

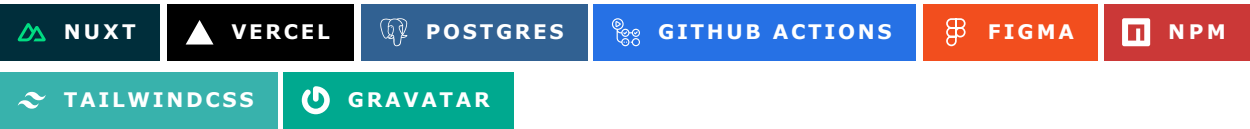
# EPI-Hub README

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## Introduction

This web application is designed to manage an organization's employee hierarchy. It allows authorized users to create, read, update, and delete (CRUD) staff information. The app features a visual representation of the organization's hierarchy for easy understanding.

## Technologies



## User Stories

### User Story 1: Manager

As a manager I want to be able to perform CRUD operations on the staff from our company for who I'm responsible. I also want to receive notifications from them, and should be able to pass it on to the next person that works above me (if necessary). The idea is to solve the problem as quickly as possible.

### User Story 2: Employee

As an employee I want to be able to perform CRUD operations on the staff from our company for who I'm responsible. I also want to receive notifications from them, and should be able to pass it on to the next person that works above me (if necessary). The idea is to solve the problem as quickly as possible.

## Architecture

For this application, a layered architecture would be most simple, to keep the system secure and simple. The reason for simplicity is because of the nature of the project, as it is focused on basic operations. Scalability will also be kept in mind as an organization can scale over time. Also, considering modularity, a layered architecture would be most suitable for the situation given that new functionality can bring the application to new levels. All of this promotes the use of a layered architecture for this specific web application without overcomplicating the system with a complex architecture which might affect performance and scalability in the long run.

## Constraints

Due to the nature of the project, time constraints were a major factor in the design and implementation of the application. The application was developed in a short period of time, which limited the scope of the project and the features that could be implemented. As a result, the application focuses on basic CRUD operations and does not include more advanced features such as notifications and other advanced functionality.

Here are some things I would have done differently if I had more time:

Can include staff satisfaction, average response time, clock-in and clock-out times, contract specific details (in a profile page: verlof, years at company, cover letter, resume, review, reference letter, performance, store CV), salary history (maybe through graphs). Other staff related measures can be added if there's time. An in-app help menu might also be helpful if one gets stuck.

## User Manual

### Installation

To install the application, follow these steps:

1. Clone the repository.
2. Run `npm install` to install the dependencies.
3. Run `npm run dev` to start the development server.

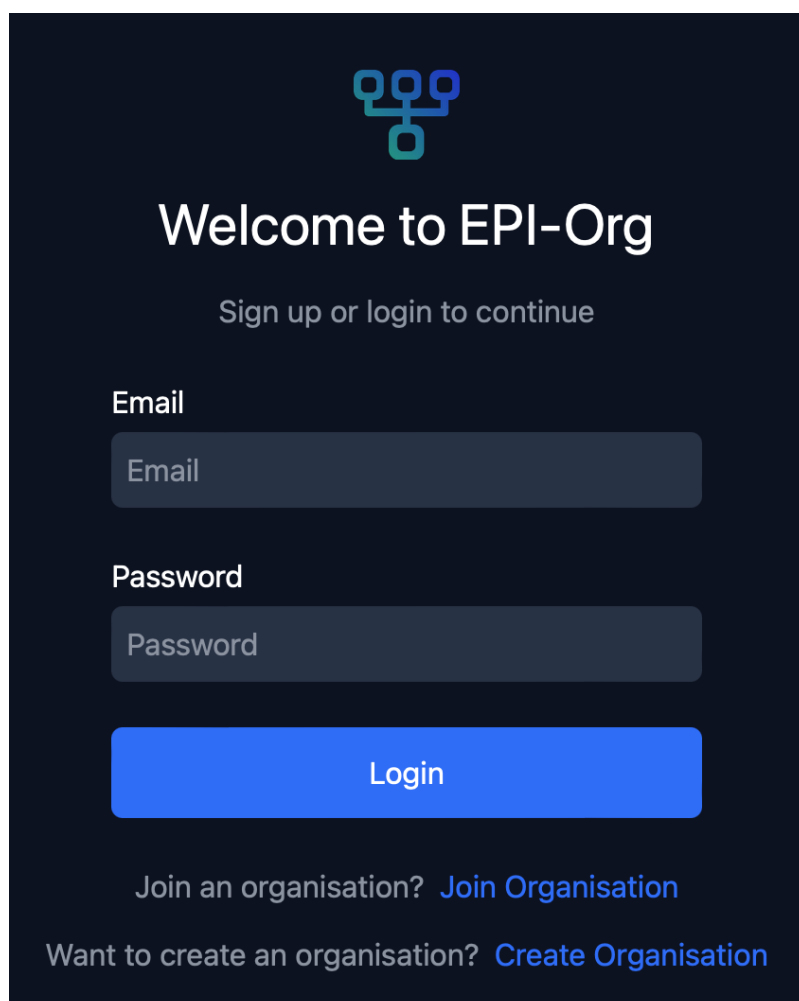
### Deployment

The application is deployed on Vercel. You can access the live version of the application [here](#).

### Creating an account & logging in

To use the application, follow these steps:

1. Register an organization, by clicking on the "Create Organization" button.

A screenshot of a dark-themed login page for 'EPI-Org'. At the top center is a logo consisting of four blue squares connected by lines, with a teal square below them. Below the logo, the text 'Welcome to EPI-Org' is displayed in a large, white, sans-serif font. Underneath this, in a smaller white font, is the text 'Sign up or login to continue'. The page features two input fields: 'Email' and 'Password', both with dark gray placeholder text. Below these fields is a prominent blue 'Login' button with white text. At the bottom of the page, there are two links in a light blue font: 'Join an organisation? Join Organisation' and 'Want to create an organisation? Create Organisation'.

- 2. You can then fill out your own details (as the organization owner) and click on the "Create Organization" button.

Personal Information

First Name \*

Last Name \*

Birth Date \*

Gravatar URL \*

linkedin Profile \*

Short Bio \*

Account Information

Please provide your email and password to create an account

Email Address \*

Password \*

Organisation Information

Please provide your new organisation's Information

Organisation Name \*

Register

After that you'll be redirected to the login page where you can login with the details you just created.

Joining an organization

To join an organization, follow these steps:

- 1. As organization owner, you can create an employee by clicking on the "+" button on the top right corner of the dashboard.



- 2. Fill out the employee details and click on the "Submit & Copy to Clipboard" button. The code will be copied to the clipboard, and you can share it with the employee.

Add new employee

An `employeeid` has been generated. Copy it and share it with the employee.

Email

Address \*

Role \*

Direct Line Manager \*

Employee ID

7b95bf3b-f501-4ced-a9a1-605b20e7d044

Submit & Copy to Clipboard

3. The employee can then paste the code in the "Join Organization" field on the login page and click on the "Join Organization" button. // ADD IMAGE HERE

Dashboard

EPI-Org-Demo

Iwan de Jong

Organisation Statistics

Total Employees

1

Total number of employees in the organisation

Average Tenure

0 years

Average years employees worked in the organisation

Monthly Salary Expenditure

R1500

Total monthly salary expenditure

New Employees

+1

New employees that joined the organisation this year

Team Management

Here are the employees under your supervision

Iwan de Jong

CEO

Organisation Tree

The organisation tree shows the hierarchy of employees in the organisation. You are highlighted in blue.

Search employees...

Search

Iwan de Jong

CEO

Switch to Table View

Nuxt web app developed by Iwan de Jong

At the top of the dashboard, you will see the organization statistics. These are read-only and displays useful statistics regarding the organisation and its employees.

Organisation Statistics

Total Employees

2

Total number of employees in the organisation

Average Tenure

0 years

Average years employees worked in the organisation

Monthly Salary Expenditure

R1500

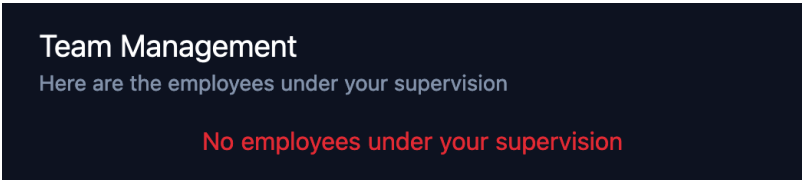
Total monthly salary expenditure

New Employees

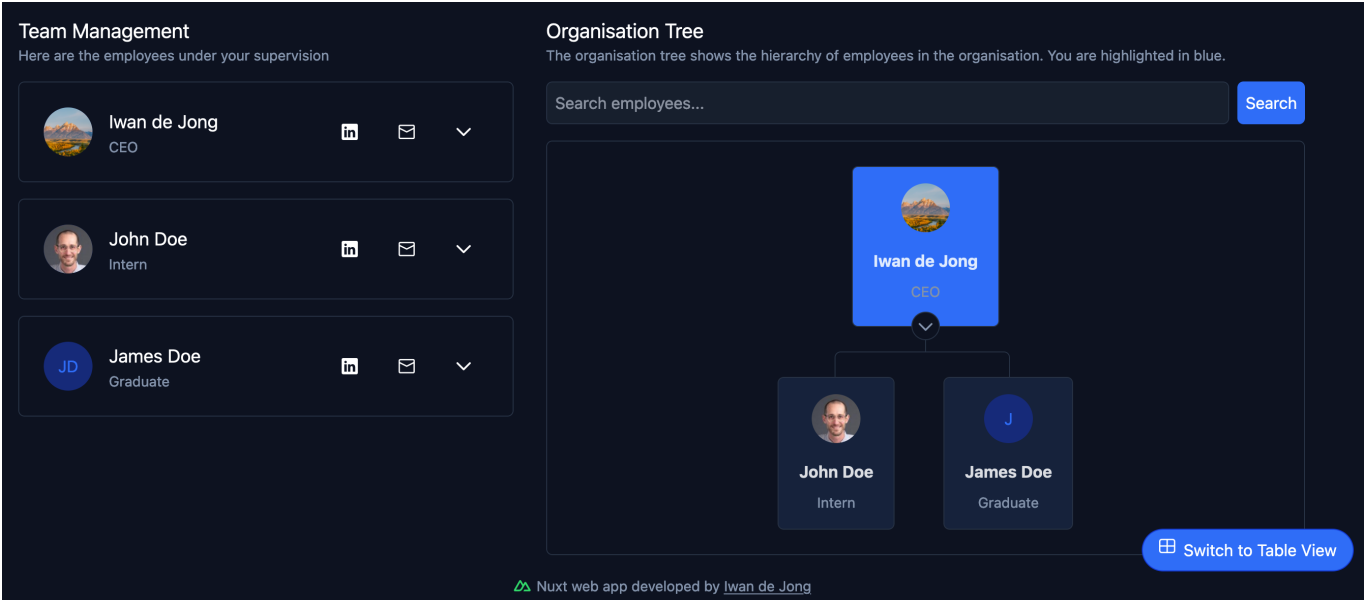
+2

New employees that joined the organisation this year

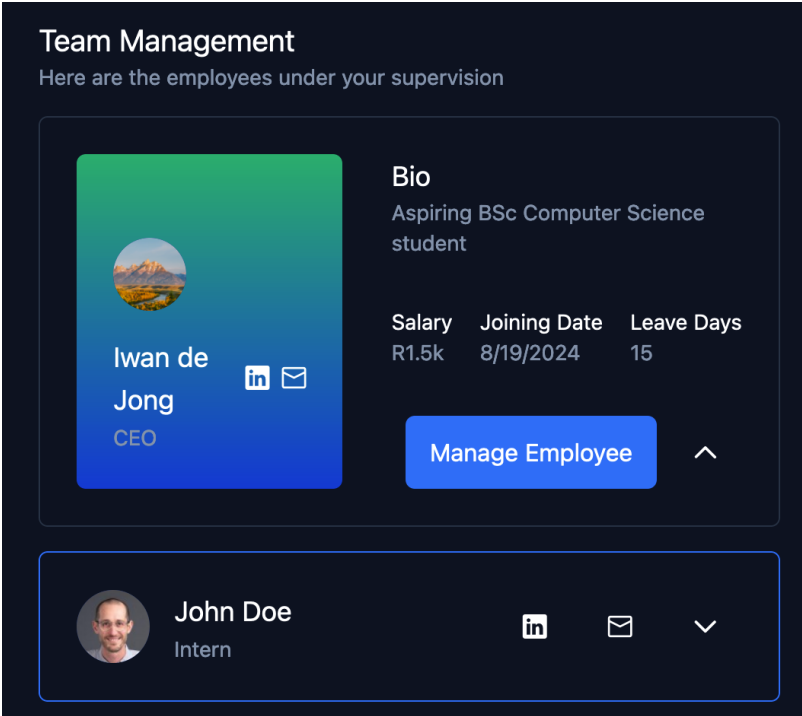
When you are not managing any employees, the dashboard will display a message:



Otherwise, you will see a list of employees that you are managing. You can click on an employee to view their details, or click on the "+" button to add a new employee.



To update an employee's details, click on the "Manage Employee" button after selecting the employee.



This will open a modal where you can update the employee's details. Here you can update & delete the employee.

Edit Employee Profile

×

Update your information.

First Name

Iwan

Last Name

de Jong

Role

CEO

Monthly Salary (R)

1500

Leave Days

15

linkedin

https://linkedin.com/in/iwandej

Email

iwan@example.com

Bio

Aspiring BSc Computer Scienc

Joining Date

8/19/2024

Birth Date

8/10/2003

Manager

Gravatar URL


https://gravatar.com/iwandejor

Delete Employee

Update Employee

Cancel

To delete an organisation, you need to be the owner of the organization. Click on your account in the top right corner and select "Manage Account & Organization". Then click on the "Delete Organization" button. Here you can delete the organization and all its employees as well as update your own account details.

Iwan de Jong

Manage Account & Organisation

Sign out

Manage your account

×

Update your information.

First Name

Iwan

Last Name

de Jong

linkedin

https://linkedin.com/in/iwandej

Email

iwan@example.com

Password

Bio

Aspiring BSc Computer Scienc

Birth Date

2003-08-10T00:00:00.000Z

Gravatar URL

https://gravatar.com/iwandejor

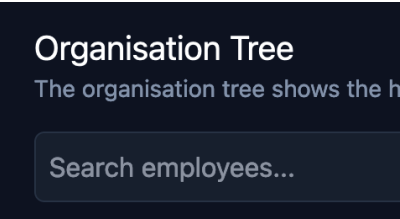
Delete Organisation

Update Employee

Cancel

Searching for an employee

You can search for an employee in the hierarchy by typing their name in the search bar just above the organisation tree. This will highlight the employee in the tree.



Alternatively, you can click on the "Search" button to search for an employee by any of their details. This will redirect you to the table view:

The screenshot shows the "EPI-Org-Demo" application interface. At the top, there is a search bar labeled "Filter Keyword Search". Below it is a table with columns: Employee ID, First Name, Last Name, Birth Date, Salary, Role, Manager, Joining Date, Leave Days, and LinkedIn. Three employees are listed: Iwan de Jong (CEO), John Doe (Intern), and James Doe (Graduate). A "Switch to Dashboard View" button is located at the bottom right.

Employee ID ↑↓	First Name ↑↓	Last Name ↑↓	Birth Date ↑↓	Salary ↑↓	Role ↑↓	Manager ↑↓	Joining Date ↑↓	Leave Days ↑↓	linkedin
0ae28b09-6736-4561-8e9b-621b8b73d8d2	Iwan	de Jong	08/10/2003	ZAR 1,500.00	CEO	N/A	08/19/2024	15	<a href="https://linkedin.com/in/iwandejong">https://linkedin.com/in/iwandejong</a>
7b95bf3b-f501-4ced-a9a1-605b20e7d044	John	Doe	08/19/2003	ZAR 0.00	Intern	0ae28b09-6736-4561-8e9b-621b8b73d8d2	08/20/2024	0	<a href="https://linkedin.com/in/johndoe">https://linkedin.com/in/johndoe</a>
5995ed94-9f52-48de-a565-7f3d4ee83022	James	Doe	11/11/2003	ZAR 0.00	Graduate	0ae28b09-6736-4561-8e9b-621b8b73d8d2	08/20/2024	0	<a href="https://linkedin.com/in/johndoe">https://linkedin.com/in/johndoe</a>

In the Table view, you can sort the employees by any of their details by clicking on the column headers.

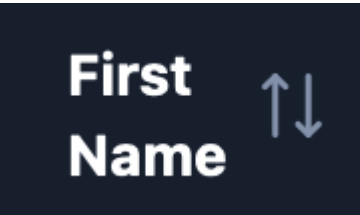
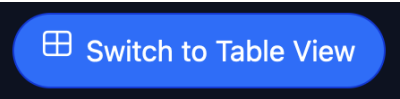


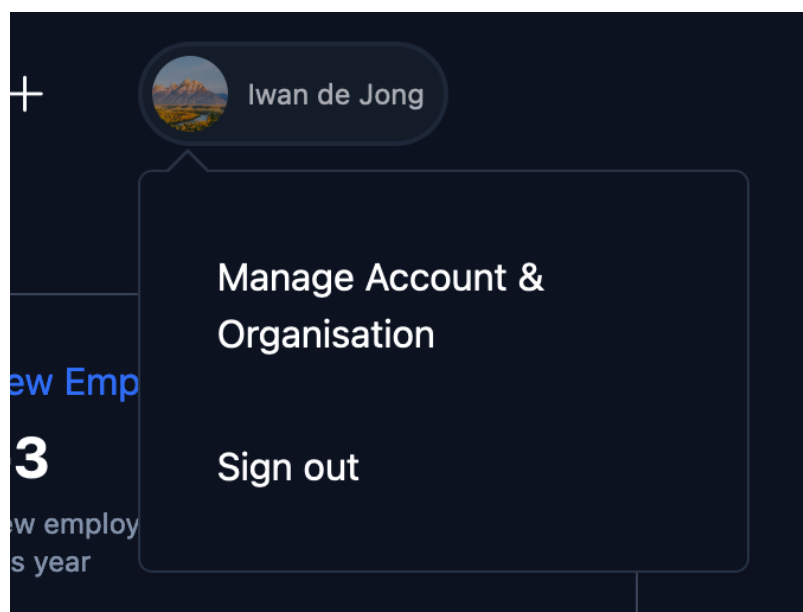
Table view

In the table view, you can see all the employees in the organization. You can sort the employees by any of their details by clicking on the column headers. You can access an employee's details by clicking on the "Switch to Table View" button.



Logging out

To log out, click on your account in the top right corner and select "Sign out".



## Design Patterns

### State

Application makes use of AuthJS to manage the state of the user. This allows the application to keep track of the user's authentication status and role. This is not a direct design pattern but a concept that is used in the application.

### Façade

Nuxt provides a façade for the Vue framework, making it easier to build server-side rendered applications. This allows the application to be more performant and easier to maintain.

### Middleware

The application uses middleware to handle authentication and authorization. This allows the application to restrict access to certain routes based on the user's role.

## Security

### Authentication

The application uses JWT (JSON Web Tokens) for authentication. When a user logs in, a JWT token is generated and stored in the browser's local storage. This token is then sent with every request to the server to authenticate the user.

### Authorization

The application uses role-based access control to restrict access to certain resources. Each user has a role (e.g., manager, employee) that determines what actions they can perform. For example, a manager can create, read, update, and delete employees, while an employee can only read their own details.

### Password Hashing



The application uses **crypto** to hash passwords before storing them in the database. This ensures that passwords are securely stored and cannot be easily decrypted.

## Organisation Hierarchy

The application uses a tree data structure to represent the organization hierarchy. Each node in the tree represents an employee, and the edges represent the relationship between employees (i.e. the employee's manager). This allows the application to visualize the organization hierarchy and display it to the user.

### Algorithm

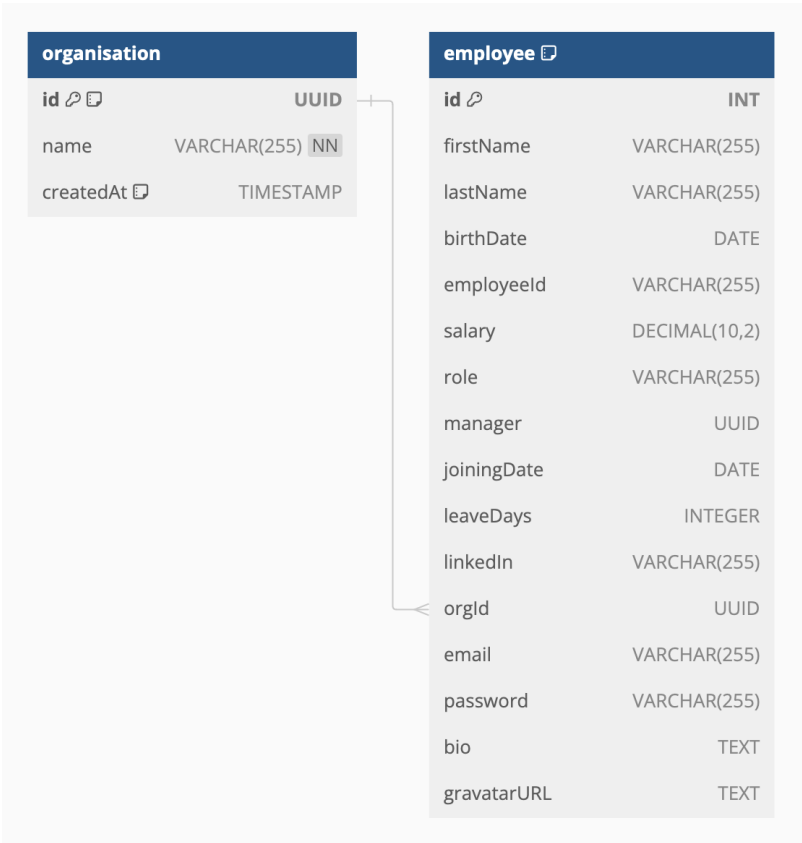
The tree is built by using a recursive algorithm that traverses the organization hierarchy and constructs the tree. The algorithm starts at the root node (the organization owner) where the manager is **null**. It then recursively adds employees to the tree by finding all employees whose manager is the current employee.

Here is the pseudocode for the algorithm:

```
function buildTree(employees, managerId):  
    // Create an empty list to store employees under the current manager  
    tree = []  
  
    // Loop through each employee  
    for each employee in employees:  
        // Check if the employee reports to the given managerId  
        if employee.manager == managerId:  
            // Recursively build the tree for this employee's children  
            employee.children = buildTree(employees, employee.employeeId)  
  
            // Add the employee (and their children) to the tree  
            tree.add(employee)  
  
    // Return the tree for this manager (including all nested children)  
    return tree
```

## Database Schema

The database schema for this application is simple and straightforward. It consists of two tables: **employee** and **organisation**.



The **employee** table contains the following columns:

- **id**: The unique identifier for the employee.
- **firstname**: The first name of the employee.
- **lastname**: The last name of the employee.
- **birthdate**: The date of birth of the employee.
- **employeeid**: The unique employee ID.
- **salary**: The salary of the employee.
- **role**: The role of the employee.
- **manager**: The manager of the employee, a foreign key that references the **employee** table.
- **joiningdate**: The date the employee joined the organization.
- **leavedays**: The number of leave days the employee has.
- **linkedin**: The LinkedIn profile of the employee.
- **orgid**: The unique organization ID, a foreign key that references the **organisation** table.
- **email**: The email address of the employee.
- **password**: The (hashed) password of the employee.
- **bio**: The biography of the employee.
- **gravatarurl**: The Gravatar URL of the employee.

The **organisation** table contains the following columns:

- **id**: The unique identifier for the organization.
- **name**: The name of the organization.

## API Endpoints

The API endpoints for this application are as follows:

- **POST /api/auth/register/emp**: Register an employee.
- **POST /api/auth/register/org**: Register an organization.
- **POST /api/create/employee**: Create an employee.
- **POST /api/delete/employee**: Delete an employee.
- **POST /api/delete/org**: Delete an organization (and all employees).
- **POST /api/read/account**: Read an account.
- **POST /api/read/employees**: Read employees.
- **POST /api/read/org**: Read an organization.
- **POST /api/read/tree**: Read the organization hierarchy.
- **POST /api/update/employee**: Update an employee.

## Technologies Used

The application is built using the following technologies:

- **Frontend**: Nuxt.js, Tailwind CSS
  - Nuxt.js provides a simple way to create a Vue.js application with server-side rendering and static site generation. Tailwind CSS is a utility-first CSS framework that allows for rapid prototyping and easy customization.
- **Backend**: Nuxt.js (Node.js)
  - Nuxt.js is used for the backend as well, as it provides a simple way to create APIs using the same codebase as the frontend.
- **Database**: PostgreSQL
  - Vercel provides a managed PostgreSQL database that is used to store the application data securely.
- **Deployment**: Vercel
  - Vercel is used to deploy the application to the web. It provides a out-of-the-box and simple way to deploy Nuxt.js applications with serverless functions.
- **CI/CD**: GitHub Actions
  - GitHub Actions is used to automate the deployment process. It runs the tests and deploys the application to Vercel when changes are pushed to the main branch.
- **Design**: Figma
  - Figma is used to design the wireframes to visualize the application layout and user interface.
- **Package Manager**: NPM
  - NPM is used to manage the application dependencies. It provides a simple way to install and manage the packages used in the application.
- **Avatar**: Gravatar
  - Gravatar is used to generate avatars for the employees. It provides a simple way to create unique avatars based on the user's email address.