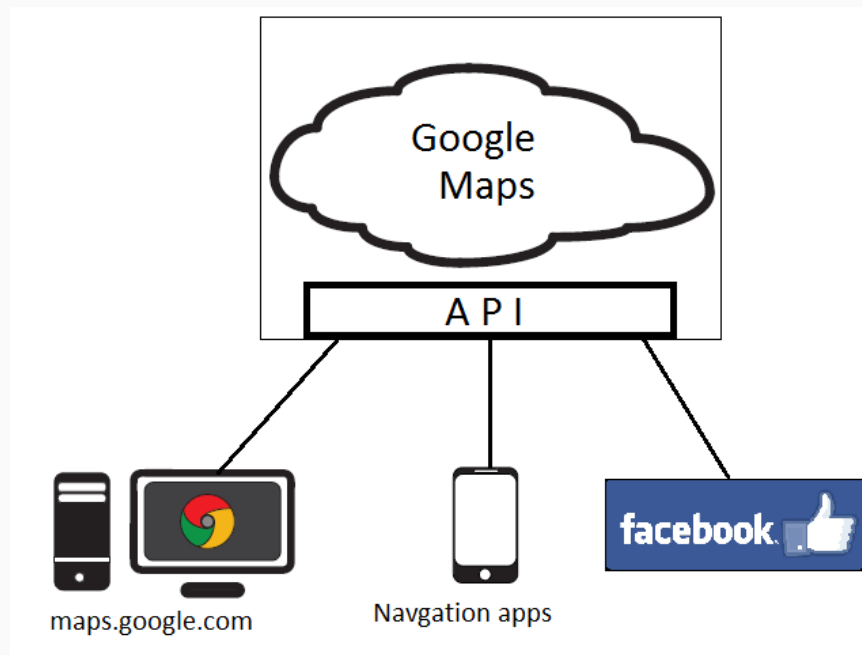
SOAP vs REST

SOAP	REST
Operations (not data) E.g. switchCategory(User, OldCategory, NewCategory)	Resources (data) E.g. getUser(User)
Single url for operation	Different URL for each resource
One data format (XML only)	Different data format (XML,JSON, other)
Web **S**ervices **D**escription **L**anguage	**W**eb **A**pplication **D**escription **L**anguage
Soap reads cannot be cached More appropriate for enterprise apps - Atomic operations More secure	REST reads can be cached HTTP support - CRUD – Create, Read, Update, Delete Better performance and scalability

Data Structures and formats

Address Book
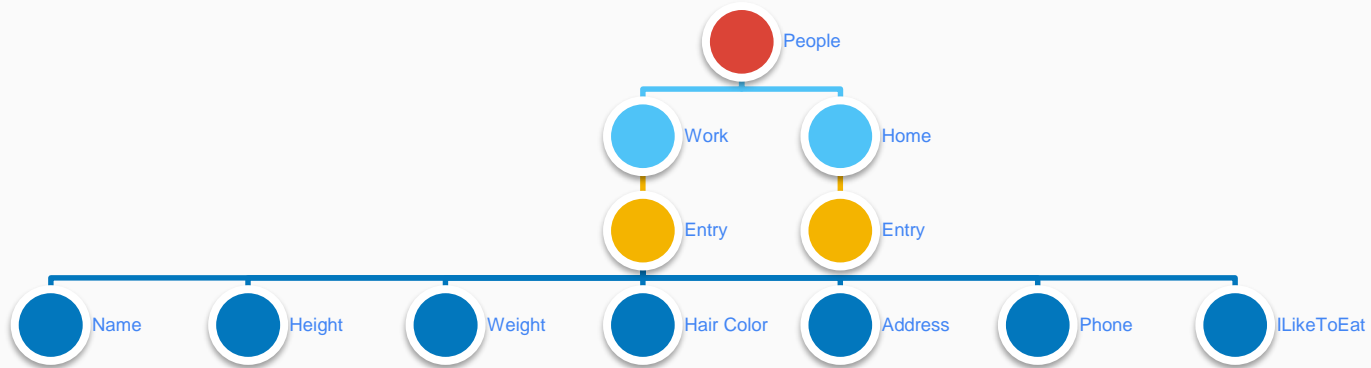
Data formats

XML - Extensible Markup Language

```xml
<people>
    <work>
        <entry>
            <name>george</name>
            <height>1.75</height>
            <weight>84</weight>
            <hairColor>grey</hairColor>
            <address>Sunset Blvd</address>
            <phone>0723 456 298</phone>
            <ILikeToEat>pizza</ILikeToEat>
        </entry>
        <entry>
            <name>marry</name>
            <height>1.65</height>
            <weight>64</weight>
            <hairColor>dark</hairColor>
            <address>Sunrise Blvd</address>
            <phone>0726 557 208</phone>
            <ILikeToEat>salad</ILikeToEat>
        </entry>
    </work>
    <home>
    </home>
</people>
```
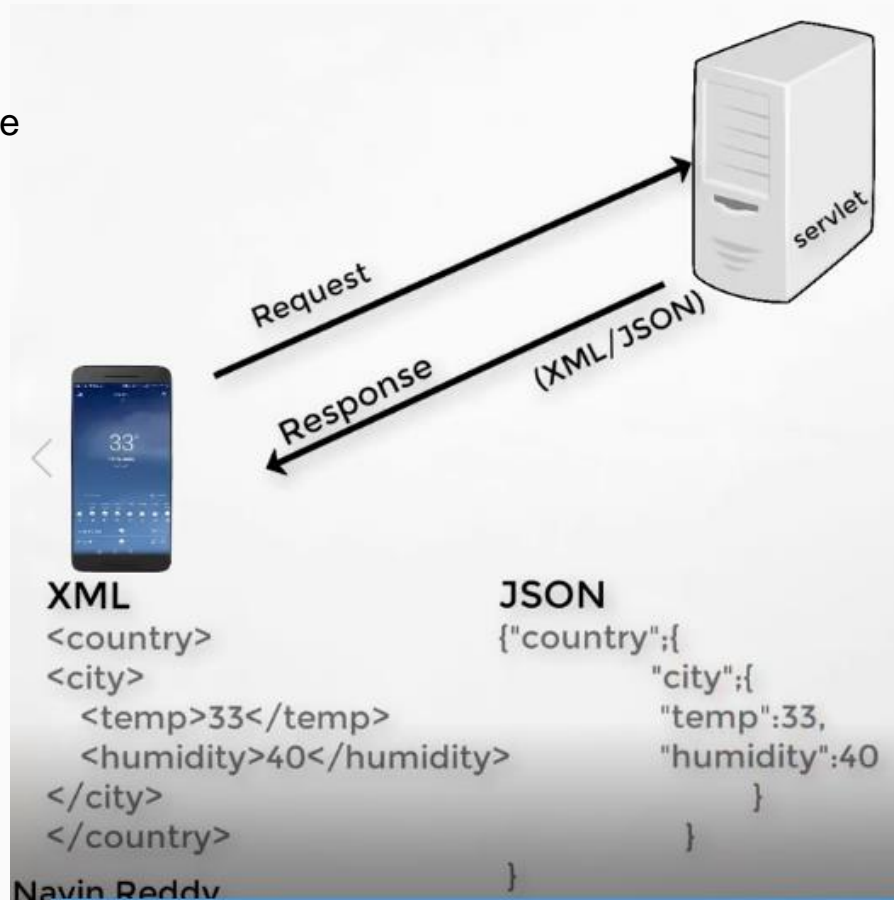
JSON - Java**S**cript **O**bject **N**otation

```json
{
    "people": {
        "work": [{
                name: "george",
                "height": 1.85,
                "weight": 84,
                "hairColor": "grey",
                "address": "Sunset Blvd",
                "phone": "0723 456 298",
                "ILikeToEat": "pizza"
            }, {
                "name": "marry",
                "height": 1.75,
                "weight": 64,
                "hairColor": "dark",
                "address": "Sunrise Blvd",
                "phone": "0725 693 286",
                "ILikeToEat": "salad"
            }
        ],
        "home": []
    }
}
```

REST

Wheather forecast service

Type of Requets

POST	Create	201 (Created)	404 (Not Found), 409 (Conflict)
GET	Read	200 (OK)	200 (OK), 404 (Not Found)
PUT	Update	200 (OK) or 204 (No Content)	404 (Not Found)
DELETE	Delete	200 (OK)	404 (Not Found

- 1xx Informational
- 2xx Success
- 3xx Redirection

- 4xx Client Error
- 5xx Server Error

Detailed list of status codes: https://httpstatuses.com

Class Exercise

- Install **Chrome Advanced REST client** extension plugin

- Use this sample request:
http://maps.googleapis.com/maps/api/distancematrix/xml?origins=Timisoara&destinations=Arad

- Check the responses and edit parameters of the request
- Check difference between json and xml value parameters
- Check Status of the request

Other REST services:
http://www.groupkt.com/post/c9b0ccb9/country-and-other-related-rest-webservices.htm

Class Exercise

As a team discuss:
- How would you test the distance matrix API?
- What values would you use?

Class discussion:
- Lessons learnt

SOAP UI Tool

Soap UI

What?
- Tool for testing REST and Soap web services – Open Source or Pro version with extra functionalities
- Also used for performance testing
- Similar tools: jMeter

Școala informală de IT

REST Testing

First use for REST:
- File → New REST Project
- Use the same url as for the previous exercise
- Check the REST request and response

Class Exercise

Please make sure the documentation for API / web service is available (Documentation for Google API → Read Documentation → Developers's guide https://developers.google.com/maps/web-services/)

Pair test case design:
- For Google API Distance Matrix REST service

Load Google Maps API:
- File → Import REST Project
- Select GoogleMaps.xml

Create tests in Soap UI

- Test Suite

- Test Case

- Test Step

- Assertions

- Run Test Step / Test Case / Test Suite

- Test Logs

Class Exercise

Create test cases for Google API Distance Matrix REST service in SoapUI

Run test cases

SOAP Example

First use for SOAP:
- Download from the platform calculator.wsdl
- File → New SOAP Project and Browse for the downloaded .wsdl file
- Check the SOAP request and response

Take Aways

Homework

1. Write test cases in SOAP UI for Calculator SOAP service OR Google Distance Matrix API.
2. Use assertions to validate the response.

Feedback 10'