

# Remote Lab

## Projeto e Seminário

Licenciatura em Engenharia Informática  
e de Computadores

Grupo 37

Alunos: N°50539 António Alves  
N°50565 Ângelo Azevedo

Maio 2025

Orientado por: Prof. Pedro Miguens Matutino

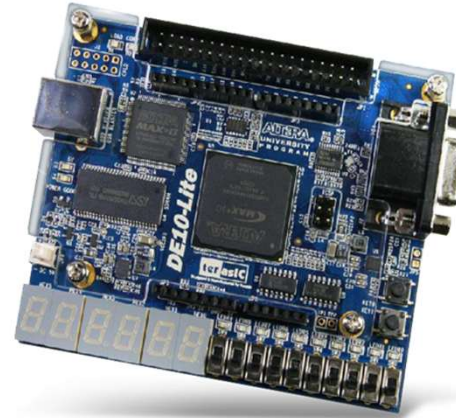
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# Introdução

## Motivação:

- Verificação em dispositivos reais
- Acesso 24/7H
- Trabalho remoto
- Custo elevado



FPGA Intel DE10-Lite

Customer	Price*
Academic	\$82 Order from <a href="#">Terasic</a>
Commercial	\$140 Order from <a href="#">Terasic</a>



Nvidia GPU



Arduino Uno

# Objetivos

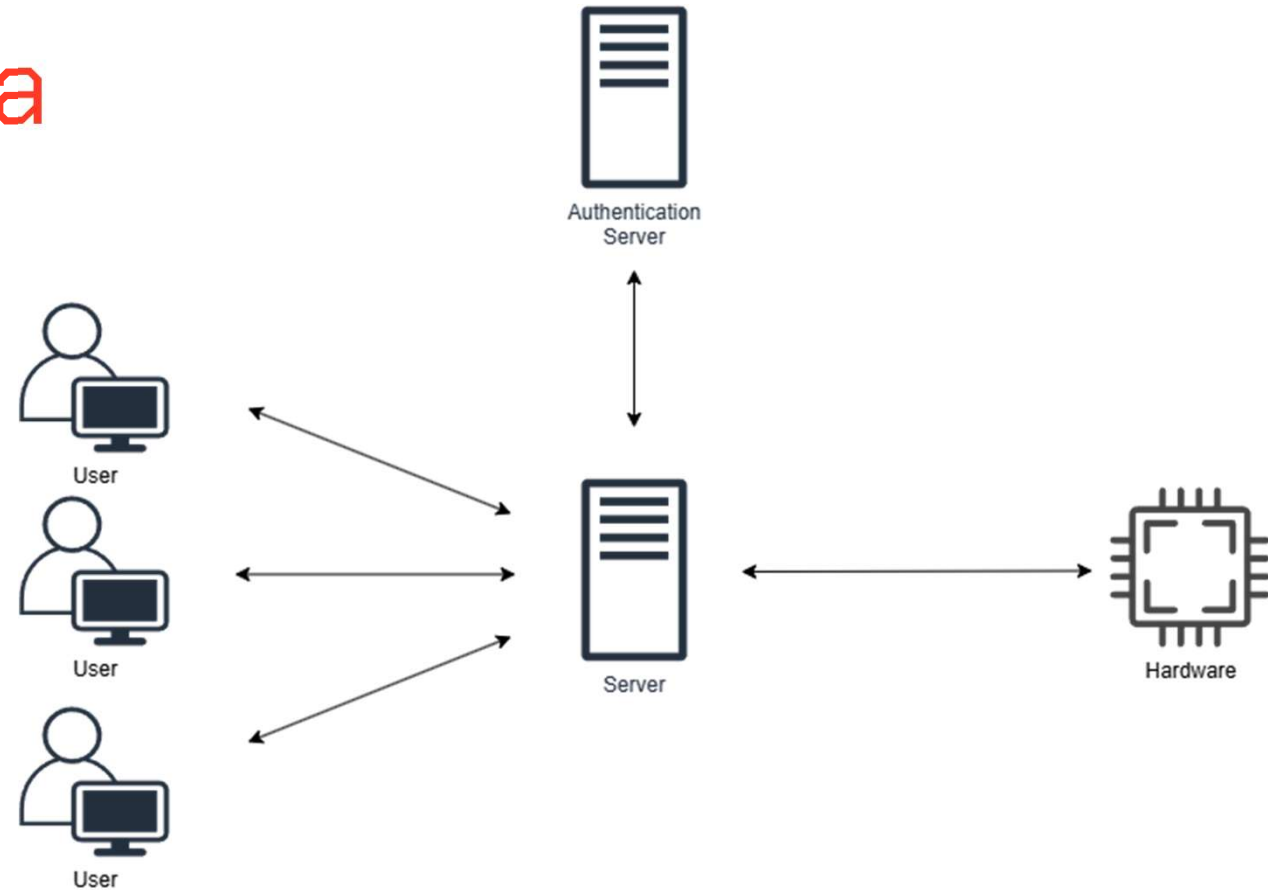
Plataforma virtual disponível 24/7H com:

- Autenticação
- Laboratórios remotos
- Perfis

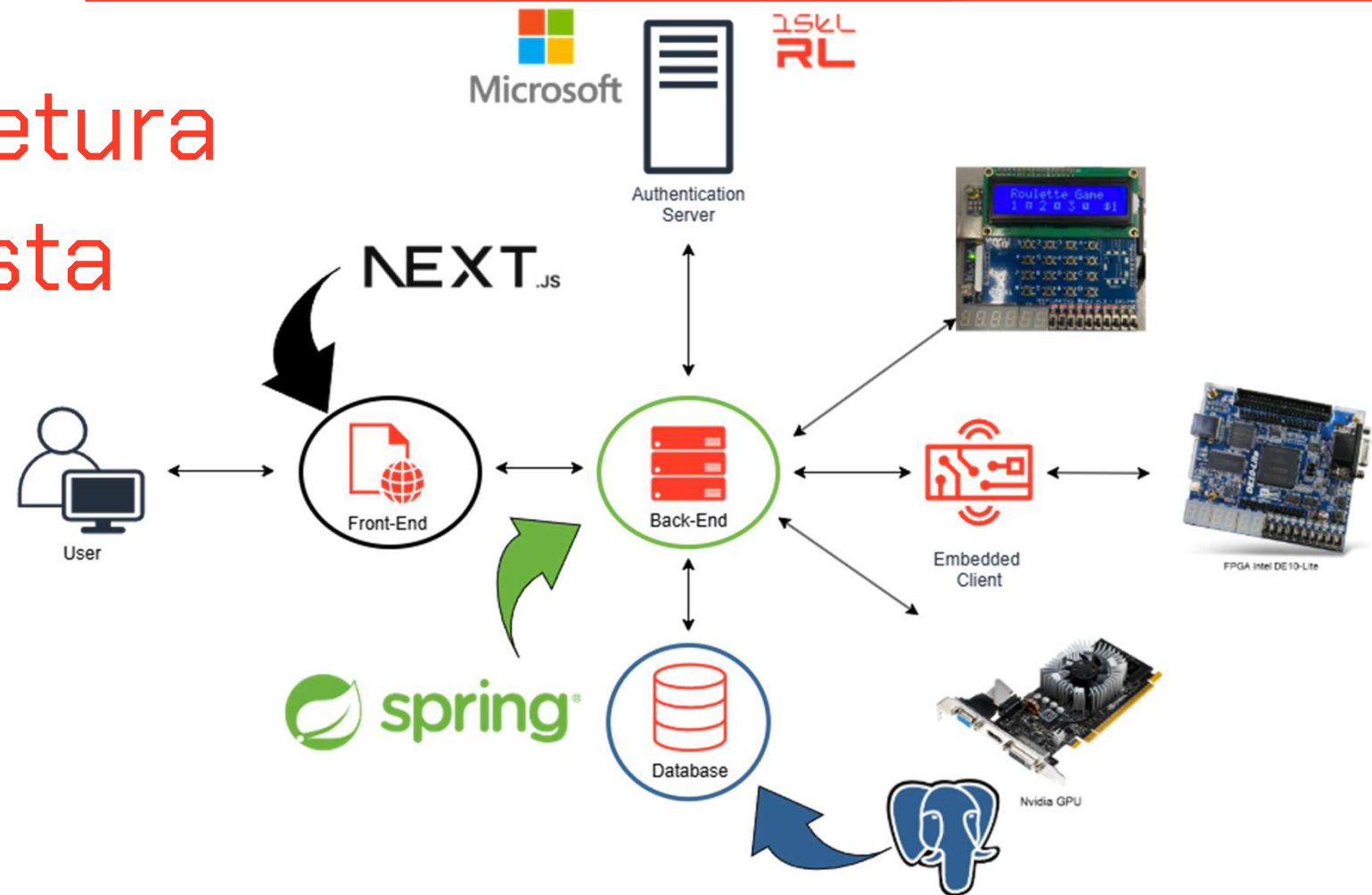
[Alunos, Professores e Administradores]



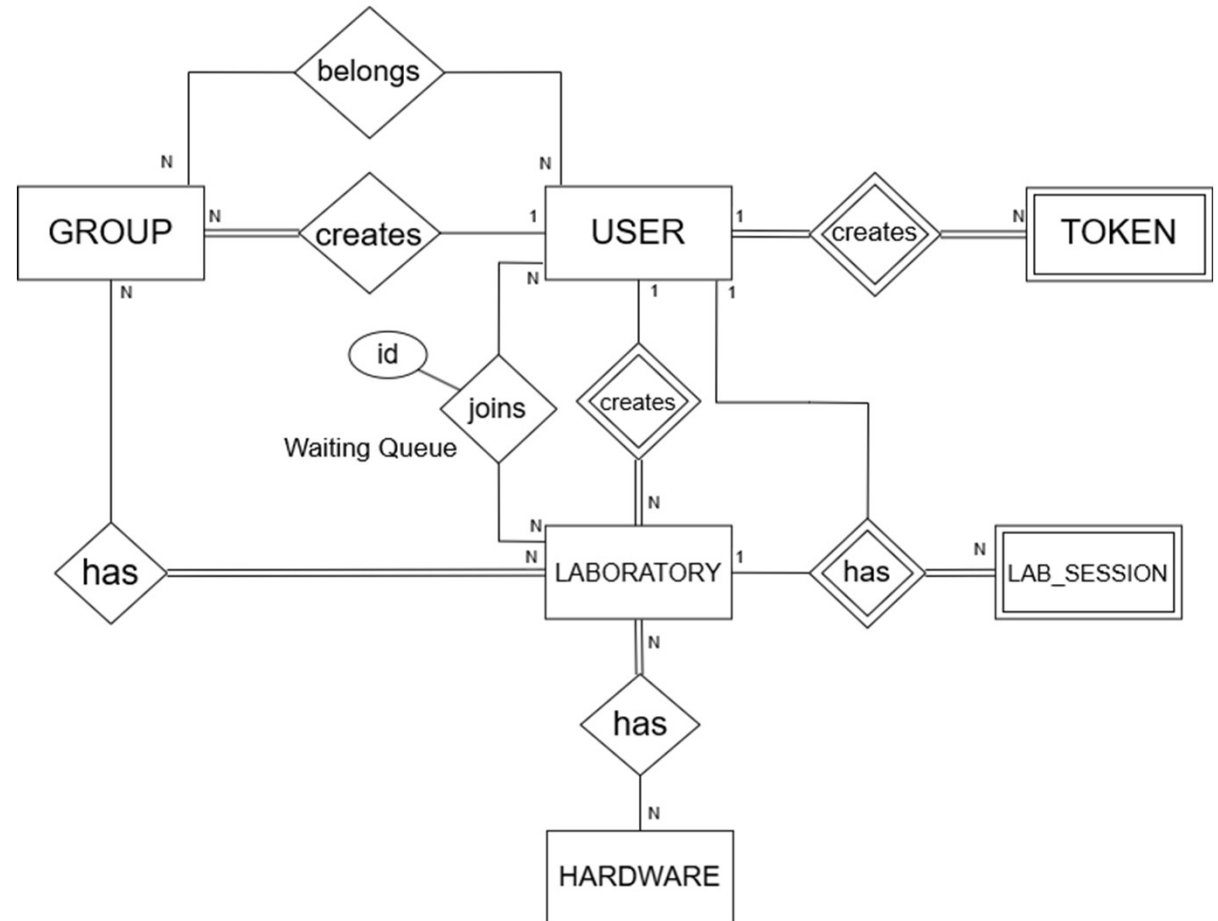
# Arquitetura Proposta



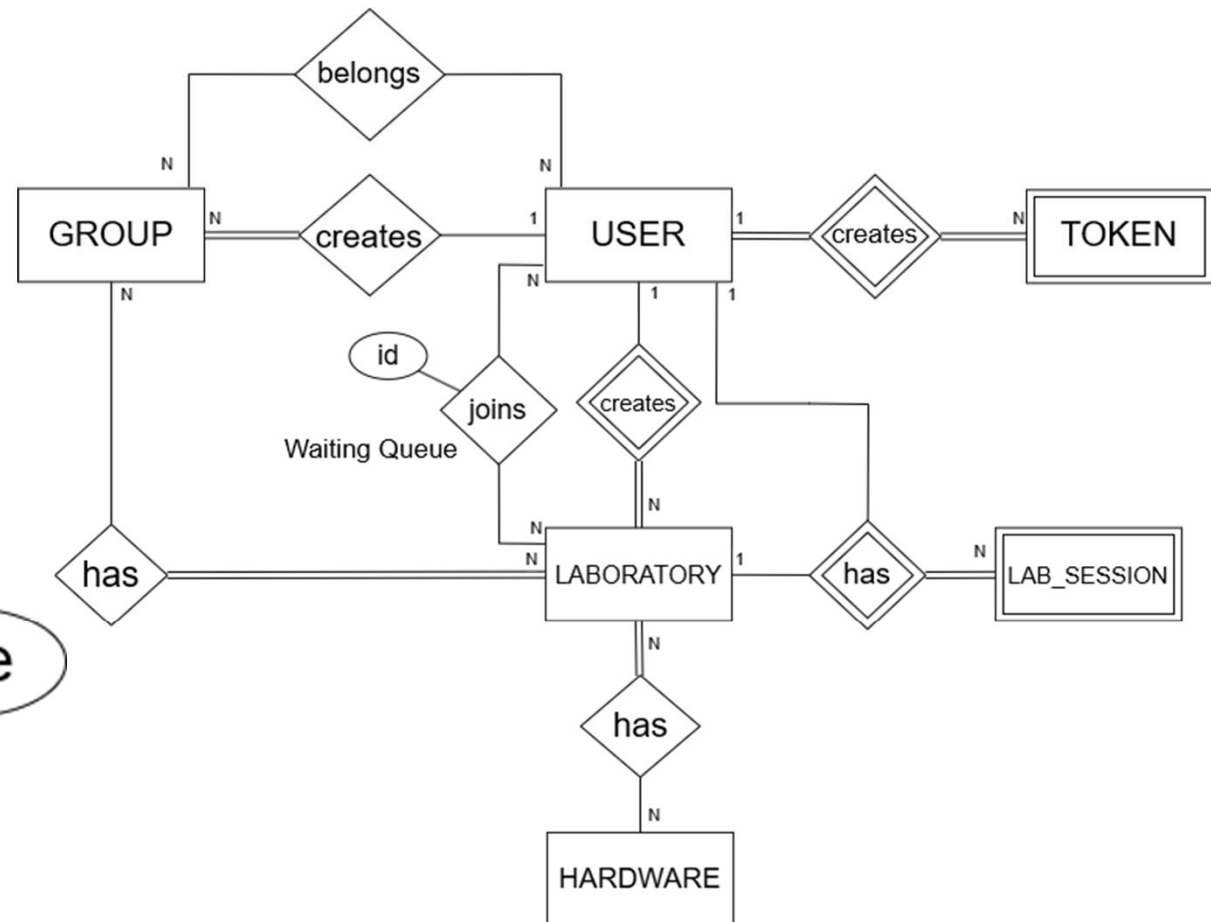
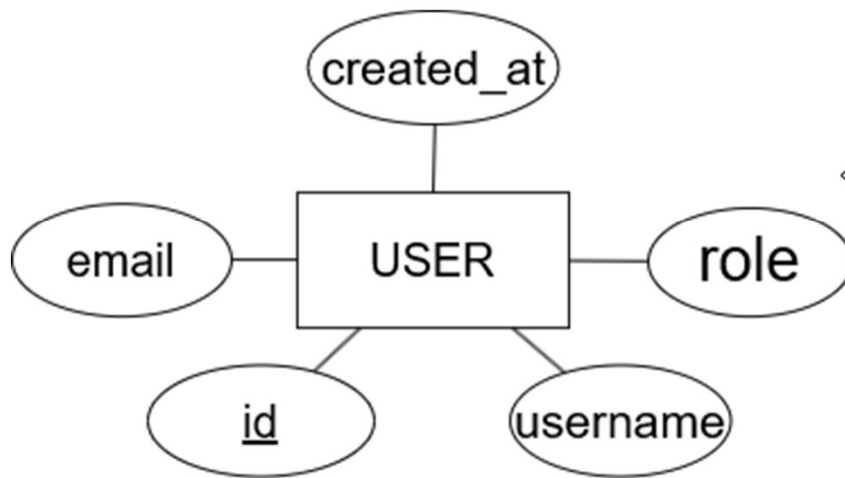
# Arquitetura Proposta



# Modelo de Dados

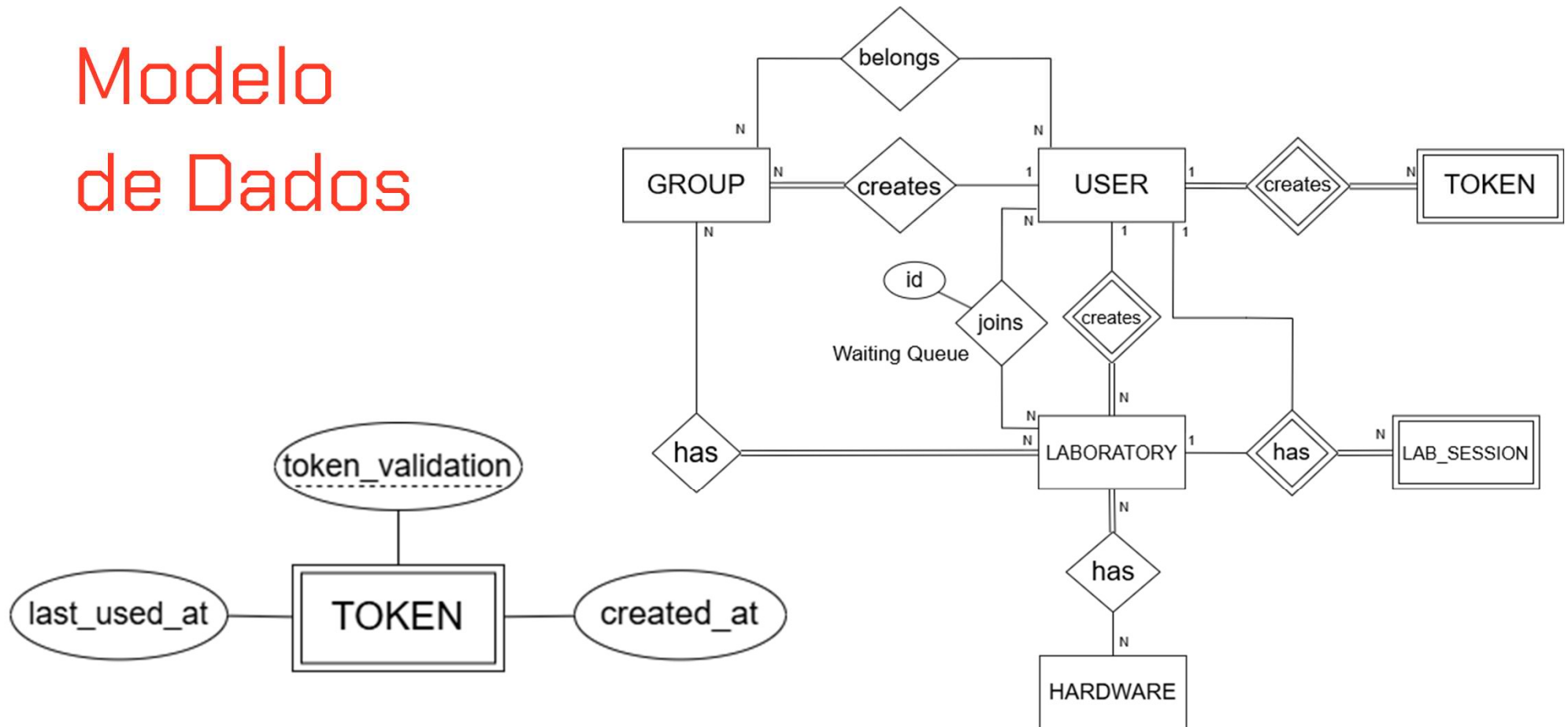


# Modelo de Dados

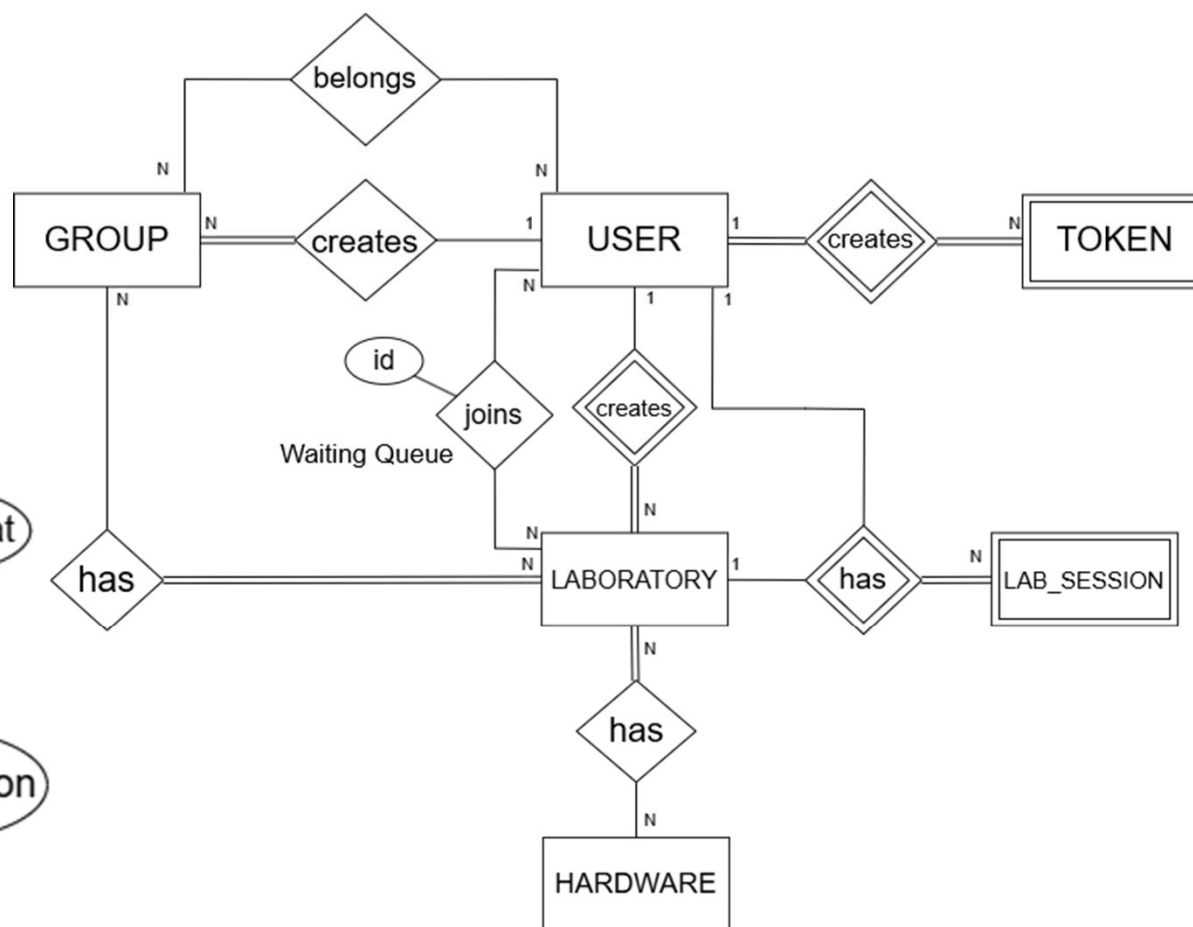
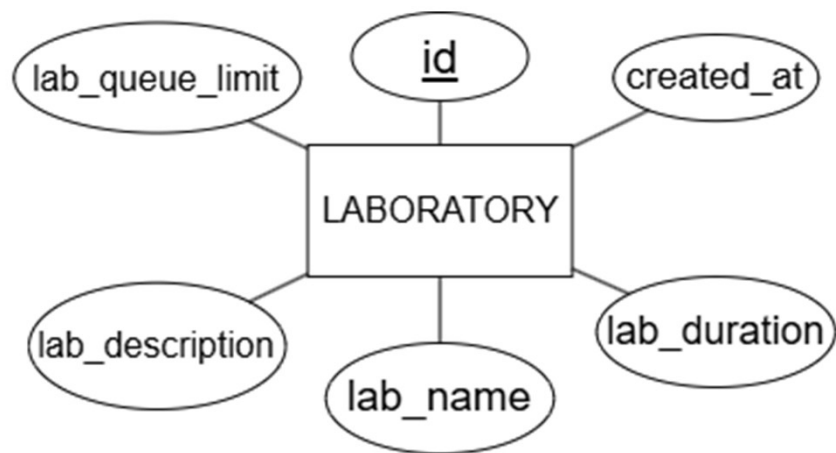




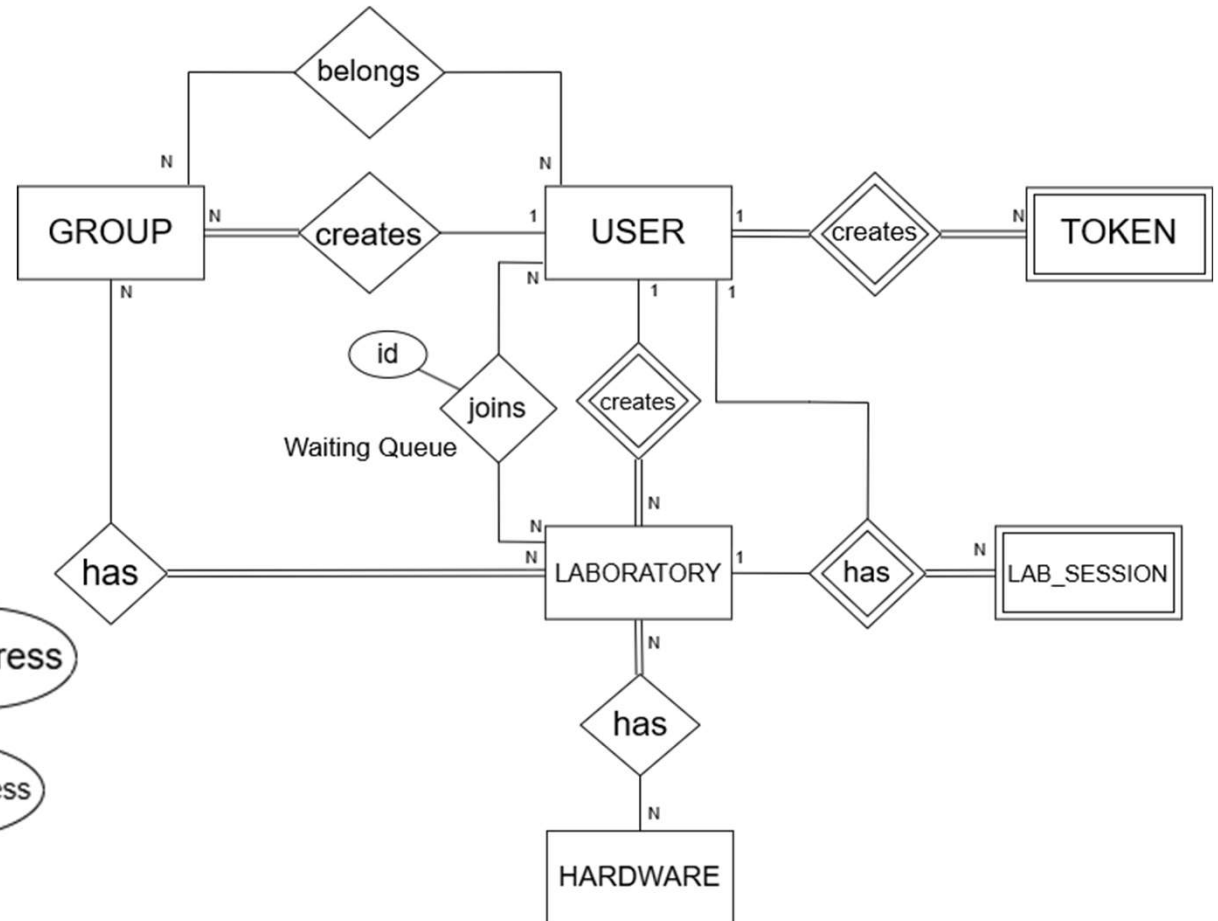
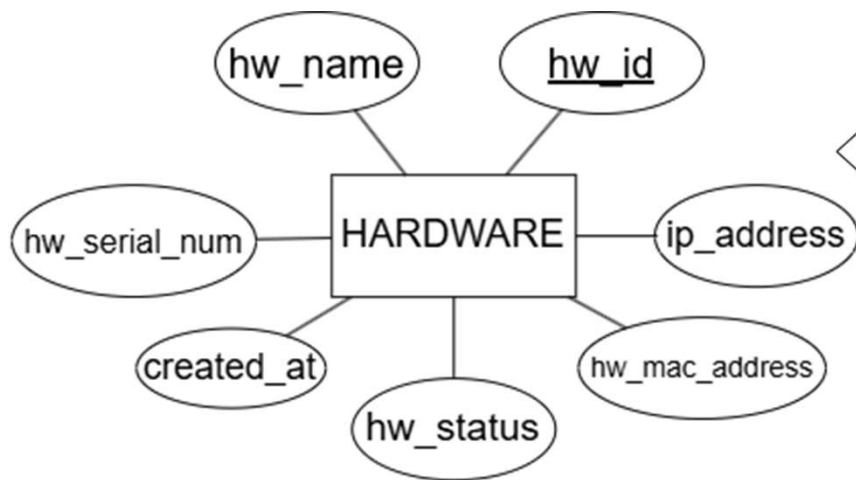
# Modelo de Dados



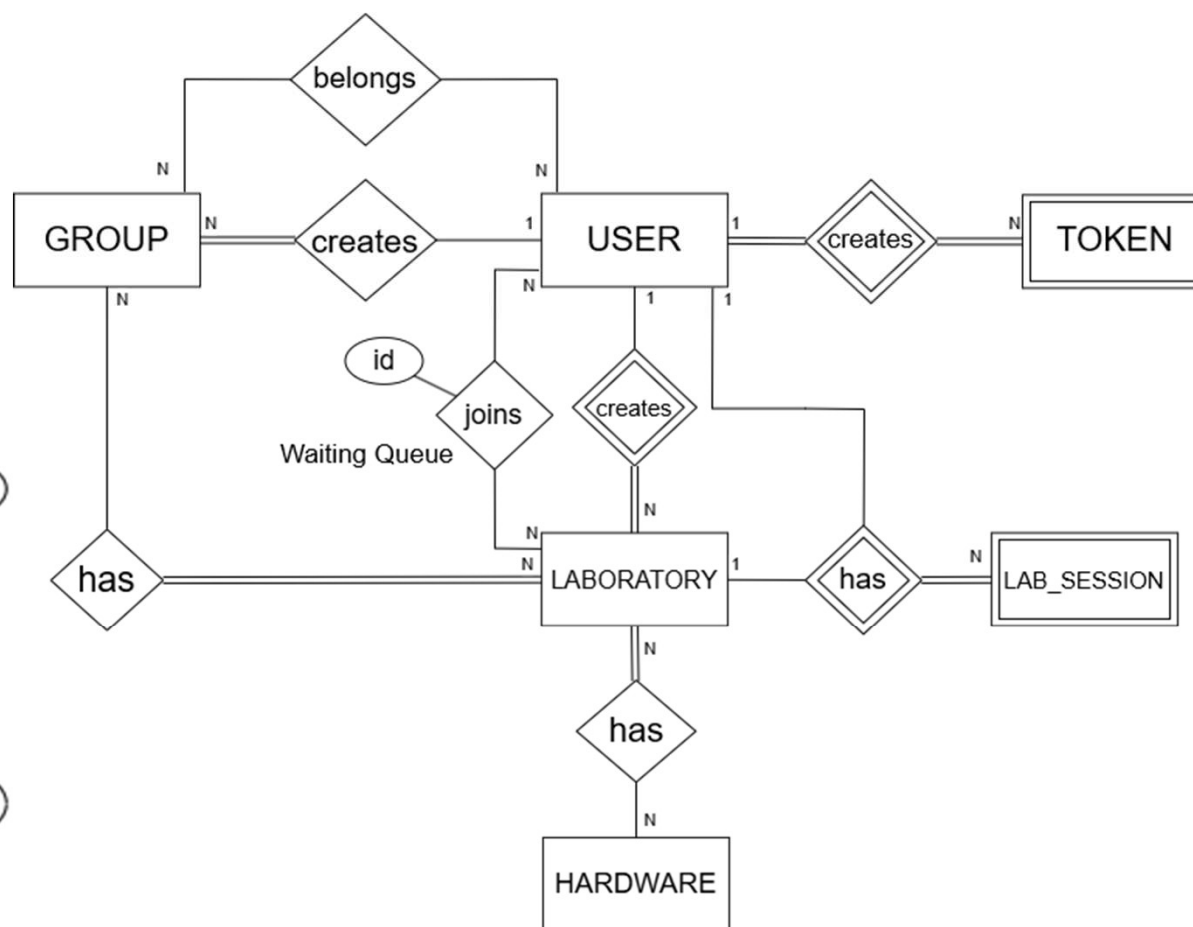
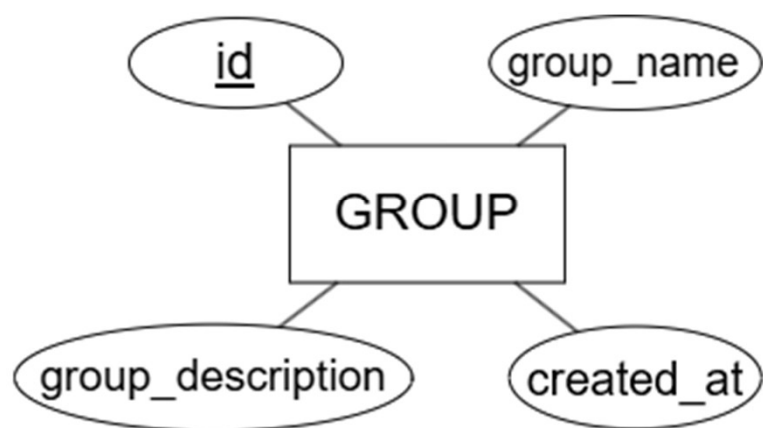
# Modelo de Dados



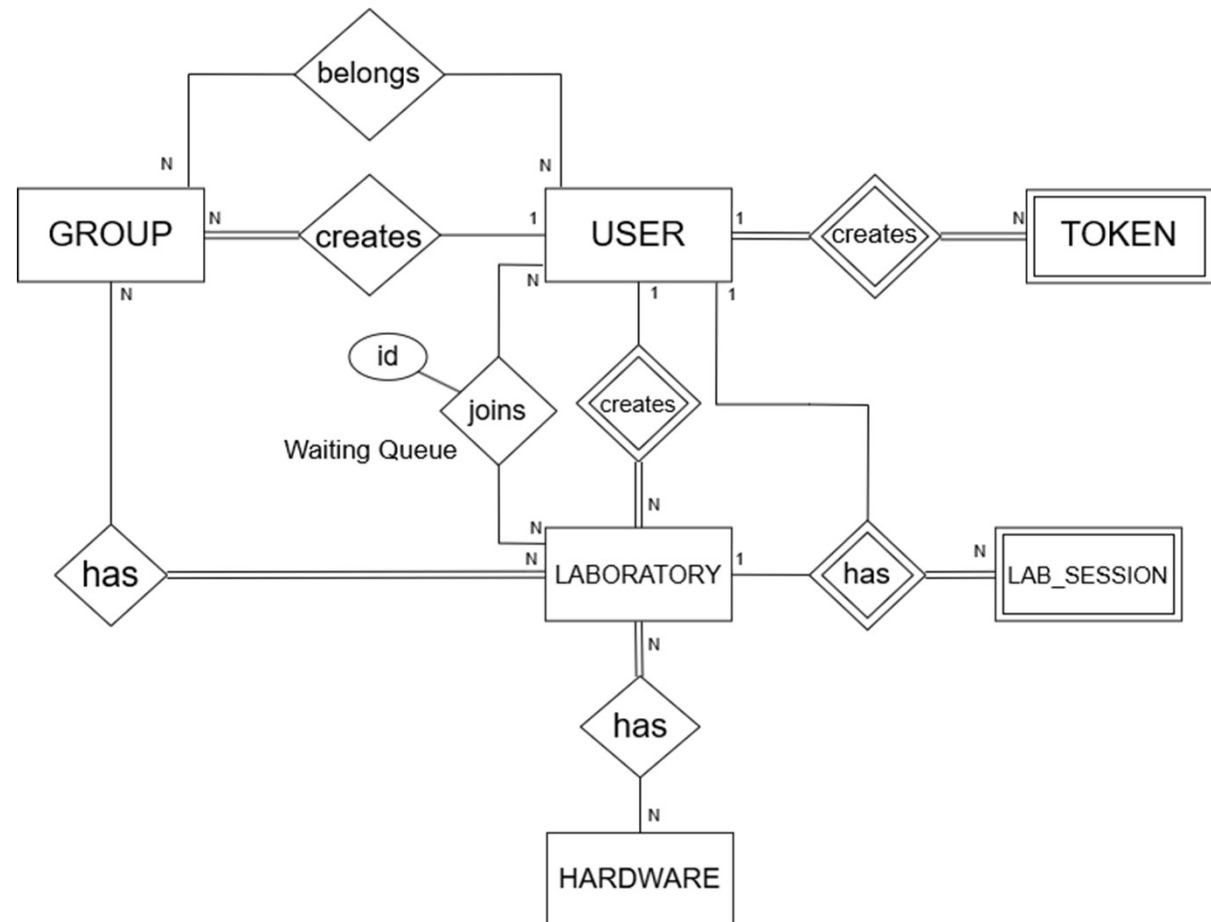
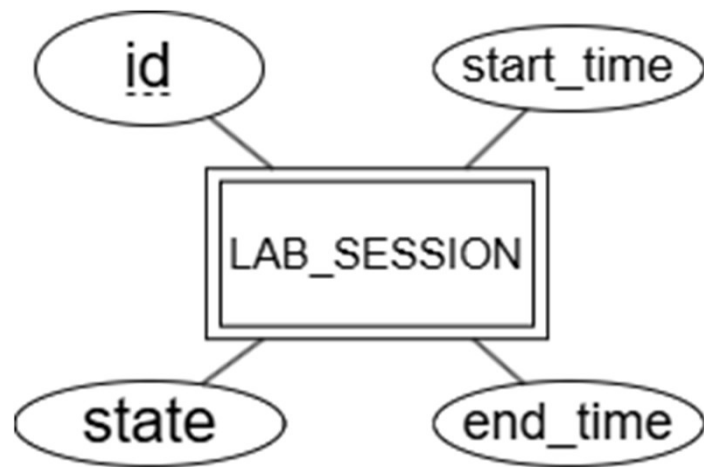
# Modelo de Dados



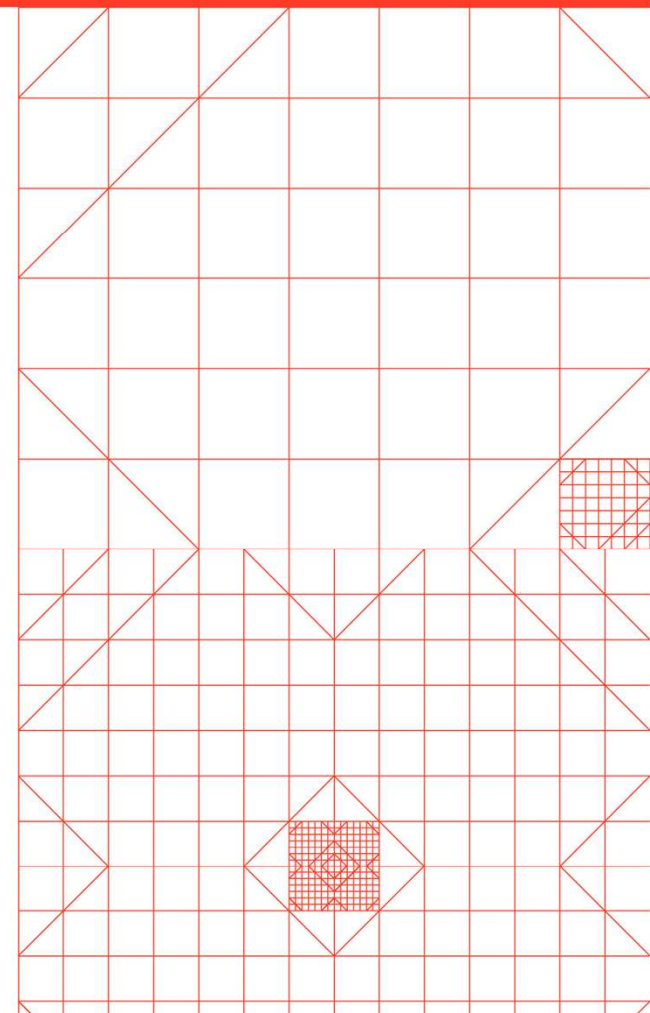
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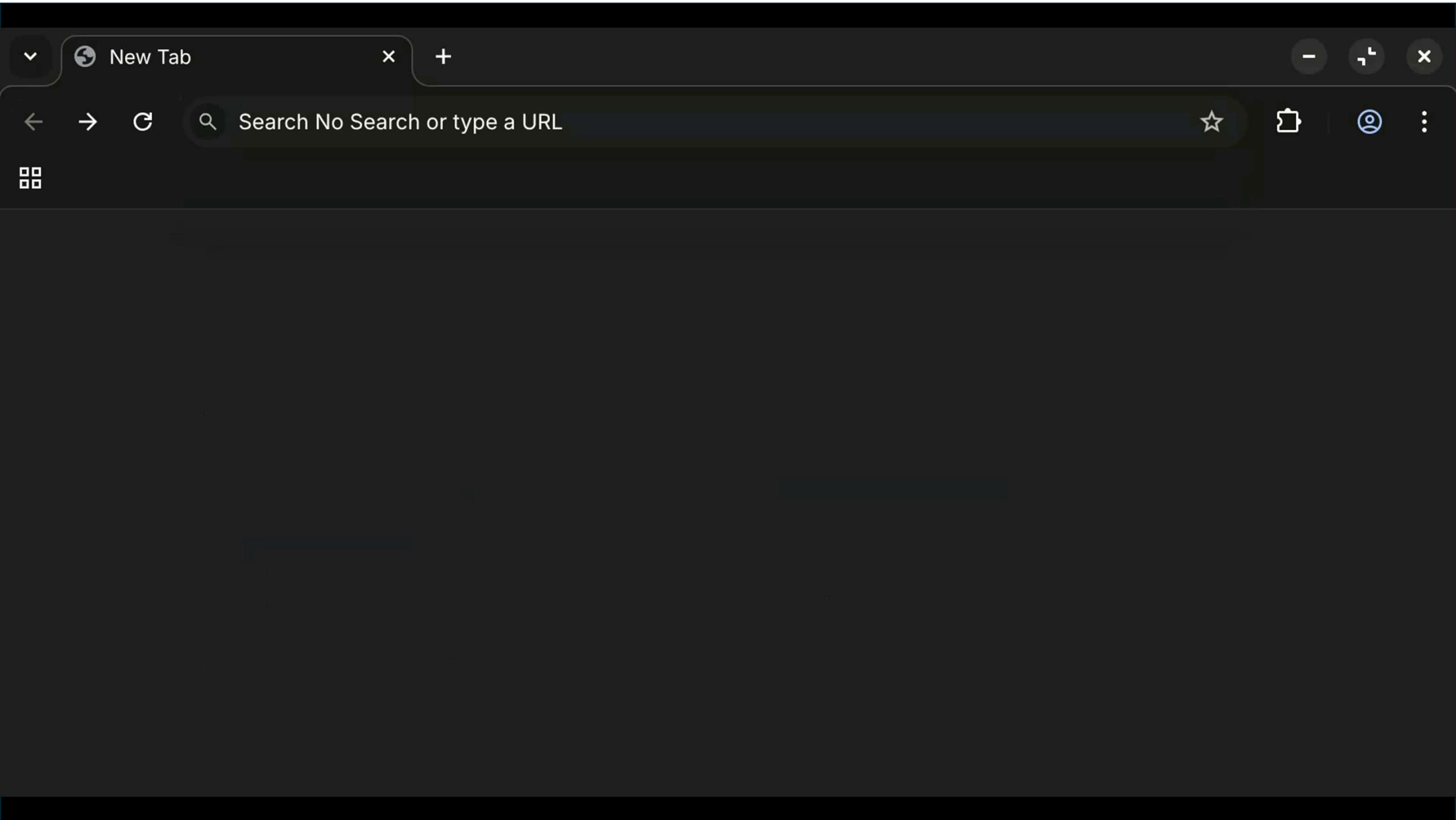


# Modelo de Dados



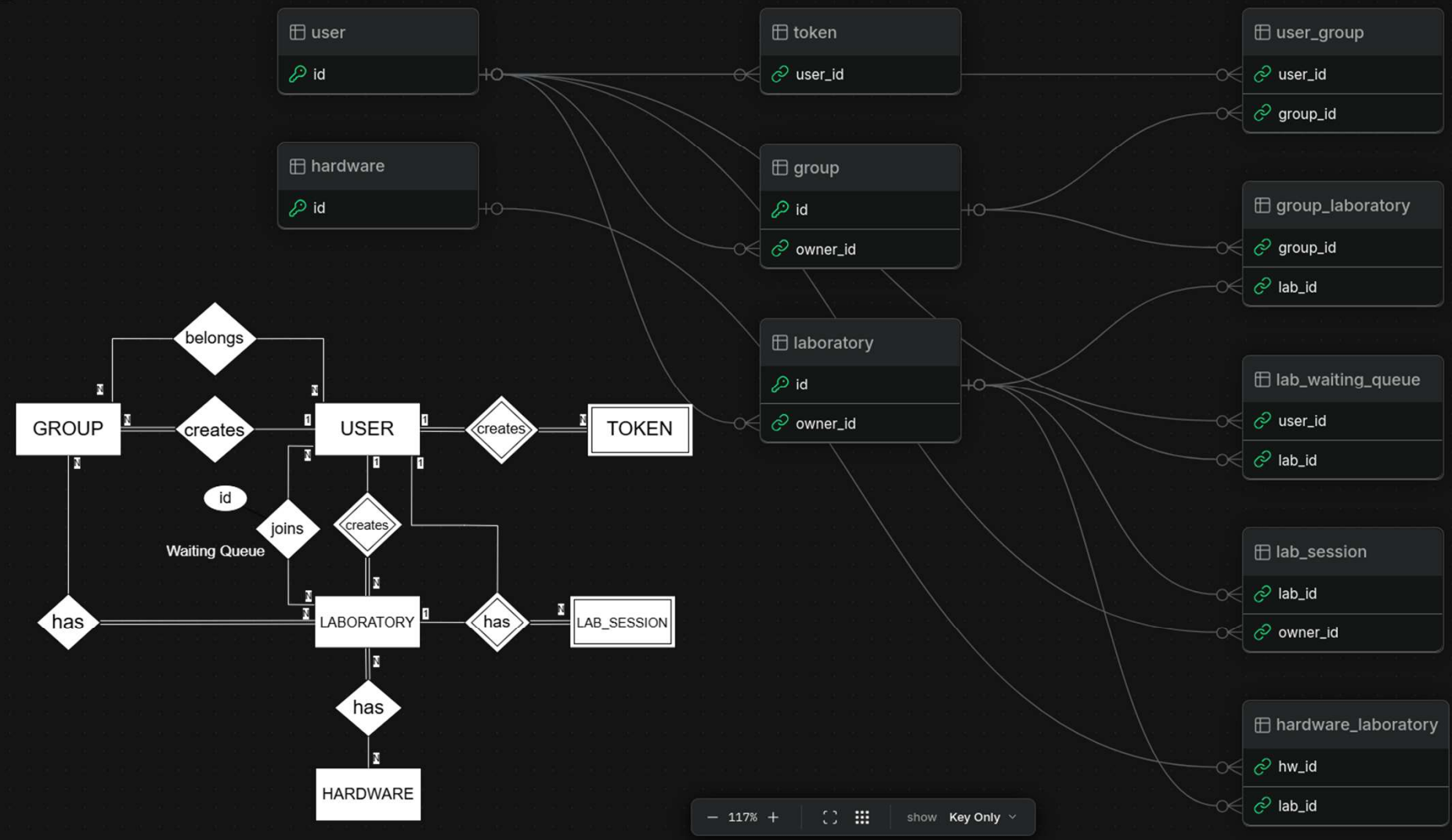
# Demonstração





# Documentação





## REMOTE LAB PRIVATE API

[Introduction](#)>  Auth

# Remote Lab Private API

This is the official Remote Lab private documentation. This is sensitive information that it should no be shared.

## Authentication

All endpoints in this collection require authentication via an API key.

- The API key must be included in every request using the `x-api-key` HTTP header.
- Unauthorized or missing keys will result in a 401 Unauthorized response.

### AUTHORIZATION API Key

Key	x-api-key
Value	<value>

## Auth

Authorization endpoints.

### POST Login



#### Authentication via External Service

This endpoint relies on an external OAuth or similar authentication service and does not accept passwords directly.

## Auth

Authorization endpoints.

### POST Login



#### Authentication via External Service

This endpoint relies on an external OAuth or similar authentication service and does not accept passwords directly.

This endpoint verifies the email:

- If the email already exists in the system, returns a token.
- If the email is not in the system, creates a new user and issues a fresh token.

#### Token Delivery

- The token is returned both:
  - As an HTTP-only, Secure cookie named `token`
  - In the JSON response body under the `token` field

### AUTHORIZATION API Key

Key x-api-key

Value

Body raw (json)

# Ponto de Situação



- Atualmente apenas a base de dados está completamente implementada e documentada
- Front-end e back-end em fase de desenvolvimento

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