Vote Vault

Team Members

Carson Batt, Jose Rodriguez, Kevin Yu, Logan Greer

Mentor: Abby Huelhorst

Client Information

Duncan Klemm

- Voting System Technical Oversight Program (VSTOP)

Design Items

Business Requirements

BR1: We want to help county clerks and election officials manage election equipment inventories efficiently.

- The system plays a crucial role in managing Indiana's election equipment, and efficient inventory management is essential for completing audits and certifications required before elections. Since county clerks and election officials are responsible for maintaining accurate records of equipment, the system must streamline these processes, reduce manual work and errors, and be able to produce random data for audits. This business requirement arises from the critical need to assist users in efficiently managing large amounts of data, ensuring compliance and readiness for elections.

BR2: We want to provide an at-a-glance summary of critical election data on a dashboard.

- Given that county clerks and election officials are the primary users of the system and often have limited technological proficiency, having a clear, easily navigable dashboard is essential. This dashboard should offer quick access to key inventory metrics, generate random records for audits, and other critical election-related data. Since users need to make informed decisions swiftly and efficiently, this business requirement is necessary to improve their workflow and ensure they have all relevant data available at a glance, minimizing the time spent searching through the system.

Use Cases

- UC1: Basic Inventory Management - Allows county clerks to manage election equipment and certificates.
- UC2: Bulk Inventory Management
- UC3: User Authentication and Authorization (Magic Link)
- UC4: Descriptive Error Messages
- UC5: At-a-glance Dashboard
- UC6: Static Reporting - Report of inventory
- UC7: Dynamic Tables - Sortable and filterable tables to manage election equipment.
- UC8: Page Demos
- UC9: Audit Report - Pull data that fits audit requirement
- UC10: User Management

Requirements

- FR1: The user shall be able to login with credentials.
  - UC1
  - HIGH
- FR2: The user shall be able to register
  - UC1
  - HIGH
- FR3: The program shall allow an API to access the data from the database.
  - UC2
  - HIGH
- FR4: User shall be able to see report of entity that they selected
  - UC2
  - HIGH
- FR5: The system shall allow for the creation of new entries.
  - UC2
  - HIGH

Requirements

- FR6: The system shall allow for updates to existing entries.
  - UC2
  - HIGH
- FR7: The system shall be able to display existing entries
  - UC2
  - HIGH
- FR8: The system shall allow for the deletion of existing entries.
  - UC2
  - HIGH
- FR9: The system shall allow for users to retrieve and display existing entries in a list.
  - UC6
  - HIGH
- FR10: The system shall allow for the bulk creation of many entries with common attributes.
  - UC3
  - MEDIUM

Requirements

- FR11: The system shall allow many existing entries with common attributes to be deleted in bulk.
  - UC3
  - MEDIUM
- FR12: The system shall display a dashboard with shortcut to add a new entries
  - UC5
  - MEDIUM
- FR13: The system shall display a dashboard with shortcut to view entries
  - UC5
  - MEDIUM
- FR14: The dashboard should have shortcuts to create entries
  - UC5
  - MEDIUM
- FR15: The system should be to display entries as a table
  - UC6
  - MEDIUM

Requirements

- FR16: The system should be to display entries as a table and allow to apply filters and re-order
  - UC7
  - MEDIUM
- FR17: The system should be able to pull data randomly and form into a table
  - UC8
  - MEDIUM
- FR18: The system admin shall have the ability to approve or decline users that register
  - UC10
  - HIGH
- FR19: The system admin shall have the ability to edit user’s detail
  - UC10
  - HIGH
- FR20: The system admin shall have the ability to delete an existing user
  - UC10
  - HIGH

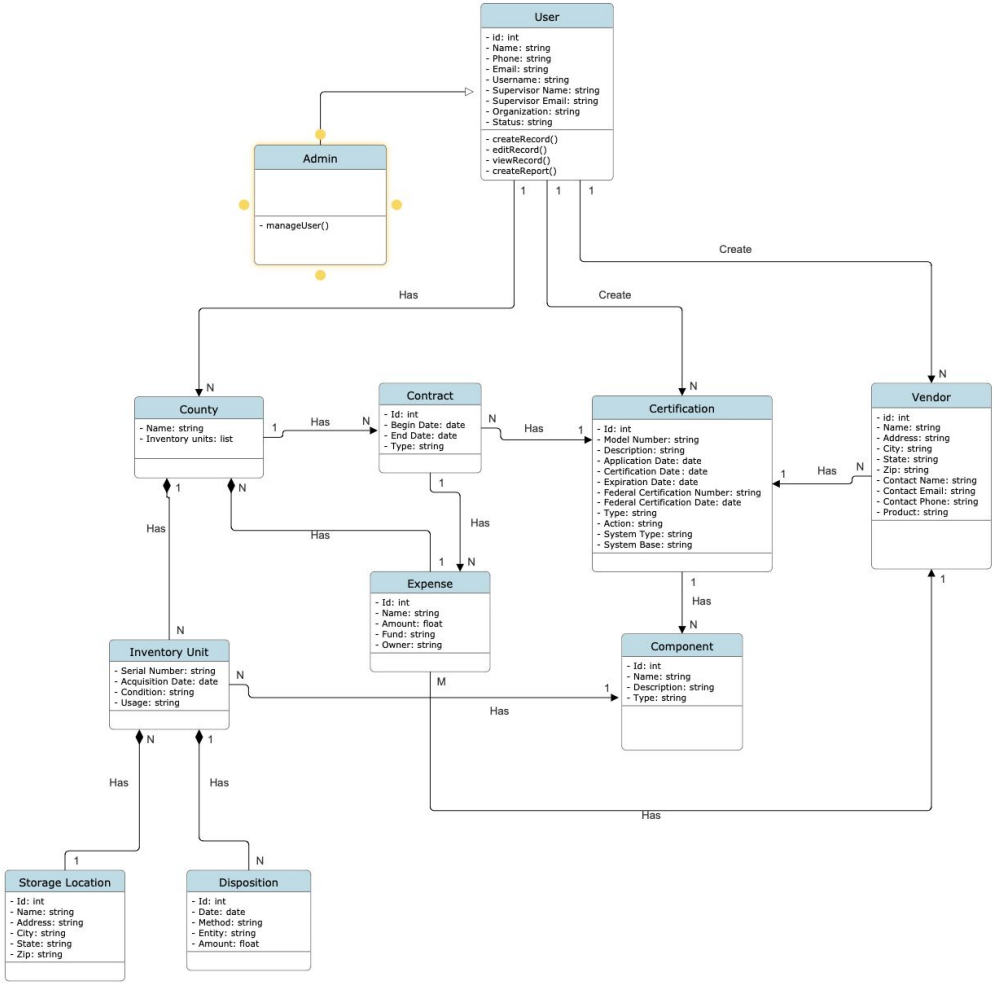
Requirements

- NR1: The system shall have error code for different errors
  a. UC4
  b. LOW
- NR2: The system shall display descriptive error base off the error code
  a. UC4
  b. LOW
- NR3: The system shall display a dashboard that allows users to make changes to the database
  a. UC5
  b. MEDIUM
- NR4: The system shall display a dashboard that allows users to access multiple different views of the data
  a. UC5
  b. MEDIUM
- NR5: The system shall have a tutorial for user
  a. UC9
  b. LOW

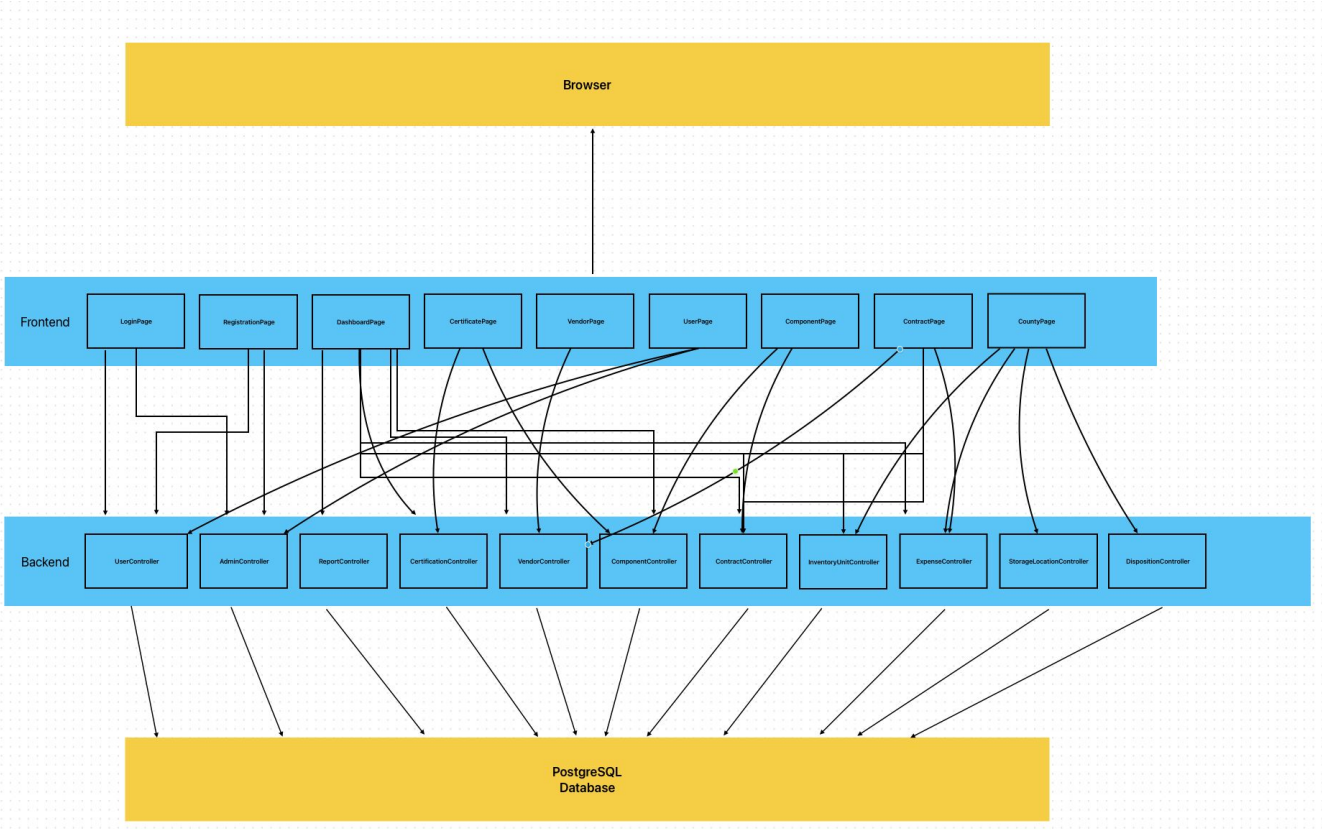
Requirements

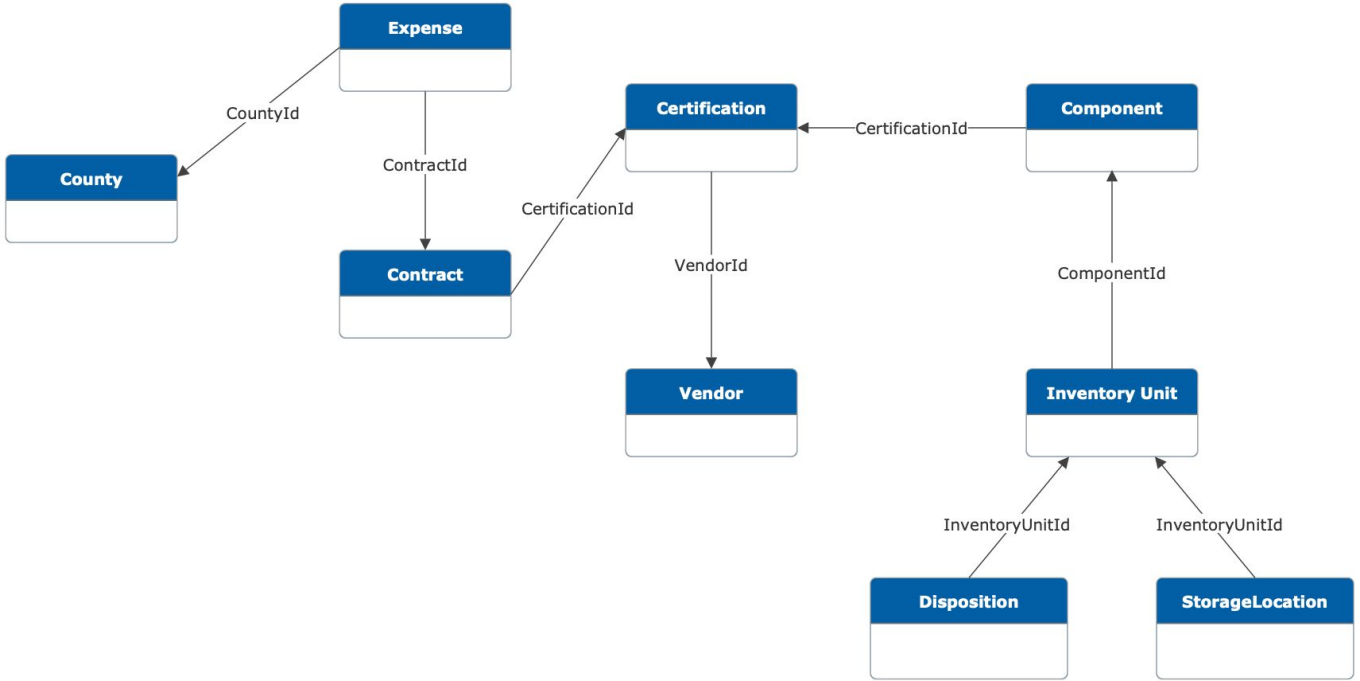
- NR6: The system shall log users out after 15 minutes of inactivity.
  - UC10
  - LOW
- NR7: The system shall force users to change their password once per year
  - UC10
  - LOW

Domain Model


User
- id: int
- Name: string
- Phone: string
- Email: string
- Username: string
- Supervisor Name: string
- Supervisor Email: string
- Organization: string
- Status: string
- createRecord()
- editRecord()
- viewRecord()
- createReport()
Admin
- manageUser()
Has
Create
Create
County
- Name: string
- Inventory units: list
Contract
- Id: int
- Begin Date: date
- End Date: date
- Type: string
Certification
- Id: int
- Model Number: string
- Description: string
- Application Date: date
- Certification Date : date
- Expiration Date: date
- Federal Certification Number: string
- Federal Certification Date: date
- Type: string
- Action: string
- System Type: string
- System Base: string
Vendor
- id: int
- Name: string
- Address: string
- City: string
- State: string
- Zip: string
- Contact Name: string
- Contact Email: string
- Contact Phone: string
- Product: string
Expense
- Id: int
- Name: string
- Amount: float
- Fund: string
- Owner: string
Inventory Unit
- Serial Number: string
- Acquisition Date: date
- Condition: string
- Usage: string
Component
- Id: int
- Name: string
- Description: string
- Type: string
Storage Location
- Id: int
- Name: string
- Address: string
- City: string
- State: string
- Zip: string
Disposition
- Id: int
- Date: date
- Method: string
- Entity: string
- Amount: float

Architecture




Expense
CountyId
County
ContractId
Contract
CertificationId
Certification
VendorId
Vendor
CertificationId
Component
ComponentId
Inventory Unit
InventoryUnitId
InventoryUnitId
Disposition
StorageLocation

Tech Stack

Database

- PostgreSQL
- Client has recommended that we use Postgres, and its similarity to MySQL makes us comfortable using it as a team.

Backend

- php 8.3 with laravel
- Laravel's extensive community and ecosystem offer powerful tools for authentication and authorization, while its MVC architecture, middleware, and routing provide flexibility. Known for its security and stability, it handles common vulnerabilities out of the box, making it a reliable long-term choice for backend development. It also has support for PostgreSQL & multiple frontend framework for flexibility.

Frontend

- React.js with typescript
- React is currently one of the most popular libraries used in frontend development. Its virtual DOM enables fast page rendering, improving the responsiveness of applications, making it an excellent choice for building a responsive dashboard. When combined with TypeScript, React offers a more robust system by adding static typing, which enhances code quality, simplifies debugging, and makes collaboration in team settings more efficient and reliable.

Prototype

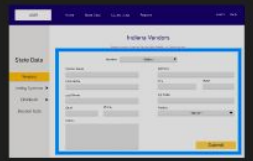
Registration page

Registration Confirmation

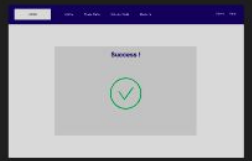
Login page

Home

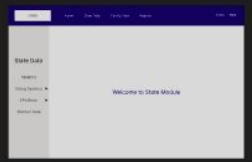
Vendors



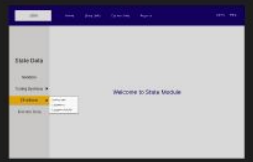
Form submit confirmation



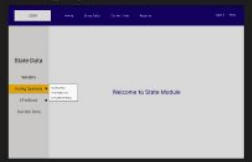
Welcome to State Module



EPB Hover



Voting Systems Hover



EPB Certifications

User Tab

First Iteration Features

- Have endpoint setup for CRUD for at least 3 of the entities
- Setup MVP frontend for demonstrate the above
- Get more information from client and finalize design

Mentor Feedback

- Some of our non-functional requirement seems to be more functional
  - Looking into the performance and stuff to find more
- Some of the use cases needed more details

Client Feedback

- Be careful when building the system
  - Be modular -> for future changes
  - Be clear -> easier to maintain
- Client helped with
  - Understanding the flow in VSTOP
  - Will send us current system screenshot as refernces

Thanks !