

MICHIGAN STATE

UNIVERSITY

Project Plan Presentation

Recovery of Lost or Stolen IT Assets

The Capstone Experience

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*From Students...
...to Professionals*

Project Sponsor Overview

- GM was founded by William C. Durant
- Parent company of Cadillac, GMC, Buick, etc.
- Invented PCV valve, Electrovair, first to use unleaded gas, etc
- Over 165,000 employees worldwide



Project Functional Specifications

- A platform to secure stolen or lost GM assets
- GM's current iteration vs Our solution
- Our goal: To expand and automate the process
- Two types of lockdowns: Instantaneous and Timed
- Automate confirmation and status emails
- Read-Access permission to the IT support staff



Project Design Specifications

- Two types of roles
 - Read access for general users
 - Full functionality for admins
- Allows for admins to remotely lock GM computers
- Easy to use desktop software application
- Usable on Windows, MacOS, and Ubuntu

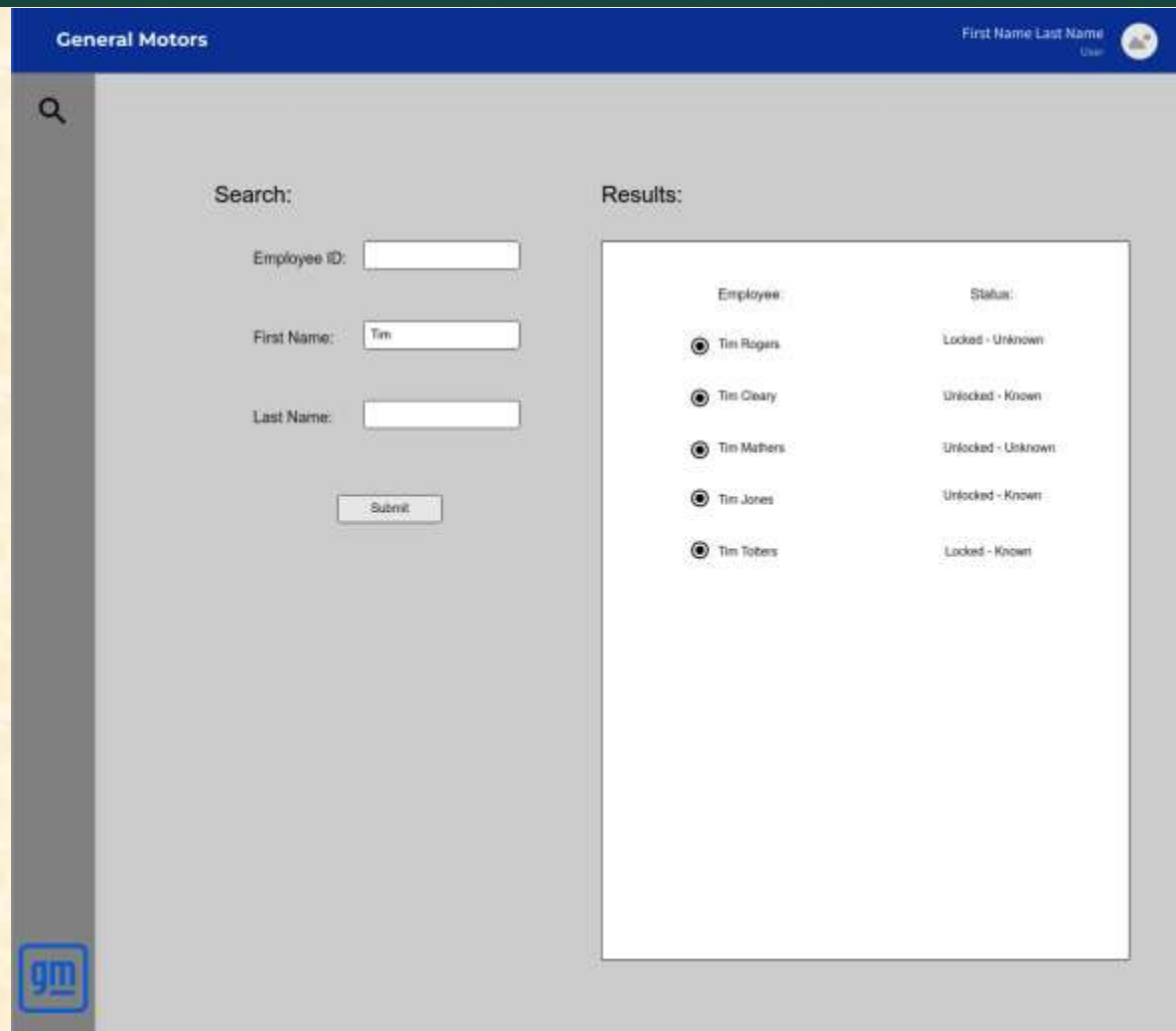


Screen Mockup: User Interface


The mockup displays a user interface for General Motors. At the top, a dark blue header contains the text "General Motors" on the left and "First Name Last Name" with a user profile icon on the right. Below the header is a search interface. On the left, a magnifying glass icon is positioned above the "Search:" label. The search form includes three input fields: "Employee ID:" with a placeholder "E.g. 190048", "First Name:" with a placeholder "E.g. John", and "Last Name:" with a placeholder "E.g. Doe". A "Submit" button is located below these fields. To the right of the search form is a "Results:" section, which is a large white rectangular area containing the labels "Employee:" and "Status:".



Screen Mockup: User Search



The mockup shows a user search interface for General Motors. It features a search form with fields for Employee ID, First Name (pre-filled with 'Tim'), and Last Name, along with a Submit button. The results are displayed in a table with columns for Employee and Status.

General Motors First Name Last Name
User 

Search:


Employee ID:

First Name:

Last Name:


Results:


Employee	Status
<input checked="" type="radio"/> Tim Rogers	Locked - Unknown
<input checked="" type="radio"/> Tim Cleary	Unlocked - Known
<input checked="" type="radio"/> Tim Mathers	Unlocked - Unknown
<input checked="" type="radio"/> Tim Jones	Unlocked - Known
<input checked="" type="radio"/> Tim Tobers	Locked - Known





Screen Mockup: Admin Interface

General Motors First Name Last Name
Admin 



Single Device Lock:

Employee ID:

First Name:

Last Name:

Set Lock Status:


Multiple Device Lock:

Country:

Set Lock Status:


Search Results:


Employee	Device Type	Last Location (Lat/Long)	Mac Address	Lock Status
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Screen Mockup: Admin Lock

General Motors First Name Last Name
Admin 



Single Device Lock:

Employee ID:

First Name:

Last Name:

Set Lock Status:

Multiple Device Lock:


Country:

Set Lock Status:

Search Results:

	Employee	Device Type	Last Location (Lat/Long)	Mac Address	Lock Status
<input checked="" type="checkbox"/>	9857462	Windows	42.7234° N, -84.4814° W	A1-B2-C3-D4-23;55	Unlocked - Unknown
<input type="checkbox"/>	9857462	MacOS	55.7558° N, 37.6173° E	B6-D3-A0-34:00:C3	Unlocked - Known

Please re-enter your password before submitting:





Screen Mockup: Country Lock

General Motors First Name Last Name
Admin

Single Device Lock:

Employee ID:

First Name:

Last Name:

Set Lock Status:

Multiple Device Lock:

Country:

Set Lock Status:

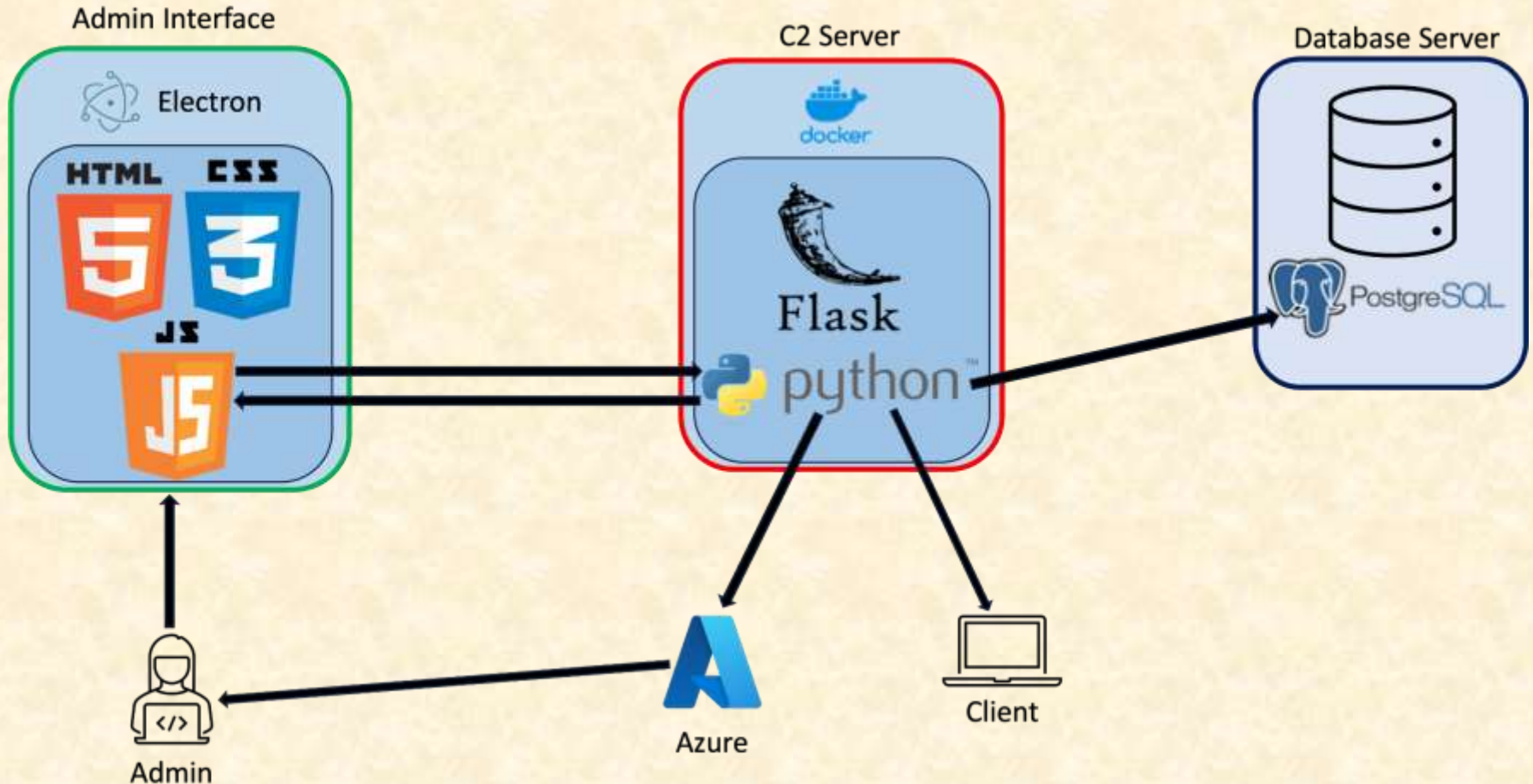
Search Results:

Country	Number of Devices
Germany	Total Devices - 1100 Windows - 700 Devices MacOS - 400 Devices

Please re-enter your password before submitting:



Project System Architecture



Project Technical Specifications

- Docker
- Flask Micro-Framework with Python
- PowerShell
- Electron framework
- PostgreSQL



Project System Components

- Hardware Platforms
 - Ubuntu Server
 - Microsoft Azure
- Software Platforms / Technologies
 - Docker
 - Flask with Python and PowerShell
 - Electron with HTML, CSS, and JS
 - PostgreSQL



Project Risks

- Scalability
 - Need our system to handle 10,000+ lockdown requests simultaneously
 - Test robustness with SQLAlchemy to emulate large numbers of queries
- Azure Integration
 - Need to integrate Azure to send digest emails detailing computer status
 - Write test scripts to send automated emails and digests
- Lockdown Initiation
 - We need to be able to lockdown a client computer and prevent access
 - Run test scripts on virtual machines to verify lockout status
- Reliability
 - Need to prevent common bypasses and attempts for unauthorized users to gain access
 - Test bypass options as well as disabling network and extra input ports



Questions?

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