

1. Tech challenge

- RM: 350505
- Grupo 53

1.1. Repository:

1.1.1. Documentation

- <https://github.com/lfnieves/tech-challenge-doc>

1.1.2. Projects

- <https://github.com/lfnieves/tech-challenge-order>
 - <https://github.com/lfnieves/tech-challenge-payment>
 - <https://github.com/lfnieves/tech-challenge-status>
-

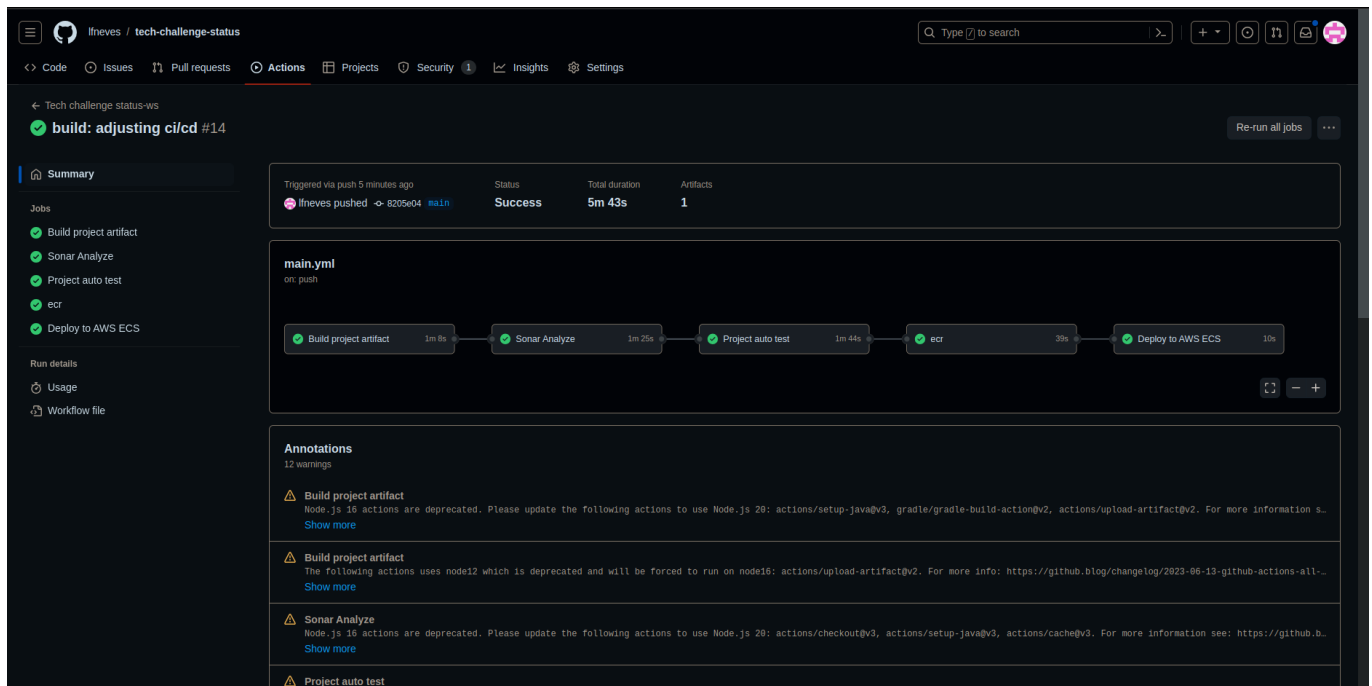
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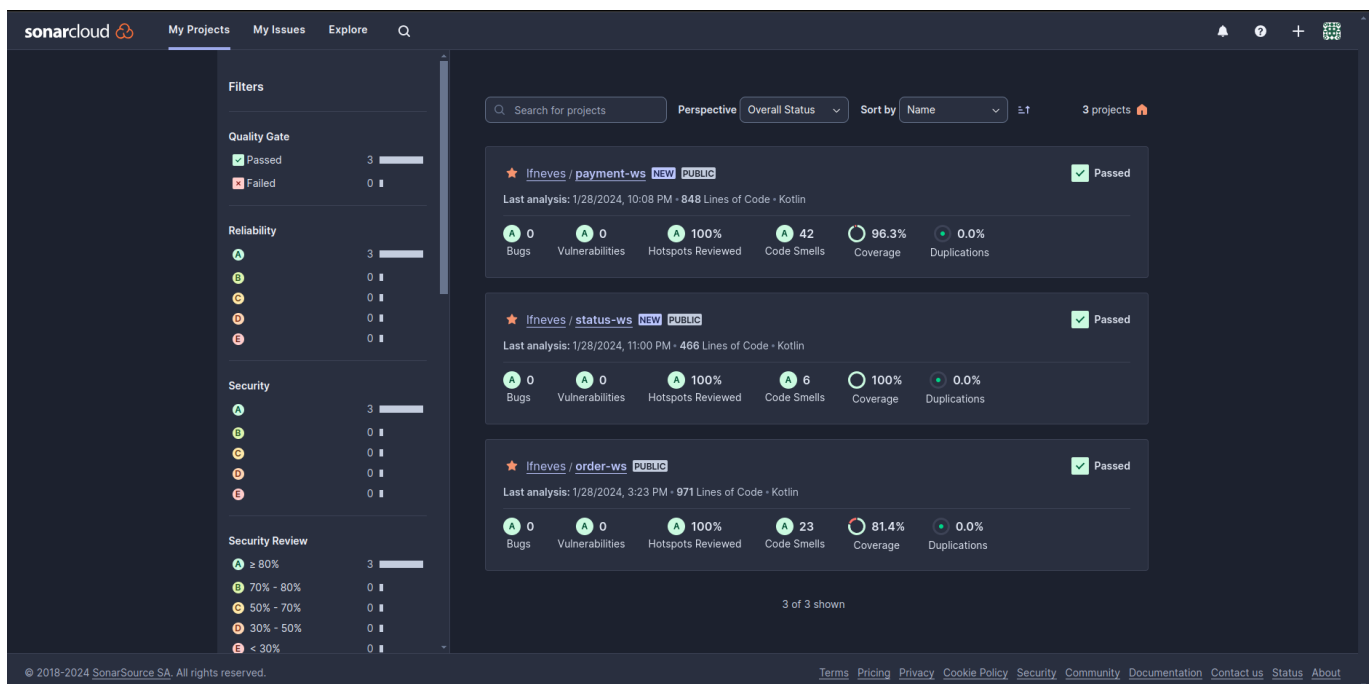
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2. Project Architecture

- Three microservices were developed: order-ws, payment-ws, and status-ws, which communicate via AWS SNS and SQS.
- When an order is created, it is saved in a PostgreSQL database and a message is sent to the ORDER_TOPIC, which then delivers the message to both the STATUS_QUEUE and PAYMENT_QUEUE.
- Upon receipt, these queues store the messages in MongoDB. Whenever a payment is made or there is a change in the order status, messages are sent to the queues to process the updated status.
- In this phase of the project, transitioned to AWS ECS Fargate as a strategic move for economic efficiency and knowledge enhancement.



2.2. Projects Coverage



2.3. Jacoco report

- NOTE: The variance in test coverage between Jacoco and Sonar can be attributed to variations in behavior exhibited by certain filters and integration tests, leading to different or unexpected outcomes.
- The test files are located in the respective folders

2.4. order-ws

- Report file download folder and open in browser: [Link order-ws report](#)

order

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
com.mvp.order.domain.service.order	<div><div></div></div>	87%	<div><div></div></div>	62%	7	20	12	85	1	12	0	1
com.mvp.order.domain.service.product	<div><div></div></div>	82%	<div><div></div></div>	50%	8	15	3	34	2	9	0	1
com.mvp.order	<div><div></div></div>	18%	<div><div></div></div>	n/a	1	2	2	4	1	2	1	2
com.mvp.order.application.v1	<div><div></div></div>	89%	<div><div></div></div>	n/a	1	12	1	16	1	12	0	2
com.mvp.order.domain.service.message	<div><div></div></div>	100%	<div><div></div></div>	n/a	0	2	0	11	0	2	0	1
com.mvp.order.domain.service.user	<div><div></div></div>	100%	<div><div></div></div>	100%	0	3	0	8	0	2	0	1
Total	125 of 908	86%	12 of 30	60%	17	54	18	158	5	39	1	8

Created with JaCoCo 0.8.11.202310140853

2.5. payment-ws

- Report file download folder and open in browser: [Link payment-ws report](#)

payment-ws

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
com.mvp.payment.domain.service.payment	<div><div></div></div>	80%	<div><div></div></div>	56%	7	19	24	114	2	11	0	2
com.mvp.payment.application.v1	<div><div></div></div>	77%	<div><div></div></div>	n/a	1	5	1	8	1	5	0	1
com.mvp.payment	<div><div></div></div>	18%	<div><div></div></div>	n/a	1	2	2	4	1	2	1	2
com.mvp.payment.domain.service.listener	<div><div></div></div>	88%	<div><div></div></div>	50%	5	9	0	17	0	4	0	2
com.mvp.payment.domain.service.message	<div><div></div></div>	100%	<div><div></div></div>	n/a	0	2	0	11	0	2	0	1
Total	163 of 855	80%	12 of 26	53%	14	37	27	154	4	24	1	8

Created with JaCoCo 0.8.11.202310140853

2.6. status-ws

- Report file download folder and open in browser: [Link status-ws report](#)

status-ws

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
com.mvp.status	<div><div></div></div>	18%	<div><div></div></div>	n/a	1	2	2	4	1	2	1	2
com.mvp.status.domain.service.listener	<div><div></div></div>	90%	<div><div></div></div>	50%	2	7	0	15	0	5	0	3
com.mvp.status.domain.service.payment	<div><div></div></div>	100%	<div><div></div></div>	100%	0	5	0	17	0	4	0	1
com.mvp.status.domain.service.message	<div><div></div></div>	100%	<div><div></div></div>	n/a	0	2	0	11	0	2	0	1
com.mvp.status.application.v1	<div><div></div></div>	100%	<div><div></div></div>	n/a	0	2	0	4	0	2	0	1
Total	21 of 239	91%	2 of 6	66%	3	18	2	51	1	15	1	8

Created with JaCoCo 0.8.11.202310140853

3. Projects structures:

- order-ws folders

```

├─ src
│   └─ main
│       ├── kotlin
│       │   └─ com
│       │       └─ mvp
│       │           └─ order
│       │               ├── application
│       │               │   └─ v1
│       │               ├── domain
│       │               └─ configuration

```

```

├── model
│   ├── exception
│   ├── order
│   │   └── enums
│   ├── product
│   └── user
├── service
│   ├── message
│   ├── order
│   ├── product
│   └── user
├── infrastructure
│   ├── entity
│   ├── order
│   ├── product
│   └── user
├── repository
│   ├── order
│   ├── product
│   └── user
├── utils
└── constants
├── resources
├── database
├── test
│   ├── kotlin
│   │   ├── com
│   │   │   ├── mvp
│   │   │   │   ├── order
│   │   │   │   │   ├── application
│   │   │   │   │   ├── bdd
│   │   │   │   │   ├── integration
│   │   │   │   │   │   ├── order
│   │   │   │   │   │   │   ├── controller
│   │   │   │   │   │   │   └── service
│   │   │   │   │   └── user
│   │   │   │   ├── message
│   │   │   │   └── unit
│   │   │   │   │   ├── order
│   │   │   │   │   │   └── model
│   │   │   │   ├── product
│   │   │   │   └── user
│   │   └── helpers
│   ├── resources
│   │   ├── features
│   │   ├── schemas
│   │   └── sql

```

- payment-ws folders

```

└─ src
  └─ main
    └─ kotlin
      └─ com
        └─ mvp
          └─ payment
            └─ application
              └─ v1
                └─ domain
                  └─ configuration
                  └─ model
                    └─ exception
                    └─ payment
                      └─ enums
                      └─ listener
                      └─ store
                  └─ status
                  └─ service
                    └─ listener
                    └─ message
                    └─ payment
                  └─ infrastructure
                  └─ entity
                  └─ repository
            └─ utils
          └─ resources
        └─ test
          └─ kotlin
            └─ com
              └─ mvp
                └─ payment
                  └─ application
                    └─ bdd
                    └─ integration
                    └─ message
                    └─ model
                    └─ repository
                    └─ unit
                  └─ mongodb
                └─ resources
                  └─ features

```

- status-ws folders

```

└─ src
  └─ main
    └─ kotlin
      └─ com
        └─ mvp
          └─ status

```



```

├── application
│   ├── v1
│   ├── domain
│   ├── configuration
│   ├── model
│   │   ├── exception
│   │   ├── payment
│   │   │   ├── enums
│   │   │   └── listener
│   │   └── status
│   ├── service
│   ├── listener
│   ├── message
│   └── status
├── infrastructure
│   ├── entity
│   └── repository
├── utils
├── resources
├── test
│   ├── kotlin
│   │   ├── com
│   │   │   ├── mvp
│   │   │   │   ├── status
│   │   │   │   ├── application
│   │   │   │   ├── bdd
│   │   │   │   ├── integration
│   │   │   │   ├── message
│   │   │   │   ├── model
│   │   │   │   ├── unit
│   │   │   └── mongodb
│   ├── resources
│   └── features

```

3.1. Terraform AWS EKS Cluster Deployment

Repositorys:

- <https://github.com/lfneves/mvp> (old)
- <https://github.com/lfneves/infra-rds-terraform>
- <https://github.com/lfneves/infra-eks-terraform>
- <https://github.com/lfneves/infra-vpc-terraform>

3.1.1. AWS Infra Terraform EKS

This project uses Terraform to automate the deployment of an Amazon Elastic Kubernetes Service (EKS) cluster on AWS. Amazon EKS is a managed Kubernetes service that simplifies the deployment, scaling, and operation of containerized applications using Kubernetes.

```
infra-eks-terraform
├── LICENSE
├── README.md
└── infra-eks-terraform
    ├── eks-cluster.tf
    ├── outputs.tf
    ├── providers.tf
    ├── variables.tf
    ├── vpc.tf
    └── workstation-external-ip.tf
```

3.1.2. Prerequisites

Before getting started, make sure you have the following prerequisites installed on your machine:

- [Terraform](#) (you can use `terraform --version` to check)
- [AWS CLI](#) configured with appropriate credentials
- [Kubectl](#) for interacting with the cluster
- [kubectl-aws-iam-authenticator](#) for authenticating with the EKS cluster
- Internet access

3.1.3. Repository

1. Clone this repository:

```
git clone https://github.com/lfneves/infra-eks-terraform.git

cd infra-eks-terraform
```

2. Automatically create a `delivery-eks-terraform.tfstate` file and deploy bucket on `delivery-terraform-s3` and provide the necessary variables:

```
region          = "us-east-1"
cluster_name     = "delivery-cluster"
node_instance_type = "t2.small"
node_max_count   = 1
node_min_count    = 1
```

3.2. Terraform AWS RDS Database Deployment

3.2.1. AWS Infra Terraform RDS

<https://github.com/lfneves/infra-rds-terraform>

Terraform AWS RDS PostgreSQL Deployment This project uses Terraform to automate the deployment of a single Amazon RDS instance with PostgreSQL on AWS. Amazon RDS (Relational Database Service) is a managed relational database service that makes it easy to deploy, operate, and scale databases.

```
infra-rds-terraform
├── LICENSE
├── README.md
├── infra-rds-terraform
│   ├── main.tf
│   ├── outputs.tf
│   ├── table_schema.sql
│   ├── variables.tf
│   └── versions.tf
```

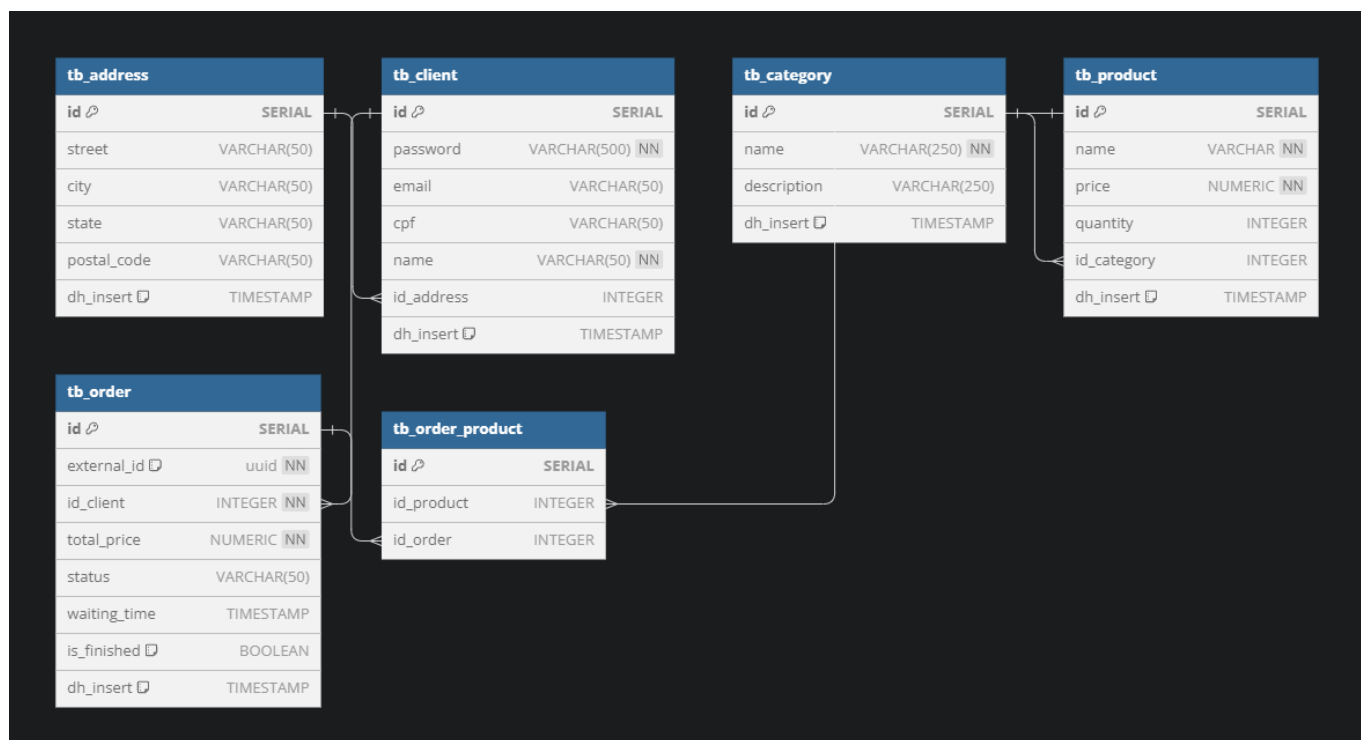
3.3. Justification for Choosing PostgreSQL for a Restaurant System

- **Robust Performance:** PostgreSQL is known for delivering solid performance, even in high transaction volume environments. This is crucial for a restaurant system where it's essential to process orders quickly and efficiently, ensuring a seamless customer experience.
- **Reliability and Stability:** PostgreSQL is renowned for its stability and reliability. Restaurant systems need a database that can handle continuous and critical workloads, minimizing the risk of unexpected failures that could disrupt business operations.
- **Flexible Data Model:** PostgreSQL supports a variety of data types and offers support for advanced features such as foreign keys, indexes, and stored procedures. This allows for flexible data modeling, covering everything from menus and orders to employee and customer information.
- **Advanced Query Capabilities:** PostgreSQL has a powerful SQL query engine that allows for efficient execution of complex queries. This is crucial for generating reports and data analysis that can help restaurant owners and managers make informed decisions.
- **Active Community and Support:** PostgreSQL has an active community of developers and users worldwide. This means you'll have access to ongoing technical support, updates, and security fixes. Additionally, many resources and plugins are available to customize the system to meet the restaurant's specific needs.
- **Cost-Effective:** PostgreSQL is an open-source database, which means it's a cost-effective option compared to many commercial database management systems. This can be especially advantageous for restaurants with budget constraints.
- **Integration and Scalability:** PostgreSQL is highly compatible with many programming languages and can be easily integrated with other parts of the restaurant system, such as online ordering apps, inventory management systems, and more. Furthermore, it is scalable, allowing the database to grow as the restaurant expands its operations.

In summary, PostgreSQL offers a solid combination of performance, reliability, flexibility, and cost-effectiveness, making it a sensible choice for a restaurant system that requires a robust and dependable

database to meet critical business needs.

3.4. Database Diagram



3.4.1. Application mvp

<https://github.com/lfneves/mvp>

3.4.1.1. This is a **Spring Boot WebFlux** application using **Kotlin**.

Spring WebFlux utilizes the **Reactor** library, which is an implementation of Reactive Streams specs for building non-blocking applications.

This project:

- Uses **Reactor Netty as the default implementation** for testing purposes. To change to Apache Tomcat as the default Web container for Spring WebFlux, follow these steps.
- Utilizes functional endpoints.
- Employs the **PostgreSQL** database.

3.5. Requirements

- Java 17 or later - [SDKMAN - Recommendation](#)
- Gradle 7.6.1 or later - [Gradle build tool Installation](#)
- Docker 24.0.2 or later - [How to install Docker](#)
- Docker Compose 1.29.2 or later - [Reference guide](#)
- Minikube v1.31.2 or later - [Get Started with Minikube](#)
- Helm v3.10.1 or later - [Installing Helm](#)
- The project runs on port 8099 (<http://localhost:8099>).

3.6. Getting Started

```
# Get the latest version

git clone https://github.com/lfneves/mvp.git
```

3.7. Project Structure

```
main
├── kotlin
│   └── com
│       └── mvp
│           └── delivery
│               ├── DeliveryApplication.kt
│               ├── application
│               ├── domain
│               ├── infrastruture
│               └── utils
├── resources
│   ├── application.yml
│   └── database
│       ├── 1_create_tables.sql
│       └── 2_inserts_category.sql
```

3.7.1. Prerequisites

Check versions:

- Java 17+

```
java --version
```

- Docker

```
docker -v
```

- Docker Compose

```
docker-compose --version
```

3.8. Installation

This is an example of how to use the software and how to install it.

3.8.1. Docker

In the main project directory:

Docker build and start applications:

```
$ docker-compose up --build
```

Or use:

```
$ docker-compose up -d --build
```

To recreate the application in case of problems, use the command:

```
$ docker-compose down
```

3.8.2. Kubernetes (k8s)

3.8.2.1. To initiate Kubernetes applications, execute the commands found within the "k8s" folder.

```
$ kubectl apply -f delivery/k8s/postgres/.
```

```
$ kubectl apply -f delivery/k8s/application/.
```

3.8.2.2. o access the application URL, use the following command:

```
$ minikube service delivery --url
```

3.8.2.3. Example output:

```
http://192.168.49.2:32000
```

Inside the "k8s" folder, you will discover ".yaml" files utilized to deploy databases and applications within Kubernetes.

```
/delivery/k8s
├── application
│   ├── 1-deployment.yaml
│   ├── 2-service-load-balancer.yaml
│   ├── 3-hpa.yaml
│   └── 4-ingress.yaml
└── postgres
    ├── 1-db-persistent-volume.yaml
    ├── 2-db-volume-claim.yaml
    ├── 3-db-configmap.yaml
    ├── 4-db-secret.yaml
    ├── 5-db-deployment.yaml
    └── 6-db-service.yaml
```

3.8.2.4. Metric Server

```
$ minikube addons enable metrics-server
```

To monitor the Horizontal Pod Autoscaler, employ the following command:

```
$ kubectl get hpa
```

NAME	REFERENCE	TARGETS	MINPODS	MAXPODS	REPLICAS	AGE
horizontalpodautoscaler.autoscaling/delivery	Deployment/delivery	55%/80%	2	4	2	51m

3.8.3. Kubernetes (k8s) - Install with Helm



[BETA] Because this hasn't been implemented following best practices.

```
$ helm install deliveryhelm deliveryhelm/
```


3.8.3.1. Helm uninstall


```
$ helm uninstall deliveryhelm deliveryhelm/
```


3.9. Deploy Github-actions

Triggered via push yesterday	Status	Total duration	Billable time	Artifacts
 Ifneves pushed  33ecbac develop	Success	1m 56s	3m	1

github-actions.yml
on: push

 build 57s

 ecr 26s

 eks 12s

3.9.1. Integration Mercado Pago

For the webhook checkout process, generate a QR code.

For testing full process with Mercado Pago webhook, use hookdeck.com with CLI to change the order status in the localhost application.

Appllication path **/api/v1/mp-order/qr-code-checkout** creates a checkout with Mercado Pago.

Example:

```
{
  "in_store_order_id": "75ca8fe9-3b1a-4053-8f3e-49a62e91f8e8",
  "qr_data": "00020101021243650016COM.MERCADOLIBRE02013063675ca8fe9-3b1a-4053-8f3e-49a62e91f8e85204000053039865802BR5908delivery6009SA0PAUL062070503***63042BFA"
}
```

3.9.2. This project uses [CommandLineRunner](#)

- CommandLineRunner is used to create a default user, products and categories on start application startup.
- Default login :

/api/auth/login-token

```
{
  "username": "999999999999",
  "password": "123"
}
```

3.10. The best way to use it as a suggestion is by using [Postman](#)

3.10.0.1. A collection is available preconfigured in the project root

MVP - Pos tech delivery application.postman_collection.json

- This project uses user and session control for access
- Endpoints without control access ***`"/api/auth/*", "/api/v1/users/signup"`***

3.10.0.2. Create new user example:

`http://localhost:8099/api/v1/users/signup`

Body:

```
{
  "name": "Admin",
  "email": "admin@email.com",
  "cpf": "99999999999",
  "password": "admin",
  "address": {
    "street": "rua 1",
    "city": "sp",
    "state": "sp",
    "postalCode": "1234"
  }
}
```

3.10.0.3. Login - Use the username (cpf) and password, then copy the token and use it in authenticated endpoints.

`http://localhost:8099/api/auth/login-token`

```
{
  "username": "99999999999",
  "password": "admin"
}
```

Response:

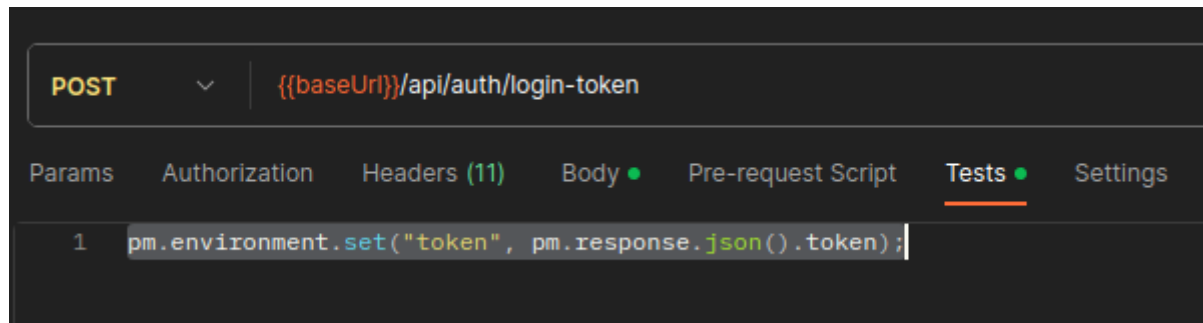
```
{
  "token":
  "eyJhbGciOiJIUzI1NiJ9.eyJpZENSaWVudCI6IjAiLCJ1c2VybmFtZSI6IjEyMzQ1Njc4OTIiwic3ViIjoiaMTIzNDU2Nzg5MTIiLCJpYXQiOiJlE2ODgwOTI1NTAsImF1ZCI6Im5vLWFwcGxpY2F0aW9uLW5hbWUiLCJleHAiOiJlE2ODgwOTQwMDB9.HagYPqukwOML30Yad8sRj lnE0Gsy-5tGUSC72S-xyfU"
}
```

3.10.1. 💡 To make it easier use environment variables

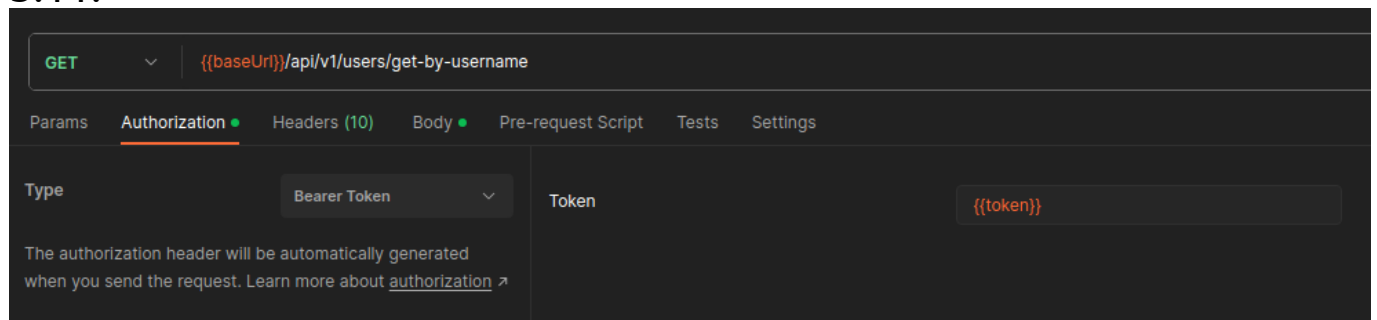
3.10.1.1. Place the command in the test tab on `/api/auth/login-token`

```
pm.environment.set("token", pm.response.json().token);
```

3.10.1.2. Example:



3.11.



3.11.1. This project also uses OpenAPI Specification ([Swagger](#)).

3.11.1.1. To access swagger use the URL:

`http://localhost:8099/swagger-ui.html` or `http://localhost:8099/webjars/swagger-ui/index.html`

localhost:8099/webjars/swagger-ui/index.html

Swagger.
Supported by SMARTBEAR

v3/api-docs

Explore

MVP - Pos tech delivery application

v3/api-docs

Servers

http://localhost:8099 - Generated server url

Authorize

Usuários

PUT	/api/v1/users/update-user/{id}	Atualiza Usuário por id	
POST	/api/v1/users/signup	Cadastro de Usuário	
GET	/api/v1/users/{id}	Busca Usuário por id	
DELETE	/api/v1/users/{id}	Deleta Usuário por id	
GET	/api/v1/users/get-by-username	Busca Usuário por username(CPF)	

Produtos Administrador

PUT	/api/v1/product/update/{id}	Atualiza produto pelo id	
POST	/api/v1/product/create	Cria produtos	
GET	/api/v1/product	Busca todos produtos	

Produtos Administrador			^
PUT	/api/v1/product/update/{id}	Atualiza produto pelo id	⌵ 🔒
POST	/api/v1/product/create	Cria produtos	⌵ 🔒
GET	/api/v1/product	Busca todos produtos	⌵ 🔒
Admin Pedidos			^
PUT	/api/v1/order/update-order-status/{id}	Atualiza o status do pedido	⌵ 🔒
PUT	/api/v1/order/finish-order	Finaliza o pedido atualizando os status	⌵ 🔒
GET	/api/v1/order	Busca todos pedidos	⌵ 🔒
Pedidos			^
PUT	/api/v1/order/fake-checkout	Efetua o pagamento atualizando os status	⌵ 🔒
PUT	/api/v1/order/add-new-product-to-order	Adiciona item(s) ao pedido	⌵ 🔒
POST	/api/v1/order/create-order	Inicia um pedido	⌵ 🔒
GET	/api/v1/order/{id}	Busca pedido id	⌵ 🔒
DELETE	/api/v1/order/{id}	Remove pedido pelo id	⌵ 🔒
GET	/api/v1/order/all-products-by-order-id/{id}	Busca todos os produtos id do pedido	⌵ 🔒
DELETE	/api/v1/order/remove-product-order	Remove produto de um pedido	⌵ 🔒
Autorização			^
POST	/api/auth/token-by-application	Autenticação clientID + secretID	⌵ 🔒
POST	/api/auth/login-token	Autenticação usuário + senha	⌵ 🔒
Administrador de Usuários			^
GET	/api/v1/users	Busca todos usuários	⌵ 🔒
Performace Usuários			^
GET	/api/v1/users/flux	Performace Usuários	⌵ 🔒
Produtos			^
GET	/api/v1/product/{id}	Busca produtos pelo id	⌵ 🔒
DELETE	/api/v1/product/{id}	Remove produto pelo id	⌵ 🔒
GET	/api/v1/product/get-by-category-name	Busca produtos por categoria	⌵ 🔒
Produtos Performace			^
GET	/api/v1/product/flux	Performace produtos	⌵ 🔒
Pedidos Performace			^
GET	/api/v1/order/flux	Performace Pedidos	⌵ 🔒

3.12. Roadmap

- ☒ Improve README.md
- ☒ Update order add paid status and adjusting service
- ☒ Implementation Helm
- Improvements

- ☒ Refactor admin services and repository to new package
 - ☒ Fix create order exceptions
 - ☒ Mercado Pago Qr code checkout
 - ☒ Refactor scripts database
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3.13. License

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