API testing with Postman

(part 1)

API - Application Programming Interface

- Documentation describing API:
  - List of functions (endpoints)
  - Calls (requests)
  - Returns (responses)
- Implementations:
  - Library or framework that can be imported to develop an application
  - OS interfaces between an app and OS (MacOS API, Windows API)
  - Remote APIs on remote servers

REST API - Representational State Transfer API

1. Integration

APIs are used to integrate new applications with existing software systems. This increases development speed because each functionality doesn’t have to be written from scratch. You can use APIs to leverage existing code.

2. Innovation

Entire industries can change with the arrival of a new app. Businesses need to respond quickly and support the rapid deployment of innovative services. They can do this by making changes at the API level without having to re-write the whole code.

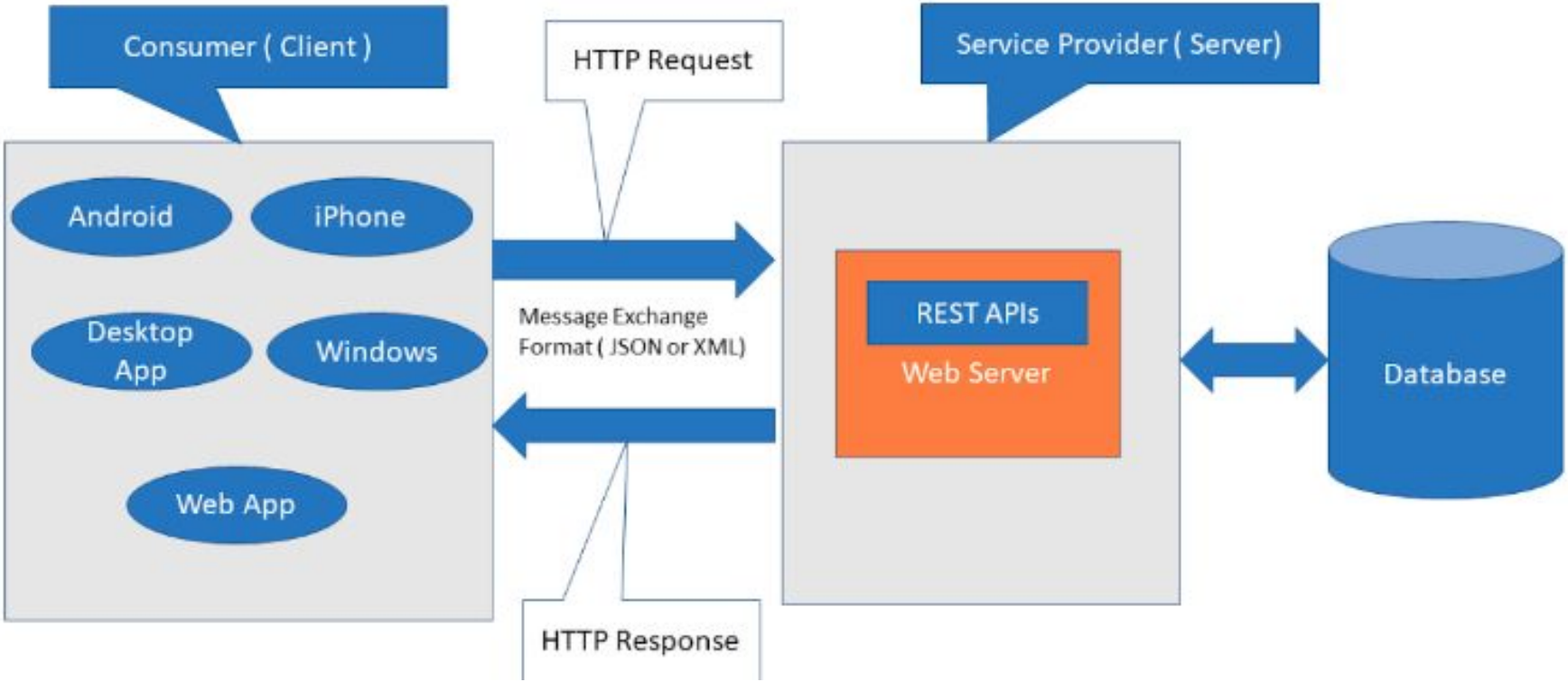
3. Expansion

APIs present a unique opportunity for businesses to meet their clients’ needs across different platforms. For example, maps API allows map information integration via websites, Android,iOS, etc. Any business can give similar access to their internal databases by using free or paid APIs.

4. Ease of maintenance

The API acts as a gateway between two systems. Each system is obliged to make internal changes so that the API is not impacted. This way, any future code changes by one party do not impact the other party.

API architecture



REST API principles

- **MESSAGES** use HTTP methods explicitly (GET, POST, PUT and DELETE)
- **RESOURCES** expose easily understood directory structure URLs
- **REPRESENTATIONS** transfer JSON and XML to represent data
- **STATELESSNESS** interactions store no client context on the server between requests

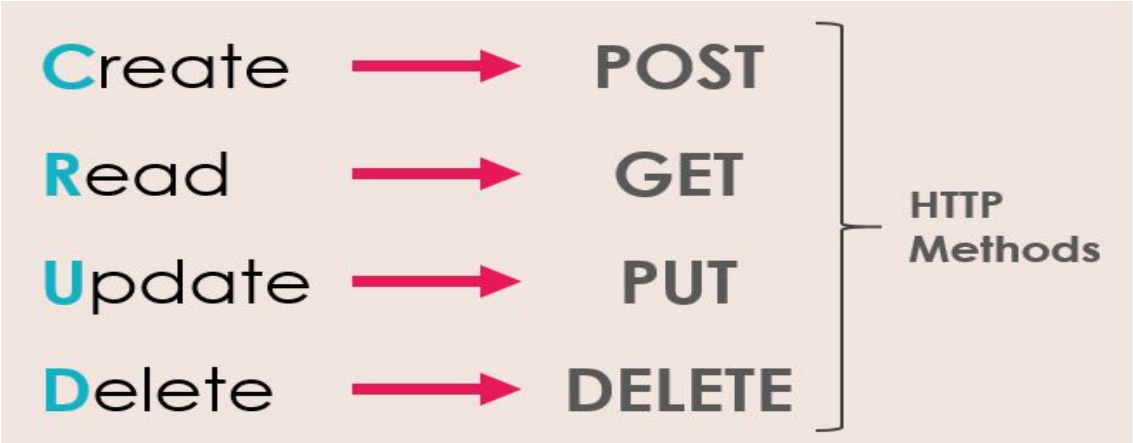
REST API concept

Request:

- **Endpoint**, which is the URL with the structure
- **Method** (GET, POST, PUT, PATCH, DELETE)
- **Headers**, serving various functions, including authentication and providing information about the content of the body
- Data **(or body)**, that's what is sent to the server with POST, PUT, PATCH, or DELETE requests.

HTTP Methods:

- **POST** request to create records
- **GET** request to read or get a resource (a document or image, a collection of other resources) from the server
- **PUT** and **PATCH** requests to update records
- **DELETE** request to delete a resource from a server



Response:

1. Status code
2. Response body
3. Headers

List of Status Codes

What is API testing?

- Making multiple requests to API endpoints for performance testing.
- Writing unit tests for checking business logic and functional correctness.
- Security testing by simulating system attacks.

Starting with Postman

1. Install Postman

- Go to https://www.getpostman.com/apps
- Click on Download for Mac / Windows /Linux depending on your platform

macOS installation

- After you downloaded the app, you can drag the file to the Applications folder. Double click on Postman to open the application

Windows installation

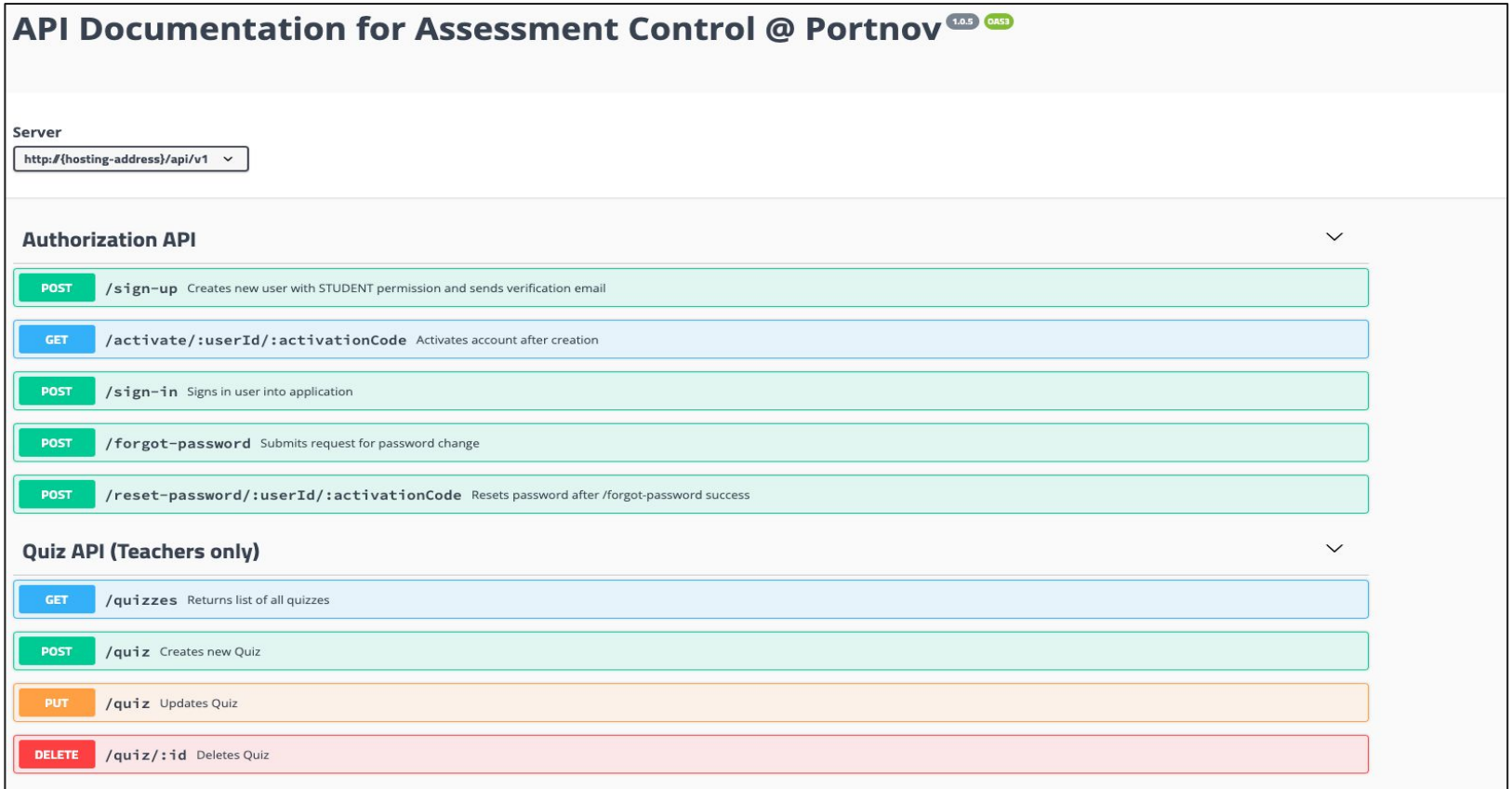
- Download the setup file
- Run the installer

Testing with Postman

- Create new workspace
  - Provide the name
  - Visibility - Personal
- Create new collection
  - Name - API calls
- Read API documentation in Swagger
- Create new API request

Swagger - API documentation

http://ask-int.portnov.com/api-doc/#/



Useful links:

JSON Objects:

https://www.w3schools.com/js/js_json_objects.asp

JSON Arrays:

https://www.w3schools.com/js/js_json_arrays.asp