User Guide and Documentation

Open Inventory System

June 29, 2020

1 Introduction

Inventory management needs a lot of documentation, forms, and folders when implemented manually. There is a need for automating inventory management to ensure the safety of the items in a laboratory, make borrowing of items efficient and make monitoring of labs simple for administrators. In current systems, users are required to do all the work manually which results in a lot of wasted time. Users being unable to see the availability of lab items also makes it harder for them. So a sustainable and reliable automated system is required to make this process more efficient and easy to use. This system is an open-source, free software built for the target of letting users manage laboratories easily.

2 Important Links

Deployed Frontend server
Link: `https://openinventoryorg.github.io/web-frontend/`

Deployed Backend API
Link: `https://open-inventory-system.herokuapp.com`

Deployed administration dashboard
Link: `https://open-inventory-system.herokuapp.com/admin`

Deployed mobile app link
Link: `https://openinventoryorg.github.io/web-frontend/app/openinventory.apk`

Deployed module documentation
Link: `https://openinventoryorg.github.io/docs/`

Deployed REST API documentation
Link: `https://openinventoryorg.github.io/docs/api/`

Deployed user documentation
Link: `https://openinventoryorg.github.io/docs/guide/`

Backend API Github repository
Link: `https://github.com/openinventoryorg/backend-api`

Web frontend Github repository
Link: `https://github.com/openinventoryorg/web-frontend`

Mobile app Github repository
Link: `https://github.com/openinventoryorg/student-mobile`

3 Getting started

3.1 Quick Start

The project is already deployed at `https://openinventoryorg.github.io/web-frontend/`. So you can test the system from this endpoint rather than configuring the project from scratch. If not you can follow the building from source guide to build the project from scratch.

3.1.1 Initial Run

After you run the project, you will receive an email (specified as *ADMIN_EMAIL* in *.env* file) with a link to the registration page .Then click the link and start your admin account registration by completing the form. After you completed the form hit the register button and you will be directed to the login page. Login to the system with the provided credentials and you will be redirected to the system dashboard. (Figure 1)

Here you will find most of the administration tasks associated with the system. Note that you will be able to access all the functionalities only if you are logged in as a administrator. Other users will see the sections depending on their permissions.

- Site Administration - Super Admin Dashboard
- User Administration - Create/Manage Roles, View Users, Add Supervisors, View Supervisors
- Lab Management - Create Laboratories, View Laboratories, Assign Staff Members
- Item Management - Create/View Item Sets, Create Items, View Items, Generate Barcode
- Account Registration - Invite Users, Retract Invitations
- Inventory Management - Lend/ Receive, Temporary Handover

Super admin dashboard (`https://open-inventory-system.herokuapp.com/admin`) is a administration dashboard which is more secure and detailed without the frontend. If will manage direct database manipulations such as changing some settings etc... You will be asked for credentials again and then taken to the super administration dashboard. (Figure 2)

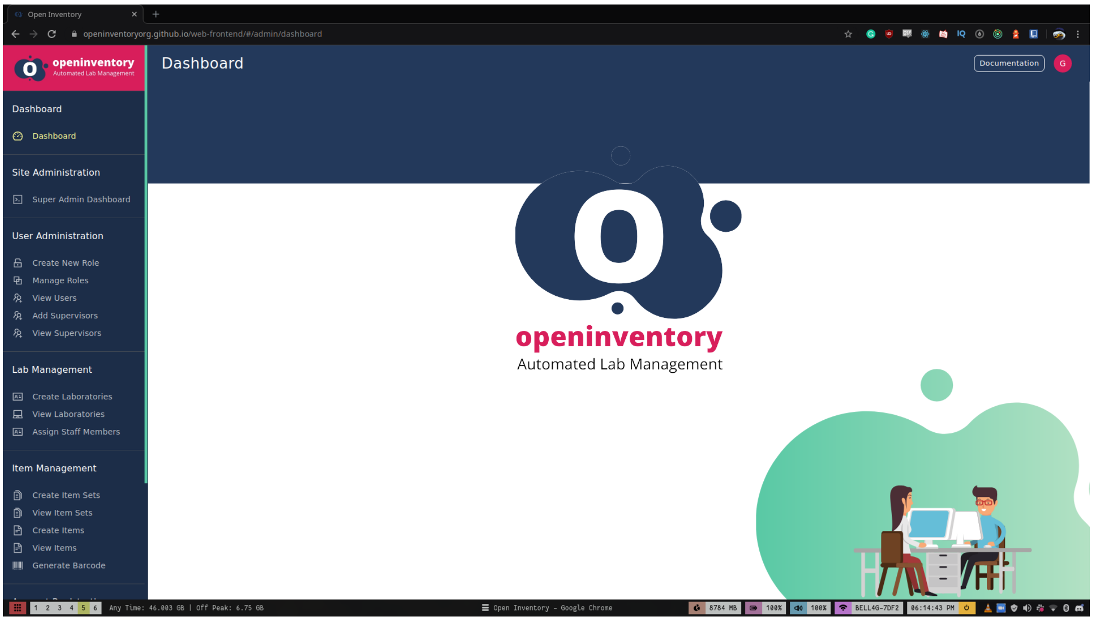
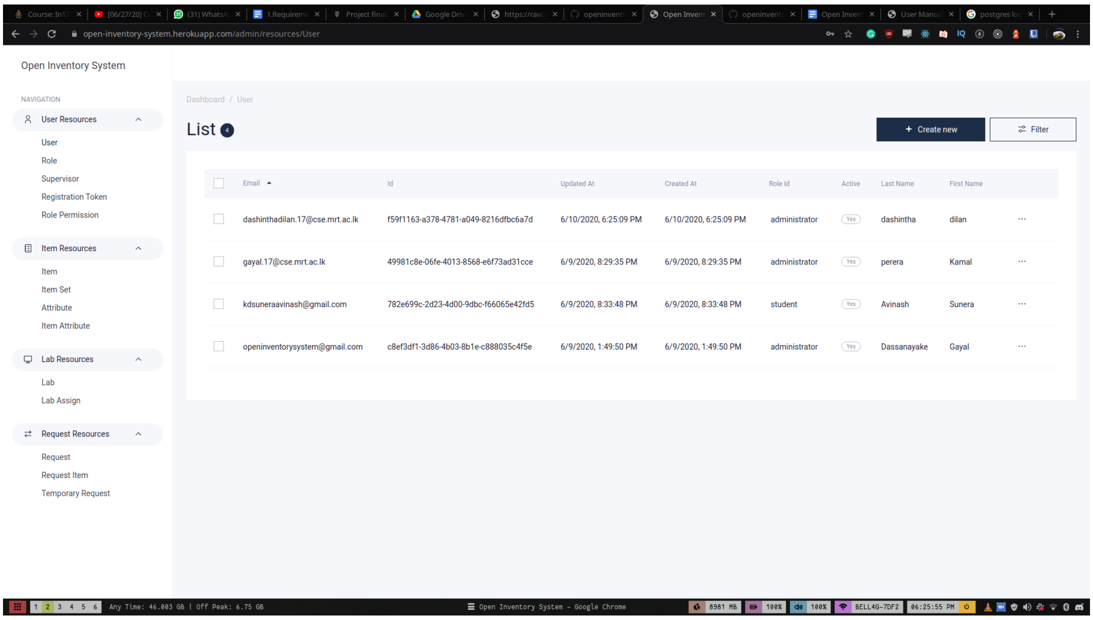


Figure 1: Admin Dashboard

3.1.2 Mobile Application

You can login to the mobile app as a student or a staff user. Either way, you will have to enter the server URL at the start of the app. Use the URL specified in the ome page of the web frontend here. (eg: `https://open-inventory-system.herokuapp.com`)



List 4

□	Email	Id	Updated At	Created At	Role Id	Active	Last Name	First Name	
□	dashinthadilan.17@cse.mrt.ac.lk	f59f1163-a378-4781-a049-8216dfbc6a7d	6/10/2020, 6:25:09 PM	6/10/2020, 6:25:09 PM	administrator	Yes	dashintha	dilan	···
□	gayal.17@cse.mrt.ac.lk	49981c8e-06fe-4013-8568-e6f73ad31cce	6/9/2020, 8:29:35 PM	6/9/2020, 8:29:35 PM	administrator	Yes	perera	Kamal	···
□	kdsuneraavinash@gmail.com	782e699c-2d23-4d00-9dbc-f66065e42fd5	6/9/2020, 8:33:48 PM	6/9/2020, 8:33:48 PM	student	Yes	Avinash	Sunera	···
□	openinventorysystem@gmail.com	c8ef3df1-3d86-4b03-8b1e-c888035c4f5e	6/9/2020, 1:49:50 PM	6/9/2020, 1:49:50 PM	administrator	Yes	Dassanayake	Gayal	···

Figure 2: Super Admin Dashboard

After that depending on your user type, you will be taken to the home page. As a staff user you can scan barcodes and temporary handover items. As a student you can request items.

4 Requirements

The basic requirements of the system are,

- **Dynamically configurable role-based access system.** Initially, only the administrator and student roles will be available. Administrators can create new roles with different privileges and add accounts as staff. *Example: An administrator can create a role technical officer and grant privileges to create labs, add items, and lend items.*
- **Registering students and staff into the system.** Registering will be done via an email sent to each student. Admin (or any user with relevant privileges) can add email addresses that are permitted to create accounts in the system.
- **Requesting to borrow items in the lab by students** Students can use the mobile app to view and add lab equipment(App will show availability, etc...) and request to borrow them via a supervisor/lecturer. The system will interact with supervisors/lecturers via emails to gain access on behalf of students. Students can then go to lab staff and borrow items.
- **Lending the permitted items to the students by staff** Through the mobile app, staff can easily scan item bar-codes and student ids to lend items.
- **Creation of labs and assigning of staff into labs**
- **Maintaining the inventory of items of each lab** Availability as well as other metrics can be easily monitored through the web application.
- **Bar-code generation for items without serial numbers**
- **Marking items as damaged, unavailable and transferring items from one lab to another**
- **Utilize the mobile app to use for entering item bar-codes and marking items** The mobile app will directly support selecting items through the camera. Staff web app will be connected to provide seamless integration to increase user-friendliness.

5 Building from Source

5.1 Backend Server

Current system uses postgres as the backend server. In order to correctly run the system, you have to setup postgres database server correctly. Use guide from official postgres site to setup the database server. Then use following commands to log into the postgres server and create the local database.

```
psql -U postgres
```

Then enter below commands in order to create the role from which the server will access the database. Remember the credentials you entered in this step.

```
CREATE ROLE openinventoryuser WITH LOGIN PASSWORD 'password';
CREATE DATABASE openinventorydatabase;
GRANT ALL PRIVILEGES ON DATABASE openinventorydatabase TO openinventoryuser;
\q
```

After this confirm that the database was correctly set-up. Use following commands to log into the system and check the database and user creation.

```
psql -U openinventoryuser openinventoryuser
```

The web server uses Node.JS as the backend runtime environment. So you will have to install and configure Node.JS. The backend was tested with NodeJS 12.16.1 LTS. Install npm to download and install packages for the system. This can be done via following commands in arch-based systems. On windows systems, go to the official websites and download and install the setups.

```
sudo pacman -S nodejs-lts-erbium
sudo pacman -S npm
```

Then download the project via github. Use npm to install the necessary packages.

```
git clone https://github.com/openinventoryorg/backend-api
cd backend-api
npm install
```

Then create new file named .env. Put the following content into the file. Put relevant dabase credentials into the file.

```
PORT=8000
NODE_ENV=development
DATABASE_URL=postgres://openinventoryuser:password@localhost:5432/openinventorydatabase
SALT_ROUNDS=10
JWT_SECRET=jwtsecret
LOG_LEVEL=info
MAIL_SENDER=openinventorysystem@gmail.com
ETHEREAL_USERNAME=maynard64@ethereal.email
ETHEREAL_PASSWORD=E6NyGYDJCgrCr9QKYN
GMAIL_USERNAME=openinventorysystem@gmail.com
GMAIL_PASSWORD=PASSWORD
SITE_API=http://localhost:3000/web-frontend/#
DB_INIT=true
ADMIN_EMAIL=admin@admin.com
SENDGRID_API_KEY=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
ENABLE_ADMINPANEL=true
```

Then use npm to serve the web-server. After initial run set DB_INIT as false in the .env file.

5.2 Frontend Website

You need to have nodejs and npm properly configured. After configuration, clone the frontend server and install packages.

```
git clone https://github.com/openinventoryorg/web-frontend
cd web-frontend
npm install
```

After that, simply run the following command and open http://localhost:3000 to view the server. The project is configured to access http://localhost:8000 for the API. So make sure that you are running the web backend as the frontend is run.

```
npm start
```

5.3 Mobile Application

First, install flutter. Then clone this repository and run using flutter tool.

```
git clone https://github.com/openinventorysystem/student-mobile
cd student-mobile
flutter run
```

This has to used alongside the open inventory backend. Point the app to the remote server on the first run.