

Dependencies:

Dependencies are libraries and tools used to build, run, and test our project.

Frontend Dependencies:

In DMS, we have used React as our frontend language. It is a declarative, efficient, and flexible JavaScript library for building user interfaces or UI components. We have used several dependencies to help build components in our project.

Where to add/find all the frontend dependencies in the Project?

The dependencies are specified in the package.json file found in the Dms-ui directory. To install a dependency NPM is used. To download all the dependencies “npm install” command is used.

```
"dependencies": {  
  "@fortawesome/fontawesome-svg-core": "^6.1.1",  
  "@fortawesome/free-solid-svg-icons": "^6.1.1",  
  "@fortawesome/react-fontawesome": "^0.1.18",  
  "@testing-library/jest-dom": "^5.16.1",  
  "@testing-library/react": "^12.1.2",  
  "@testing-library/user-event": "^13.5.0",  
  "axios": "^0.26.0",  
  "bootstrap": "^5.1.3",  
  "emailjs-com": "^3.2.0",  
  "joi": "^17.6.0",  
  "jquery": "^3.6.0",  
  "jwt-decode": "^3.1.2",  
  "moment": "^2.29.1",  
  "rc-progress": "^3.2.4",  
  "react": "^17.0.2",  
  "react-big-calendar": "^0.39.4",  
  "react-circular-progressbar": "^2.0.4",  
  "react-dom": "^17.0.2",  
  "react-phone-number-input": "^3.1.46",  
  "react-router-dom": "^6.2.1",  
  "react-scripts": "5.0.0",  
  "react-toastify": "^8.2.0",  
  "remixicon": "^2.5.0",  
  "web-vitals": "^2.1.4"  
},
```

1. Fortawesome

Fontawesome is used to build and manage icons and typefaces in a single place, then serve them with a single line of code.[8]. We are using it to beautify and provide aesthetics to our project.

2. Testing-library

Testing-library is a family of packages that helps you test UI components in a user-centric way.[10]

3. Axios

In ReactJS, Axios is a library that serves to create HTTP requests that are present externally. It is evident from the fact that we may sometimes in React applications need to get data from an external source. It is quite difficult to fetch such data so that they can be normally shown on the website. [11] We are using Axios interceptors to integrate our frontend and backend.

4. Bootstrap

Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development developed by TWITTER [9]. It contains CSS- and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

5. EmailJs-com

EmailJS helps send emails using client-side technologies only. No server is required – just connect EmailJS to one of the supported email services, create an email template, and use our JavaScript library to trigger an email. [12] This is used in our OTP module and Appointment booking confirmation module.

6. JOI

Joi is the most powerful schema description language and data validator for JavaScript.[13]

7. JQuery

jQuery is a lightweight, "write less, do more", JavaScript library. The purpose of jQuery is to make it much easier to use JavaScript on your website. jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish and wraps them into methods that you can call with a single line of code[14]

8. Moment

A JavaScript date library for parsing, validating, manipulating, and formatting dates.Moment.js is a legacy project, now in maintenance mode. In most cases, you should choose a different library.[15]. It is used as a localizer for React-big-calender

9. JWT-decode

jwt-decode is a small browser library that helps decode JWTs token which is Base64Url encoded. This library doesn't validate the token, any well-formed JWT can be decoded.

You should validate the token in your server-side logic by using something like express-jwt, koa-jwt, Owin Bearer JWT[16]. It is used for authentication purposes.

10. React

React is a declarative, efficient, and flexible JavaScript library for building user interfaces or UI components. It lets you compose complex UIs from small and isolated pieces of code called “components”. [17]

11. React-big-calender

An events calendar component built for React and made for modern browsers and uses flexbox over the classic tables-caption approach. [18]. It is used in our timesheet feature.

12. React-dom

The react-dom package provides DOM-specific methods that can be used at the top level of your app and as an escape hatch to get outside the React model if you need to.[19]

13. React-phone-number-input

Use the react-phone-number-input component to automatically recognize and format international phone numbers in your forms. [20]. We used this for our registration module.

14. React-router-dom

React Router DOM is an npm package that enables you to implement dynamic routing in a web app. It allows you to display pages and allow users to navigate them. It is a fully-featured client and server-side routing library for React.[21]. It facilitates navigation between components.

15. React-scripts

React-scripts is a set of scripts from the create-react-app starter pack. create-react-app helps you kick off projects without configuring, so you do not have to set up your project by yourself. react-scripts start sets up the development environment and starts a server, as well as hot module reloading.

16. React-toastify

React Toastify is a lightweight package based on react library that helps to add beautifully crafted custom notifications to react project. The end-user gets a message as a popup alert in the browser. [22] We use it to pop errors.

17. Remixicon

Remix Icon is a set of open-source neutral-style system symbols for designers and developers. Unlike a patchwork icon library, 2200+ icons are all elaborately crafted so that they are born with the gene of readability, consistency and perfect pixels. Each icon was designed in "Outlined" and "Filled" styles based on a 24x24 grid. Of course, all the icons are free for both personal and commercial use. [23]

18. Web-vitals

The web-vitals library is a tiny (~1K), modular library for measuring all the Web Vitals metrics on real users, in a way that accurately matches how they're measured by Chrome and reported to other Google tools

Backend Dependencies:

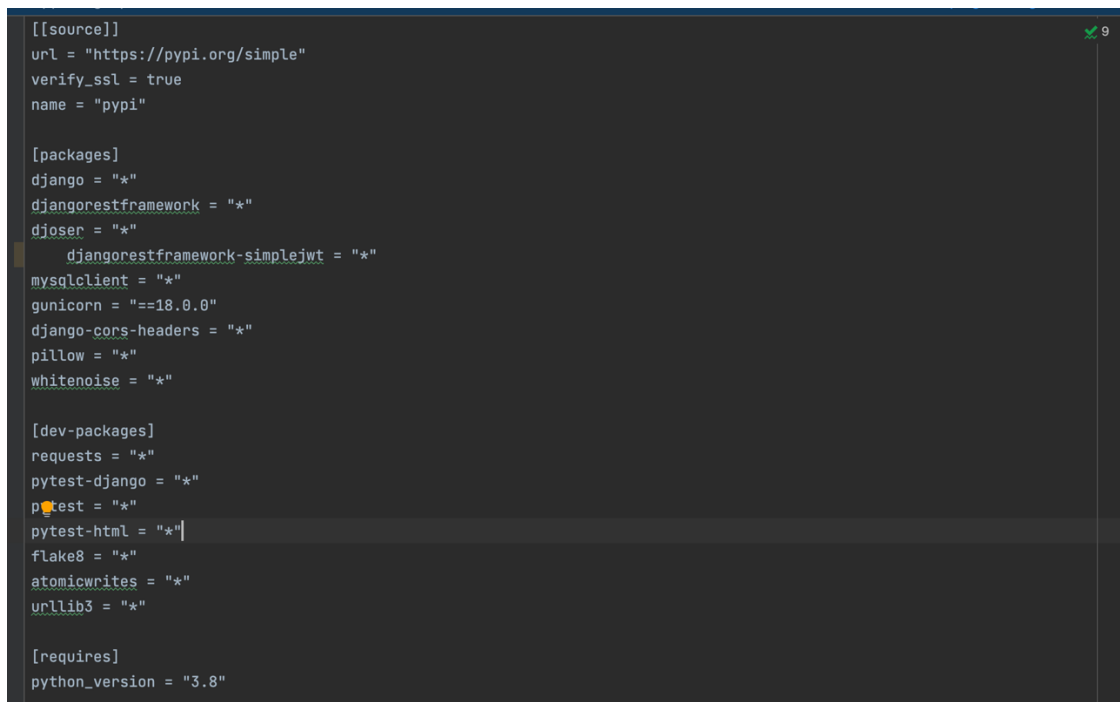
In DMS, we have used python as our backend language. Django is one of the popular python frameworks for web application development. It can help you in building frontend, backend, and Rest APIs as well. Here, in our project, we have used it for backend and API creation. Here are all the dependencies for out backend side.

We have divided all the dependencies in two major sections

1. Application Dependencies
2. Development Dependencies

Where to add/find all the backend dependencies in the Project?

One can look for pipfile under the main project folder, it looks something like what is given in the below image. Whenever a person builds the project for the first time, he/she need to install pipenv package, and then they must run the command 'pipenv install'. This command will automatically start installing all the packages and plugins mentioned in the pipfile.



```
[[source]]
url = "https://pypi.org/simple"
verify_ssl = true
name = "pypi"

[packages]
django = "*"
djangorestframework = "*"
djoser = "*"
    djangorestframework-simplejwt = "*"
mysqlclient = "*"
unicorn = "==18.0.0"
django-cors-headers = "*"
pillow = "*"
whitenoise = "*"

[dev-packages]
requests = "*"
pytest-django = "*"
pytest = "*"
pytest-html = "*"
flake8 = "*"
atomicwrites = "*"
urllib3 = "*"

[requires]
python_version = "3.8"
```

Figure. (1) Pipfile for the backend dependencies

Application Dependencies

1. Django:

Django is a high-level Python Web framework that encourages rapid development and clean pragmatic design. A Web framework is a set of components that provide a standard way to develop websites fast and easily. Django's primary goal is to ease the creation of complex database-driven websites [1]. It follows MVT software design pattern.

In our project, it's the main framework used specially to creating models and views. Models helped us working with database and views are more like controller in MVC. It helps you to control things on backend.

2. Django REST Framework:

It's a powerful toolkit for creating Rest APIs for web applications. It's simple, easy to use, robust, and helps to build test covered API endpoints. In our project, all the APIs are created using this toolkit. It has powerful serialization engine which is compatible with ORM data sources [2].

3. Djoser:

It's a REST implementation of Django authentication system. This library provides a wide range of functionalities such a login, sign up, logout, password reset and account activation [3]. We have used it for our login and registration facility with JWT token for authentication.

4. Django REST Frameworks – simpleJWT:

Simple JWT provides a JSON Web Token authentication backend for the Django REST Framework. It aims to cover the most common use cases of JWTs by offering a conservative set of default features [4]. This package has helped us to implement JWT Web Token for authentication of user requests.

5. MySQL Client:

It's an interface forked from Python MySQL. This package provides API to connect with MySQL database, Also, it becomes easy to work with MySQL databases with this package. In DMS, we have used this package to connect with MySQL database, also it's helping us to connect and communicate with local testing database – SQLite.

6. Gunicorn:

Gunicorn takes care of everything which happens in-between the web server and your web application [5]. This way, when coding up you're a Django application you don't need to find your own solutions for:

- communicating with multiple web servers
- reacting to lots of web requests at once and distributing the load

- keeping multiple processes of the web application running

7. Django-cors-headers:

A Django App that adds Cross-Origin Resource Sharing (CORS) headers to responses. This allows in-browser requests to your Django application from other origins [6].

Development Dependencies

1. Requests:

Requests module allows you to so HTTP requests using python. It returns a response object in which one will get the requested data, request status code, encoding, etc. In DMS, it was used in unit and integration testing. We have used it for sending get, post, and put requests.

2. Pytest:

It's a python framework for test driven development. It helps you to setup test environment on any python project and it supports complex functional testing for applications and libraries.

3. Pytest-Django & Pytest-html:

These plugins are part of pytest environment. Pytest-Django enable you to write test cases in a very clean way. It also helps you define different markers, under which you can separate test cases for different purposes as well. Pytest-html gives you a html look like report for test results.

4. Flake8:

Flake8 is a Python library that wraps PyFlakes, pycodestyle and Ned Batchelder's McCabe script [7]. It is a great toolkit for checking your code base against coding style (PEP8), programming errors (like "library imported but unused" and "Undefined name") and to check cyclomatic complexity.

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