

# Payments API

## Design

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## Overview

Create a RESTFUL API that should be able to:

- Fetch a payment resource
- Create, update and delete a payment resource
- List a collection of payment resources
- Persist resource state to a database

## Solution

The API is made with Spring 5 and Spring Boot2, using Webflux reactive endpoints and a reactive MongoDB repository to persist the payment resources.

The key benefit of reactive and non-blocking is the ability to scale with a small, fixed number of threads and less memory.

## Testability

The solution was created taking in consideration TDD and BDD (gherkin-cucumber) and the tests can be executed with:

```
# starts automatically a MongoDB instance
./gradlew test
```

## Getting started

Start MongoDB

```
cd docker
docker-compose up
```

Run application

```
./gradlew bootRun
```

# Payments API

## Get payment resource

```
GET /v1/payments/{id}
```

## Get all payment resources

```
GET /v1/payments/
```

## Create a payment resource

```
POST /v1/payments/ -H 'Content-Type: application/json' -d '{paymentResource}'
```

## Update a payment resource

```
PUT /v1/payments/{id} -H 'Content-Type: application/json' -d '{paymentResource}'
```

## Delete a payment resource

```
DELETE /v1/payments/{id}
```

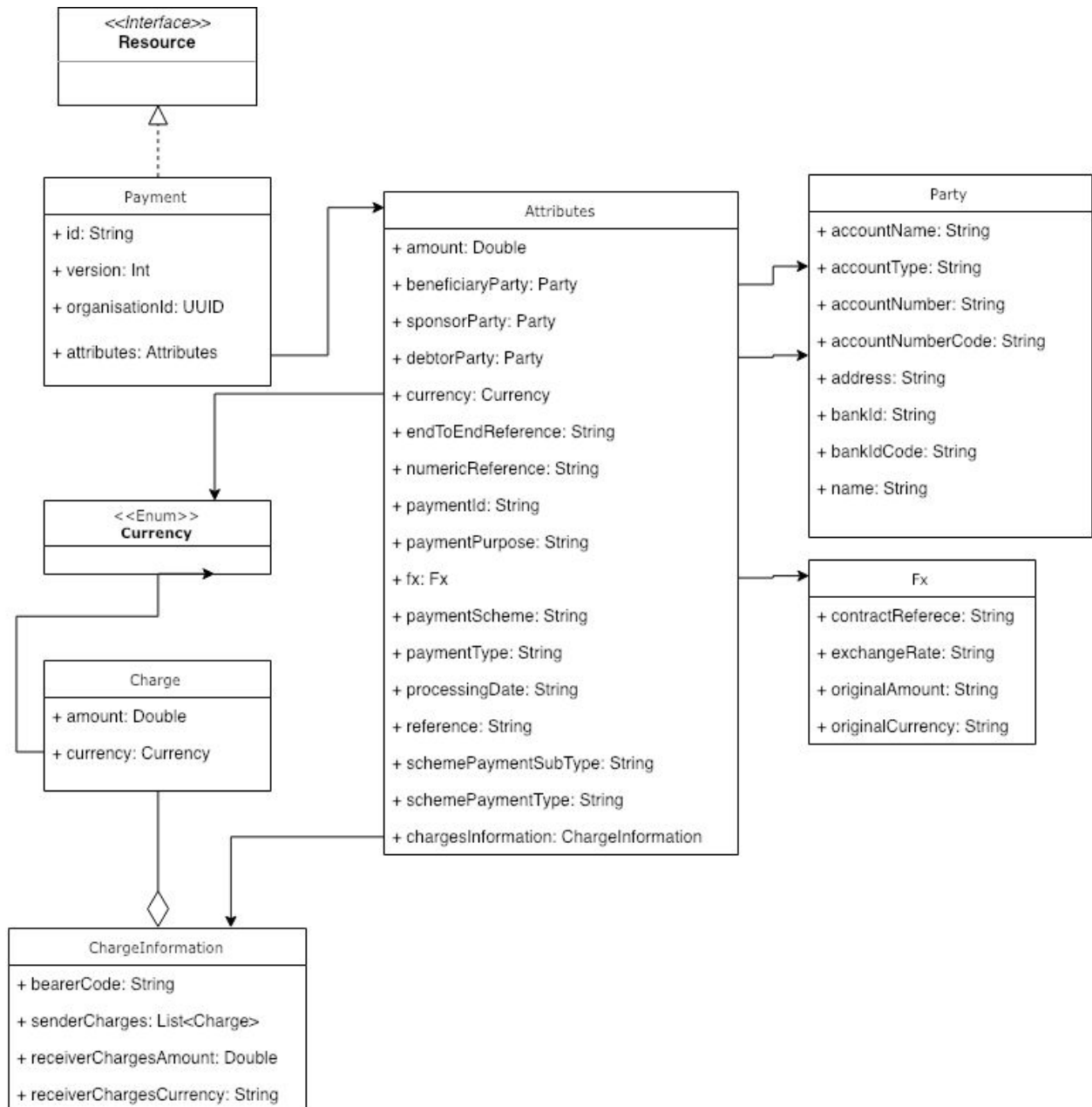
## Delete all payment resource

```
DELETE /v1/payments/ (use carefully)
```

# Models

## Activity diagram

## Class diagram



## Payment resource example

```
{
  "type": "Payment",
  "id": "4ee3a8d8-ca7b-4290-a52c-dd5b6165ec43",
  "version": 0,
  "organisation_id": "743d5b63-8e6f-432e-a8fa-c5d8d2ee5fcb",
  "attributes": {
    "amount": "100.21",
    "beneficiary_party": {
      "account_name": "W Owens",
      "account_number": "31926819",
      "account_number_code": "BBAN",
      "account_type": 0,
      "address": "1 The Beneficiary Localtown SE2",
      "bank_id": "403000",
      "bank_id_code": "GBDSC",
      "name": "Wilfred Jeremiah Owens"
    },
    "charges_information": {
      "bearer_code": "SHAR",
      "sender_charges": [
        {
          "amount": "5.00",
          "currency": "GBP"
        },
        {
          "amount": "10.00",
          "currency": "USD"
        }
      ],
      "receiver_charges_amount": "1.00",
      "receiver_charges_currency": "USD"
    },
    "currency": "GBP",
    "debtor_party": {
      "account_name": "EJ Brown Black",
      "account_number": "GB29XABC10161234567801",
      "account_number_code": "IBAN",
      "address": "10 Debtor Crescent Sourcetown NE1",
      "bank_id": "203301",
      "bank_id_code": "GBDSC",
      "name": "Emelia Jane Brown"
    },
    "end_to_end_reference": "Wil piano Jan",
    "fx": {
      "contract_reference": "FX123",
      "exchange_rate": "2.00000",
      "original_amount": "200.42",
```

```
        "original_currency": "USD"
    },
    "numeric_reference": "1002001",
    "payment_id": "123456789012345678",
    "payment_purpose": "Paying for goods/services",
    "payment_scheme": "FPS",
    "payment_type": "Credit",
    "processing_date": "2017-01-18",
    "reference": "Payment for Em's piano lessons",
    "scheme_payment_sub_type": "InternetBanking",
    "scheme_payment_type": "ImmediatePayment",
    "sponsor_party": {
        "account_number": "56781234",
        "bank_id": "123123",
        "bank_id_code": "GBDSC"
    }
}
}
```