

Systems & Biomedical Engineering Department

Faculty of Engineering

Cairo University



Database System For CMMS In Tertiary Hospital

Ahmed Salah El-Din Fouad |Sec: 1 | B.N: 5

Ahmed Abdelmageed Ahmed |Sec: 1 | B.N: 8

Ahmed Mahdy Mohammed |Sec: 1 | B.N: 9

Abdullah Mohammed Sabry |Sec: 2 | B.N: 8

Fady Tadrous |Sec: 2 | B.N: 13

Submitted to: **Dr. Bassel Tawfik**

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# Description

Design a database system for CMMS in a tertiary hospital. The main target of this project is to storage and organize the devices data, staff’s information, work orders, different types of reports and other data of a hospital in a good and interactive way so the hospital’s staff could use it perfectly without any bugs.

# Features

The website has many features. The user could be an admin, an engineer or a technician, so not all features are available for any user, which make the database more secured. Let’s talk about some features starting from the beginning of workflow to the end:

* Login System with security authorization
* Some statistics about the stored data and work orders.
* Viewing each stored data in a separate table in a nice-look view.
* Adding a new data to the database or modifying the existing data.
* A notification system for viewing the work orders to be done.
* Creating different types of work orders for each device in a specific department or for all the devices in a certain department.
* Generate different types of reports such as repair, PPM and daily inspection reports, display and save them as PDF files.

# Workflow And Results

In this section we will explain how the website works and the steps from starting the website until generating a certain report.

## 3.1 Login Page

As you see in Figure 1 you need to login first to access the database and use it. And of course, for the sake of security, the users’ passwords are encrypted.

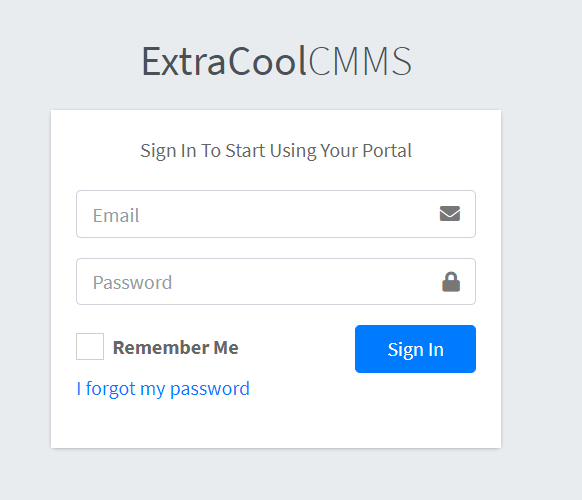


Figure 1: Login Page

## 3.2 Home Page

After you’ve logged in you will be redirected to the home page of the website, see **Figure 2**. In this figure the logged in user is ad admin so the view is different and he can access different data.



Figure 2: Home Page – Admin

In the home page you could see some information about each part of the database such as the users, departments, devices, parts and the work orders. These data are related to each other and connected together i.e. each department has some devices and each device is formed of some parts.

## Data Tables

In the following figures you could see each table of the data we added in the database, as we mentioned above, we’re now logged in as an admin, so you would see an option for the adding or deleting operation. We added some features to each table such as searching, sorting and panning for more flexibility and user experience.

### 3.3.1 Departments Data

There are four departments in this database as it’s a beta version as you could see in Figure 3.

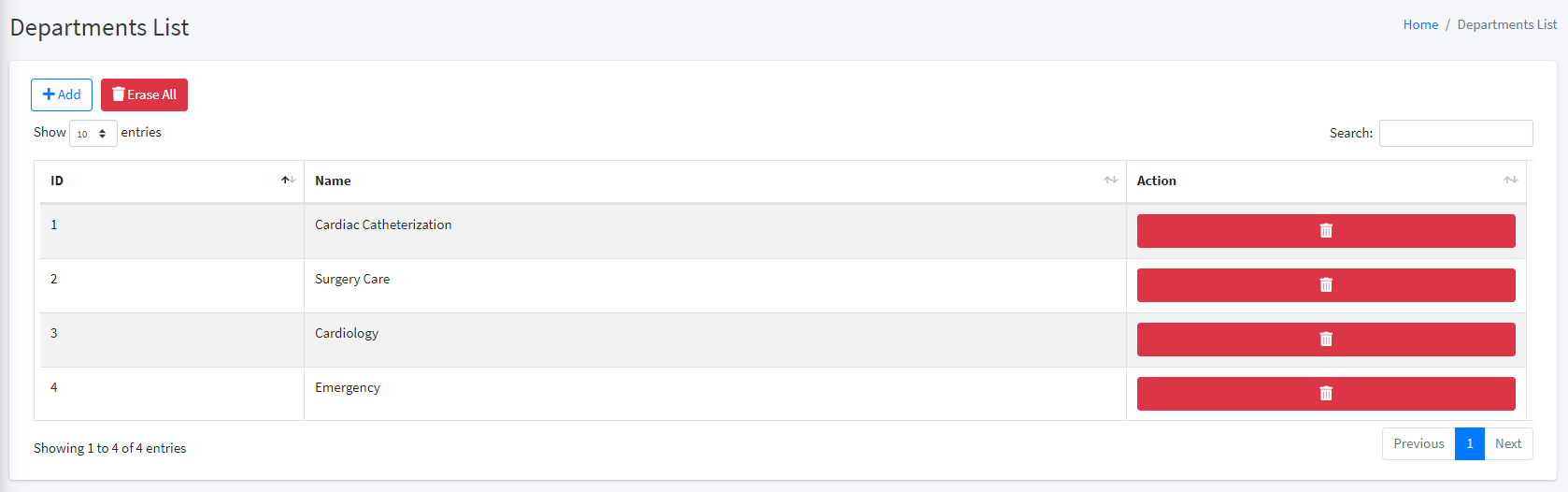


Figure 3: Departments Table

### 3.3.2 Users Data

The users list is divided to 3 types, an admin, an engineer and a technician, see **Figure 4**. The admin can access more data and make different actions that the engineer or the technician can’t do it such as adding a new department, device and part. And only the admin can perform a delete operation to an existing data.

As you see in the figure, each user belongs to one department and has a certain role.

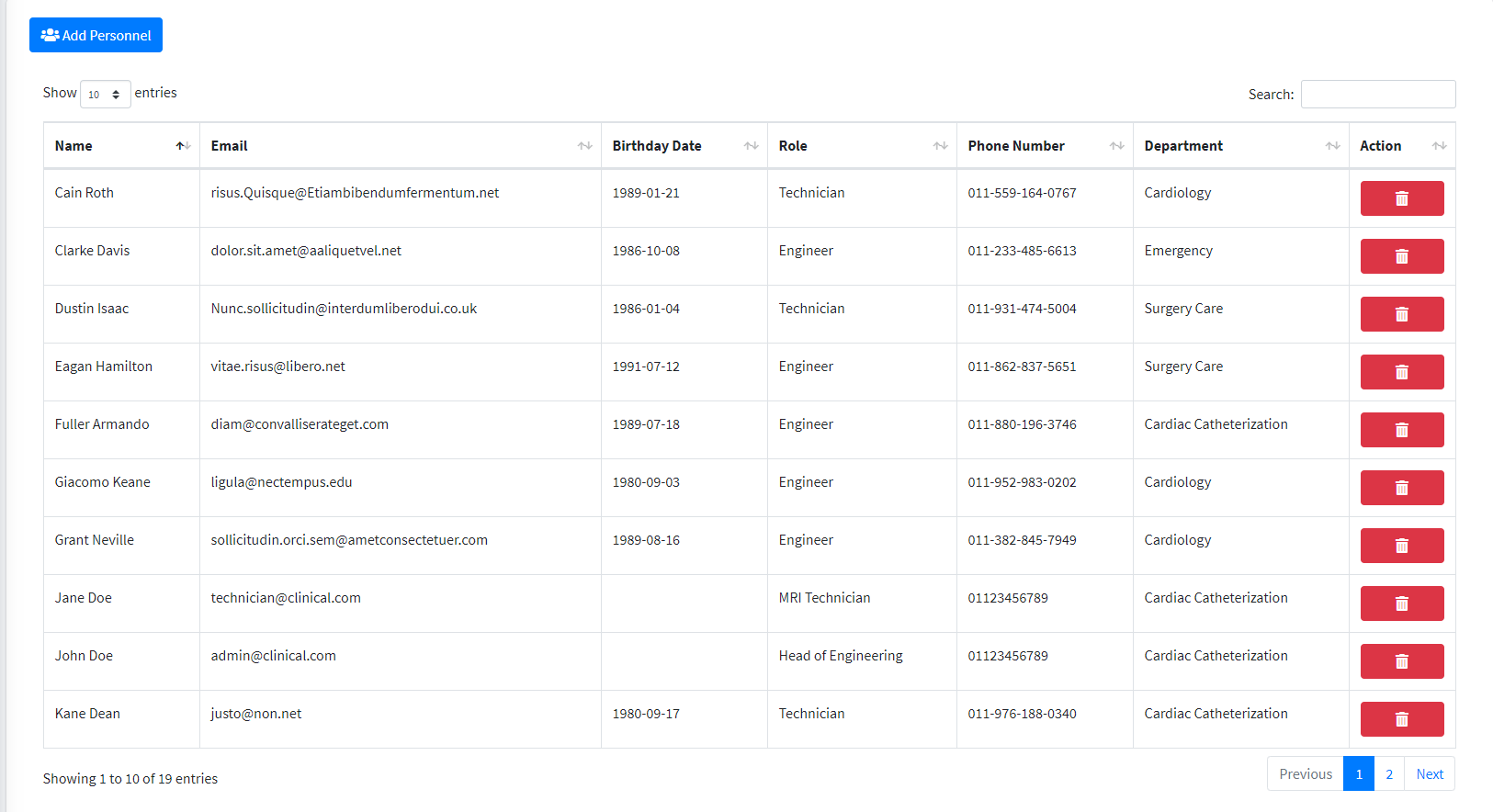


Figure 4: Users List

### Devices Data

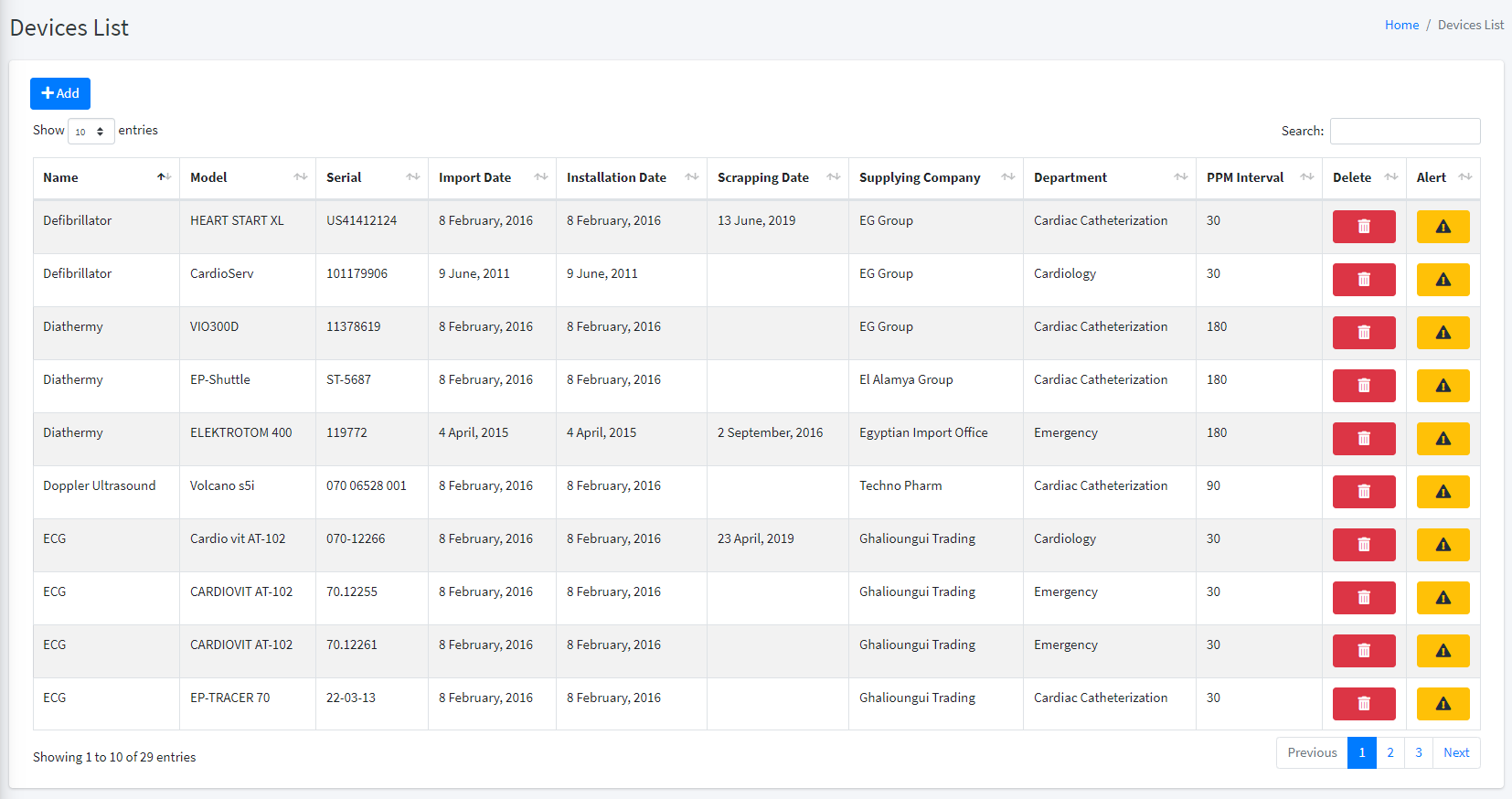


Figure 5: Devices Table

Each device has some important data we need for generating the required reports. The warning icon purpose is to make an alert on this device when any problem occurs to this device or if sudden failure happens. After executing this alert, a new notification would appear in the notifications badge.

## Notifications System

After generating a work order, a notification would appear in the notifications badge. Each work order has a certain type such as ‘**Repair’**, ‘**PPM’** and ‘**Daily** **Inspection’**. After creating some work orders:

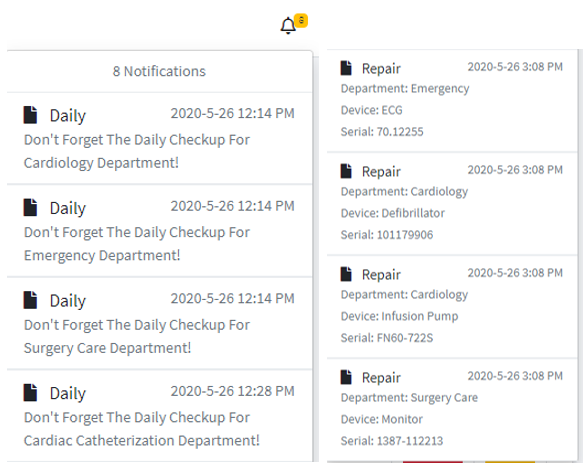


Figure 6: Notifications Bar

When you click on this notification you would be redirected to a form for creating a new work order on this device with the associated report type in the notification.

## Creating Work Order

Each work order has different form to fill it with the needed data. You will be redirected to the specific form depending on the type of work order, as you saw previously in the notifications bar, the type of the work order is displayed with some useful data such as department and device names.

### 3.5.1 Repair Type

For the ‘repair’ type, the form of creating its work order is shown in **Figure 7**. The department, device and user names are automatically filled after clicking on the notification.

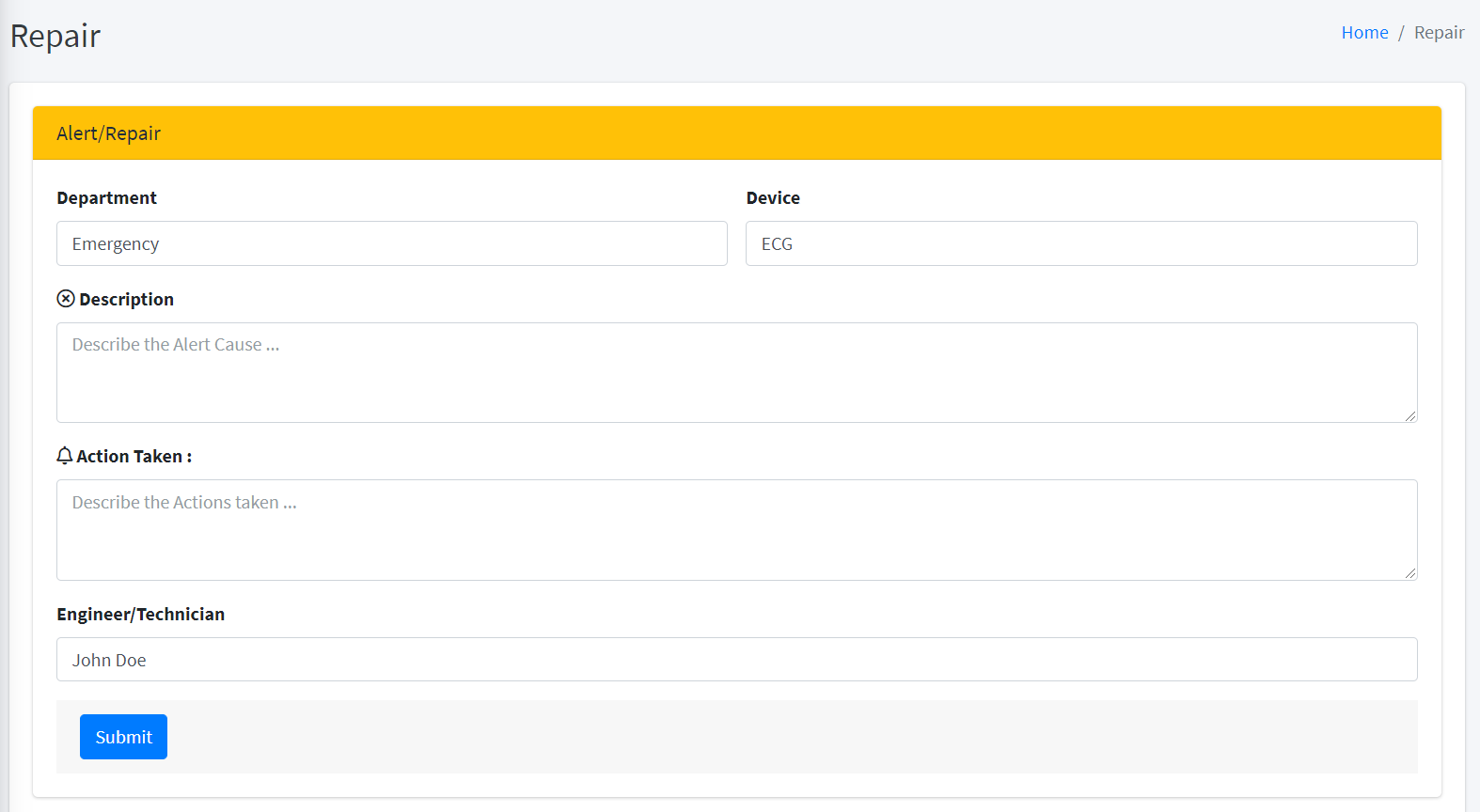


Figure 7: Repair Work Order

The user can fill this form with the required information and describe the work order and what he have done.

### 3.5.2 Daily Inspection Type

For the ‘Daily Inspection’ type, the form of creating its work order is shown in Figure 8. In this case it’s for all the devices in surgery care department. The user will fill this check boxes for each device depending on its state. As you see in **Figure 8** below.

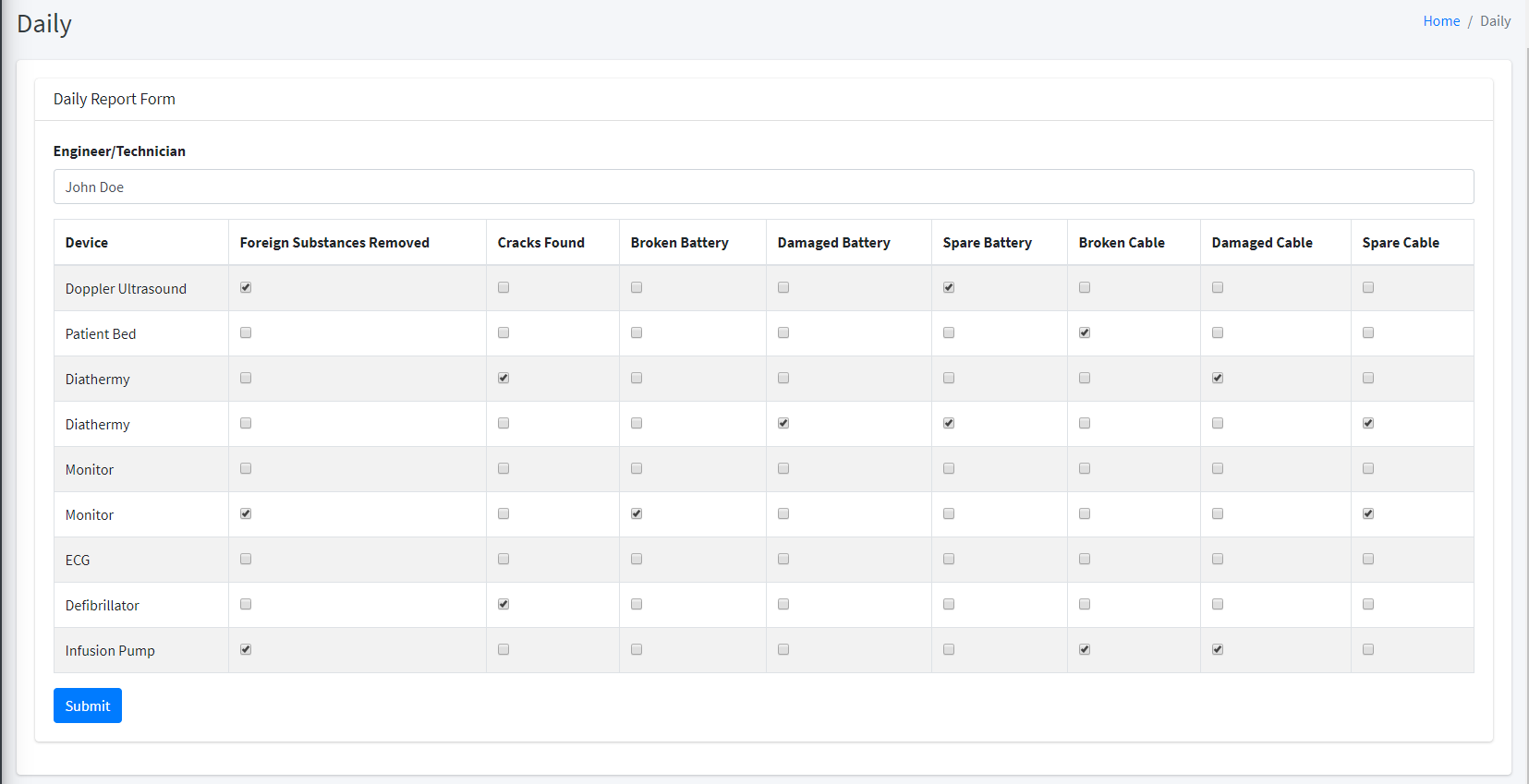


Figure 8: Daily Inspection Work Order

### 3.5.3 PPM Type

For the ‘PPM’ type, the form of creating its work order is shown in Figure 9.

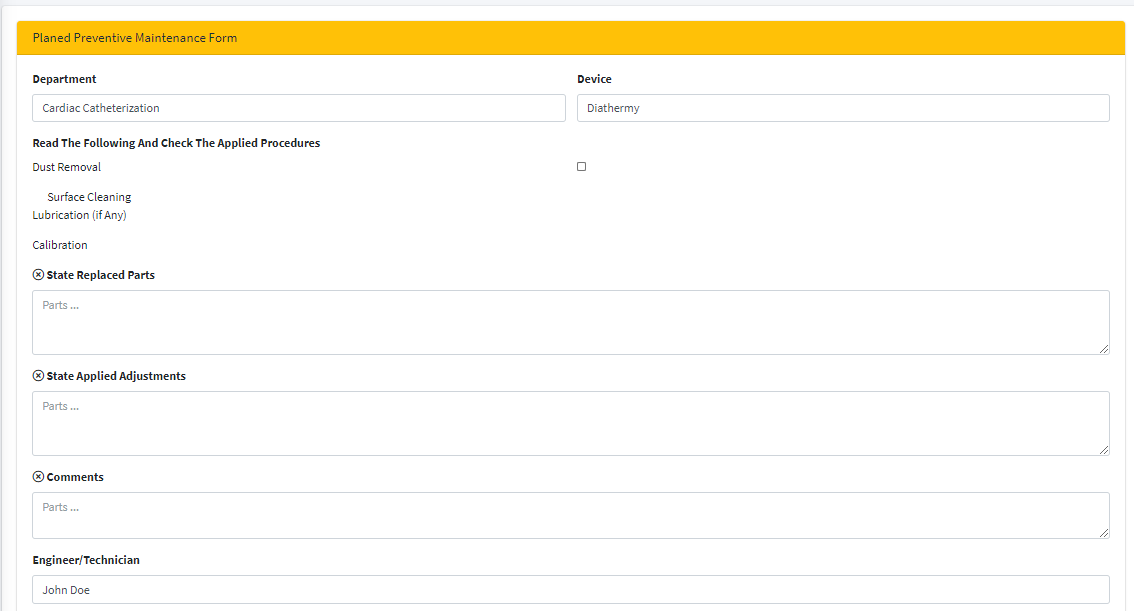


Figure 9: PPM Work Order

After submitting each one of the previous forms, a new work order would be generated and recorded in the database successfully. So, after creating some work orders, here is a list of some recorded work orders that we have made, see Figure 10.

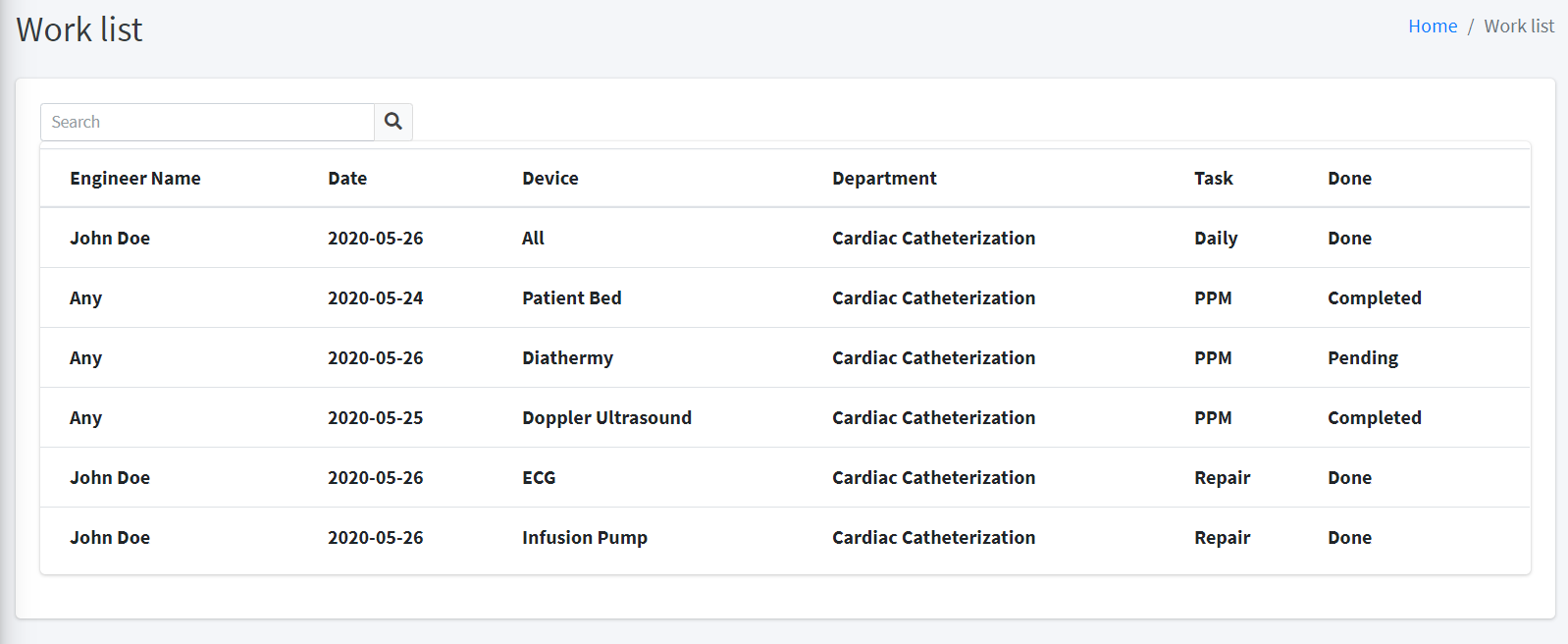


Figure 10: Work Orders List

## Generating The Reports

We could generate three different types of reports (Repair, Daily Inspection and PPM). In the sidebar there is a button ‘**Reports**’, it would redirect you to the page of creating a new report, see **Figure 11**.

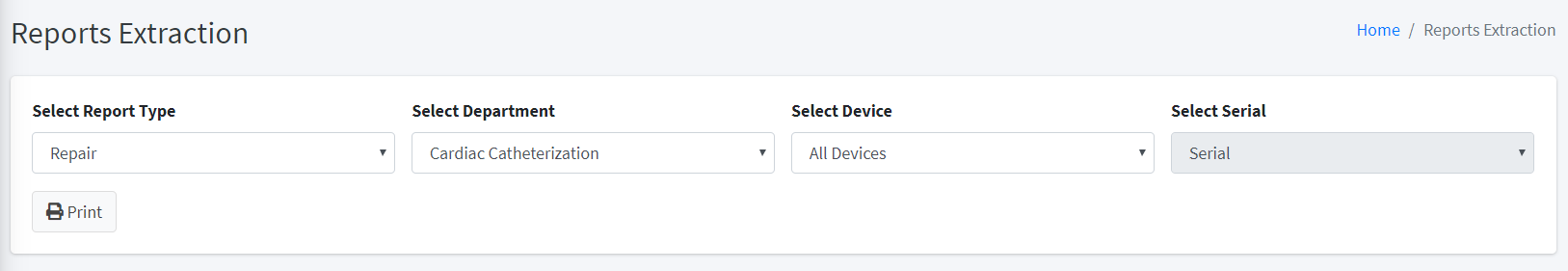


Figure 11: Generating Reports

After you click ‘button’ button, you would see the result of the extracted report in the same page, see **Figure 12**.

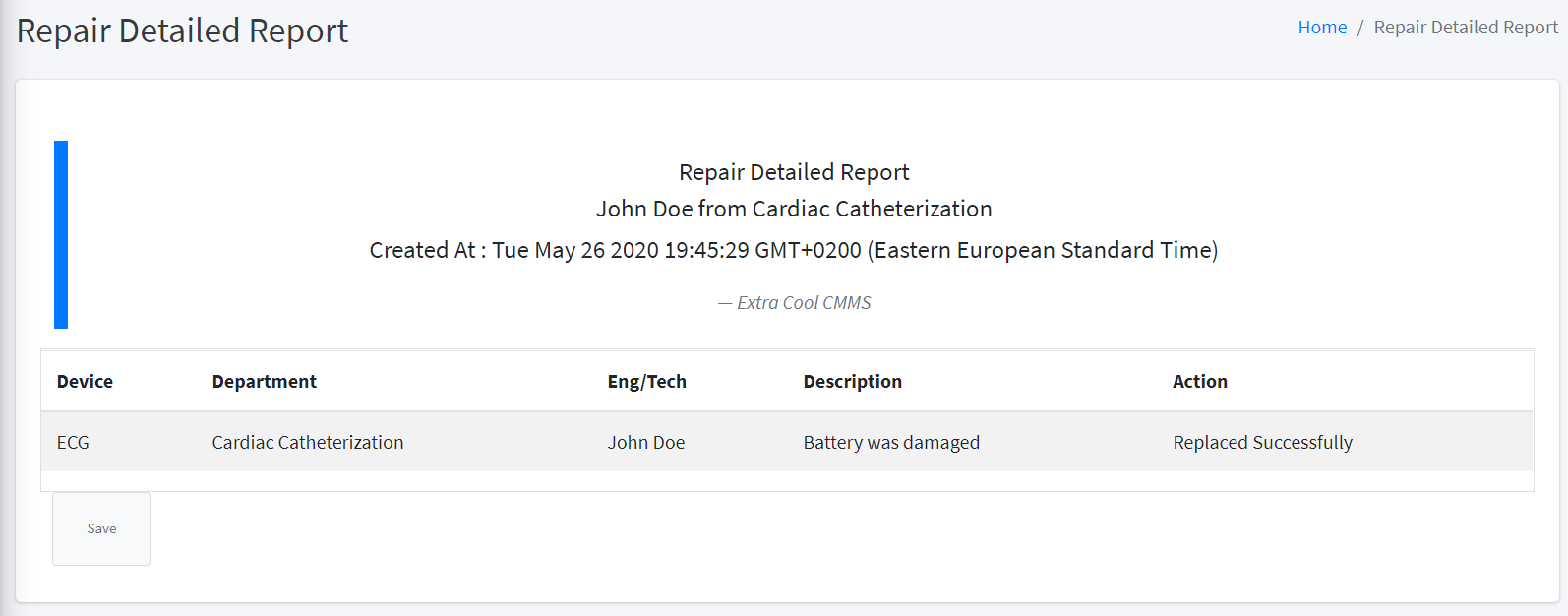


Figure 12: Repair Report Result

Another type of the reports is “Daily Inspection” and this is the result when generating its report, see Figure 13.

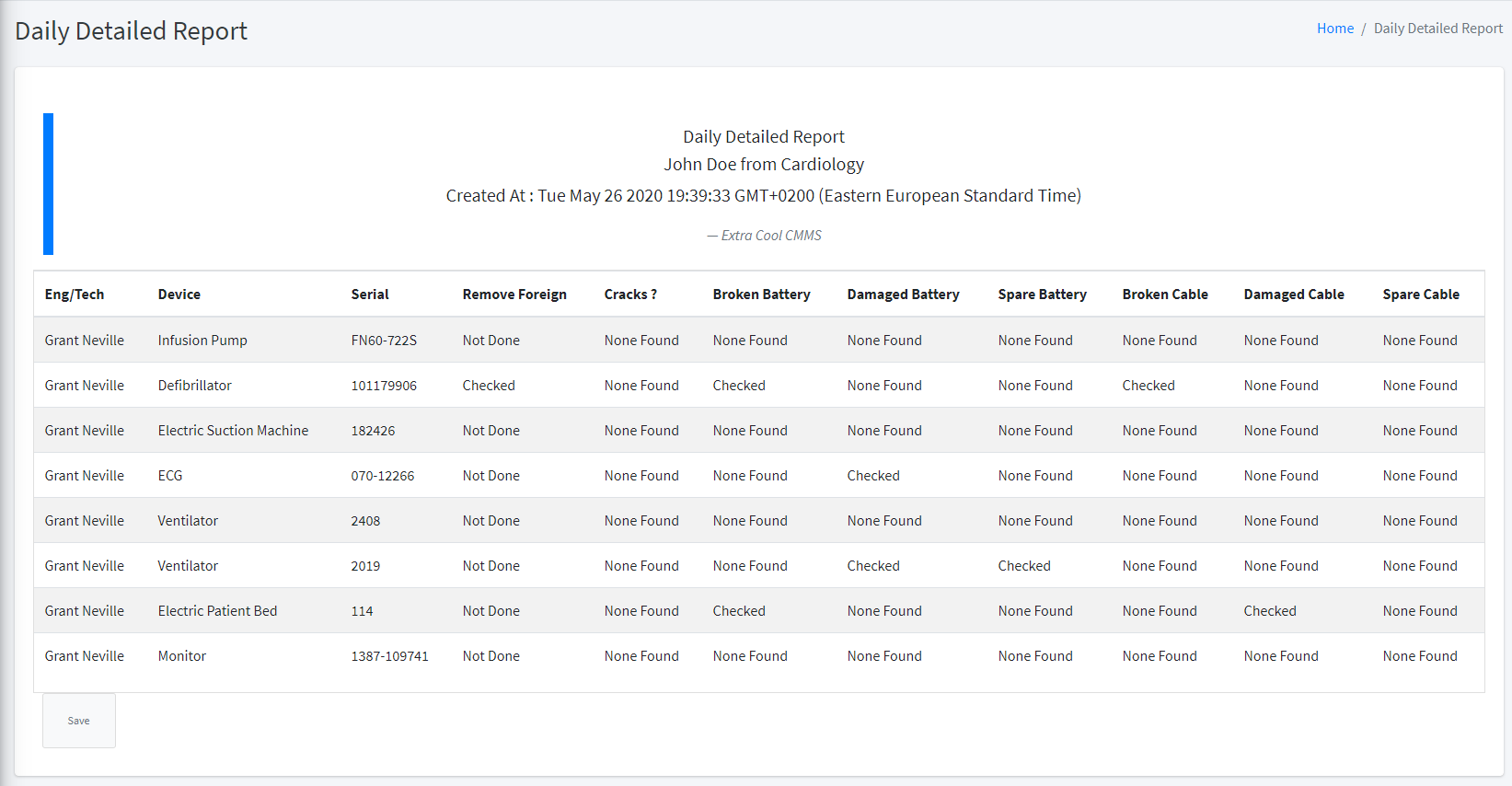


Figure 13: Daily Inspection Report Result

You could save this report as PDF by clicking on ‘save’ button.

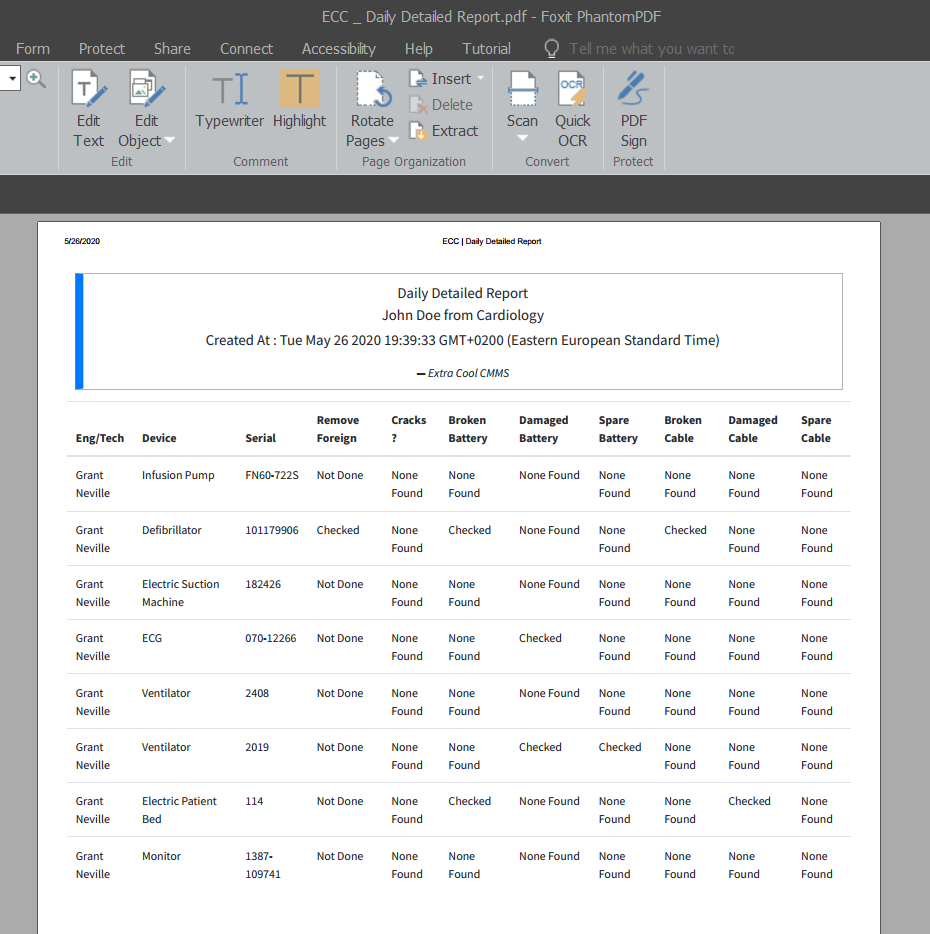


Figure 14: Report' Result as PDF File