

System Design and Data Model

Project Overview

This system aims to provide IT asset tracking within a company. It is designed to be accessed only by a company's IT team. Our system will allow IT departments to view which devices have been issued to a given employee, check information about those devices, and track when employees checkout / return various technology assets. In addition, we'll provide corporate IT departments with various company-wide-summary statistics to give them greater visibility into the use of technology in their organizations.

Tech Stack

We will build a Python/Flask server which uses a MySQL database backend.

Scope

Our application will:

- Provide users with a list of devices issued to every employee
- Provide access to information about each of the issued devices i.e. make, model, serial number, etc.
- Allow IT workers to issue new devices to employees
- Allow IT workers to record when employees return devices
- Compute various "company-wide" statistics about issued devices. For example, the number of apple mice issued to employees.

Our application will not:

- Handle any user authentication. It is assumed that our application is running in an environment only accessible by qualified members of a corporate IT department.
- Be designed for access by employees. Again, it is solely for the internal use by IT professionals

System Design: Control Flow

This sections describes the basic flow of our application. For detailed information on the company view and employee view see the following sections.

Our system has two distinct views: the company view, and the employee view. Users initially land on the company view. Here they are presented with a table showing each employee at the company, their start and end dates (if applicable) and the number of devices currently issued to that employee. In addition, the user is also presented with information on the number of devices of a certain type , say apple mice for example, currently issued to employee. From the company view, users can add/ remove employees or can click the row of an employee and proceed to the employee view for that employee.

The employee view presents information on a single employee at the company. It presents their name, start and end dates (if applicable) and a table with detailed information on the devices currently issues to that employee. From here, users can check various devices out to employee or check-in previously issued devices. Users can return to the company view by way of the back button.

Company View

The company view will provide information about the distribution of IT assets at a company level. It will consist of a scrollable table of employee names (where each name is a link to the employee view for that specific employee) and the employee's start and end date to see if the employee is still working in the company and the number of devices currently registered to that employee. In addition, this page will also display a few company-level statistics about the devices currently issued by the IT department, e.g the number of apple mice currently issued by the department.

[Logo] TechCompany IT Device Tracker

Employees

| Employ ID | Name | Start Date | End Date | Devices Issued |
|-----------|----------------|------------|----------|----------------|
| 1 | Stewie Griffin | 11/8/2017 | null | 4 |
| | | | | |

Add Employee

Remove Employee

Device Statistics

| Device Type | Issued |
|-------------|--------|
| Apple mouse | 30 |
| Keyboard | 50 |

The employee view is a web page that has the employee's name, id, start and end dates; and a list of all devices currently issued to that employee. Each row in this list has the type, make, model, serial number, warranty expiration date of the device, as well as the date the device was issued.

| Device Type | Make | Model | Serial No | Warranty Exp | Date Issued |
|--------------|----------|------------------|-------------------|--------------|-------------|
| Apple Laptop | Apple | MacBook Pro 2017 | C0267XYE9029HSU09 | 10/8/2019 | 11/8/2017 |
| Mouse | Apple | MagicMouse | AMM021456JSW | null | 11/8/2017 |
| HDMI Cable | null | null | null | null | 3/4/2018 |
| Dongle | StarTech | USBC to HDMI | null | 11/29/2018 | 11/14/2017 |

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Data Model

Overview

Our data model consists of three tables: Employee, Issued_to, and Device. Employee represents an employee, which will include its employee id, name, start date and end date. Device represents a device/asset, which will include its device id, device type, make, model, serial number and its warranty expiration date. Issued_to represents a 1-to-M relation between an employee and device. An employee can be issued multiple devices. This relation keeps tracks of the employee id, device id, issued date and returned date.

CRUD operations

Our CRUD operations are mainly triggered by our buttons in Company and Employee View. Here are the data operations present in our system:

Create:

- creating new employees in Company View through button “Add Employee”
- creating new device issued in Employee View through button “Add Device”

Read:

- displaying all employees of a company and their details in Company View
- displaying all devices issued to an employee in Employee View

Update:

- adding/removing company employees in Company View
- adding/removing devices issued to an employee in Employee View

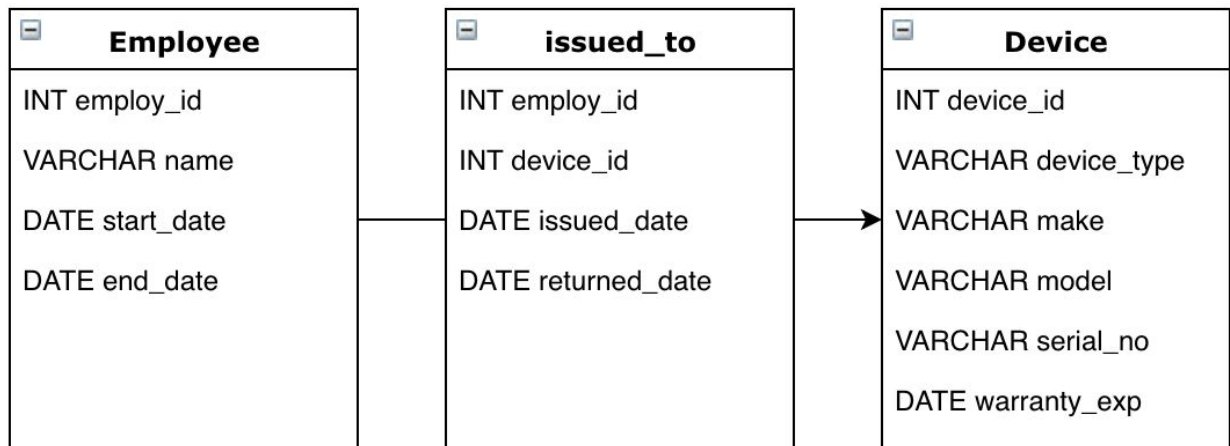
Remove:

- removing employees in Company View through button “Remove Employee”
- removing device issued in Employee View through button “Remove Device”

Authorization/Permission Assumptions

This system is intended to be used by the internal employees in the IT department only. Therefore, only IT engineers will be given privileges/permission to create, update and remove data from the database. However, it will be more convenient for other employees to know what they should currently possess. Therefore, all employees should be granted access to read from the “Device” attribute from the database, meaning they can only access the Employee View without the add or remove buttons.

ER Diagram



Relational Schema

Employee(employ_id,name,start_date,end_date)

Issued_to(employ_id,device_id,issued_date,returned_date)

Device(device_id,device_type,make,model,serial_no,warrenty_exp)