# Assignment Scalable Web

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## ASSUMPTIONS

Next, it is documented and explained how the system should work according to the guidelines initially provided.

To start it is clarified that there will be an Object that we will call **Resource**, a resource will contain 3 fields:

- **ID**: Unique identifier.
- **left_data**: Json encoded in base64 with any type information.
- **right_data**: Json encoded in base64 with any type information.

The objective of the system is to compare if the left and right Jsons are the same in their content, if they are not the same, information will be returned depending on the case.

Each endpoint of the technical solution and the possible answers are explained in more detail below.

When starting the application, a test data is loaded automatically to be able to execute certain test cases, but new data can be created if desired.
This information is stored in a Java **H2 memory DB**, in order not to have to install and create a local DB to run the application.
It is clarified that for a technical solution it was implemented based on a **Hexagonal Architecture and SOLID principles**, this facilitates the creation of microservices and also has a **low coupling** to the infrastructure, which makes it easy to change the implementation of the desired DB engine, as long as the contracts defined in the Interfaces are respected.

# The Assignment

- Provide 2 http endpoints that accepts JSON base64 encoded binary data on both endpoints:

  ○ **POST <host>/v1/diff/<ID>/left** -> endpoint that updates the left json of a resource. If the resource with the ID sent does not exist, the resource will be created and also the json on the left will be updated.

| Code | Details |
|------|---------|
| 201 | **Response body** |

```
Left Data created successfully
```

  ○ **POST <host>/v1/diff/<ID>/right** -> endpoint that updates the json on the right of a resource. If the resource with the ID sent does not exist, the resource will be created and also the json on the right will be updated.

| Code | Details |
|------|---------|
| 201 | **Response body** |

```
Right Data created successfully
```

**Request Body Example (both Endpoints)**: Base64 encoded Json.

**Request body** required                                    application/json ⌄

**Example Value** | Schema

```
{
  "value": "ewogICAgImtleSI6ICJ2YWx1ZSIKfQ=="
}
```

NOTA: For these 2 endpoints the following scenarios are considered:

- If the ID of the resource sent does not exist in DB, a new resource will be created and the value sent will be assigned to the side the specified side.
  Response: HTTP 201
  ***Example images of the response on each endpoint previously mentioned***

- If the ID of the resource sent Exists previously, but the specified side does not contain a Json, the side will be updated with the base64 Json sent.
  Response: HTTP 201
  ***Example images of the response on each endpoint previously mentioned***

- If the encoded Json sent does not contain a valid json, the system generates an error indicating this message.

| Code | Details |
|------|---------|
| 400 *Undocumented* | Error:<br><br>**Response body**<br><br>`{`<br>`  "code": "WAES-006",`<br>`  "message": "Json format invalid"`<br>`}` Download |

- If the ID of the resource sent previously exists, and also the specified side already contains a value in DB, the system will respond with an exception indicating that the side of the resource already exists.
  Response: HTTP 400 -> WAES-005 -> Resource already exists

| Code | Details |
|------|---------|
| 400 *Undocumented* | Error:<br><br>**Response body**<br><br>`{`<br>`  "code": "WAES-005",`<br>`  "message": "Resource already exists"`<br>`}` Download |

- The provided data needs to be diff-ed and the results shall be available on a third endpoint.

  - **GET <host>/v1/diff/<ID>** -> This endpoint is the one in charge of comparing the content of the Jsons provided by the first 2 endpoints mentioned. For the comparison, certain basic validations are carried out in order to guarantee that the comparison is possible. The possible cases and possible answers for each of them are listed below:

# Successful Scenario

**HTTP Code Response**: HTTP 200
**Body**: Json in base64.
**Description**: The submitted resource contains the left and right jsons exactly the same.

| Code | Details |
|------|---------|
| 200 | **Response body** |

```
{
  "id": 1,
  "description": "WAES demo",
  "author": "Luis Eduardo",
  "date": "2020-03-03",
  "goal": "Work at WAES and live in Netherlands"
}
```

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# Alternative Unsuccessful Scenarios

**HTTP Code Response**: HTTP 400
**Error**: WAES-002 -> Resource not found
**Description**: The ID of the resource sent does not exist.

| Code | Details |
|------|---------|
| 400 | Error: |

**Response body**

```
{
  "code": "WAES-002",
  "message": "Resource not found"
}
```

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**HTTP Code Response**: HTTP 400

**Error**: WAES-003 -> Resource has no left data

**Description**: The ID of the resource sent exists but doesn't have Json left for
comparison.

| Code | Details |
|------|---------|
| 400 | Error:<br><br>**Response body**<br><br>```<br>{<br>    "code": "WAES-003",<br>    "message": "Resource has no left data"<br>}<br>```  Download |

**HTTP Code Response**: HTTP 400

**Error**: WAES-004 -> Resource has no right data

**Description**: The ID of the resource sent exists but doesn't have Json on the right
for comparison.

| Code | Details |
|------|---------|
| 400 | Error:<br><br>**Response body**<br><br>```<br>{<br>    "code": "WAES-004",<br>    "message": "Resource has no right data"<br>}<br>```  Download |

**HTTP Code Response**: HTTP 400

**Error**: WAES-006 -> Json format invalid

**Description**: The ID of the resource sent exists but some of the Json does not have
a valid format.

| Code | Details |
|------|---------|
| 400 | Error:<br><br>**Response body**<br><br>```<br>{<br>    "code": "WAES-006",<br>    "message": "Json format invalid"<br>}<br>```  Download |

**HTTP Code Response**: HTTP 400

**Error**: WAES-007 -> Json objects have different sizes

**Description**: The ID of the submitted resource exists but the Jsons have different sizes. I want to clarify that the size is the number of fields or properties within the Main Json. Nested Jsons will not be taken into account.

| Code | Details |
|------|---------|
| 400 | Error: <br><br> Response body <br><br> ```{ "code": "WAES-007", "message": "Json objects have different sizes" }``` |

**HTTP Code Response**: HTTP 400

**Error**: WAES-008 -> Json objects are different

**Description**: The ID of the resource sent exists, The Jsons are the same the same size, but the content of the properties is different. For this last scenario, we also have the following considerations:

- For each property existing in both Json, it will be specified which is the value of each side.
- For each property that exists in only one of the Jsons, the property name and value will be specified for each side of the resource.

| Code | Details |
|------|---------|
| 400 | Error: <br><br> Response body |

```
{
    "code": "WAES-008",
    "message": "Json objects are different",
    "differences": {
        "onlyOnLeft": {
            "author": "Luis Eduardo",
            "code": "myCode"
        },
        "differing": {
            "date": {
                "left": "2020-03-03",
                "right": "2020-03-04"
            },
            "jsonNested": {
                "left": {
                    "prop1": "value1",
                    "prop2": "value2"
                },
                "right": {
                    "prop3": "value3",
                    "prop4": "value4"
                }
            }
        },
        "onlyOnRight": {
            "recruiter": "Pieter",
            "animal": "Dog"
        }
    }
```

# EXTRA ENDPOINT

Finally, this endpoint was created to consult all the existing resources in the DB, in order to know how much info you can have

- ○ **GET <host>/v1/diff** ->This endpoint does not receive parameters and returns the existing resources in DB
  **HTTP Code Response**: HTTP 200

| Code | Details |
|------|---------|
| 200 | Response body |

```
[
  {
    "id": "1",
    "leftData": "ewogICJpZCI6IDEsCiAgImRlc2NyaXB0aW9uIjogIldBRVMgZGVtbyIsCiAgImF1dGhvciI6ICJMdWlzIEVkdWFyZG8iLAogICJkYXRlIjogIjIwMjAtMDMtMDMiLAogICJnb2FsIjogIldvcmsgYXQgV0FFUyBhbmQgGl2ZSBpbiBOZXRoZXJsYW5kcyIKfQ==",
    "rightData": "ewogICJpZCI6IDEsCiAgImRlc2NyaXB0aW9uIjogIldBRVMgZGVtbyIsCiAgImF1dGhvciI6ICJMdWlzIEVkdWFyZG8iLAogICJkYXRlIjogIjIwMjAtMDMtMDMiLAogICJnb2FsIjogIldvcmsgYXQgV0FFUyBhbmQgGl2ZSBpbiBOZXRoZXJsYW5kcyIKfQ=="
  },
  {
    "id": "2",
    "leftData": "ewogICJpZCI6IDIsCiAgImRlc2NyaXB0aW9uIjogIldBRVMgZGVtbyIsCiAgImF1dGhvciI6ICJMdWlzIEVkdWFyZG8iLAogICJkYXRlIjogIjIwMjAtMDMtMDMiLAogICJnb2FsIjogIndvcmsgYXQgV0FFUyBhbmQgGl2ZSBpbiBOZXRoZXJsYW5kcyIKfQ=="
  },
  {
    "id": "3",
    "rightData": "ewogICJpZCI6IDMsCiAgImRlc2NyaXB0aW9uIjogIldBRVMgZGVtbyIsCiAgImF1dGhvciI6ICJMdWlzIEVkdWFyZG8iLAogICJkYXRlIjogIjIwMjAtMDMtMDMiLAogICJnb2FsIjogIndvcmsgYXQgV0FFUyBhbmQgGl2ZSBpbiBOZXRoZXJsYW5kcyIKfQ=="
  },
  {
    "id": "4"
  },
  {
    "id": "5",
    "leftData": "ewogICJpZCI6IDUsCiAgImRlc2NyaXB0aW9uIjogIldBRVMgZGVtbyIsCiAgImF1dGhvciI6ICJMdWlzIEVkdWFyZG8iLAogICJkYXRlIjogIjIwMjAtMDMtMDMiLAogICJnb2FsIjogIndvcmsgYXQgV0FFUyBhbmQgGl2ZSBpbiBOZXRoZXJsYW5kcyIsCiAgImV4dHJhIjogIlV4dHJhIERhdGEifQ==",
    "rightData": "ewogICJpZCI6IDUsCiAgImRlc2NyaXB0aW9uIjogIldBRVMgZGVtbyIsCiAgImF1dGhvciI6ICJMdWlzIEVkdWFyZG8iLAogICJkYXRlIjogIjIwMjAtMDMtMDMiLAogICJnb2FsIjogIndvcmsgYXQgV0FFUyBhbmQgGl2ZSBpbiBOZXRoZXJsYW5kcyIKfQ=="
  },
```

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