

STIMS

the Smart Tagged Inventory Management System

Abstract

STIMS, the Smart Tagged Inventory Management System is a database driven storage catalog capable of adding and tracking any combination of real world items. This **multi-modal storage paradigm** is achieved through the use of many tagging systems, in comparison to other inventory databases using simply one for a specific type of physical media.

The goal of STIMS is to provide database administrators with the tools to **easily catalog new items** and **even create new object types** for tracking, while providing a **streamlined search and recall** dashboard for end-users to facilitate inventory check-in and check-out operations while maintaining database security throughout the whole process.

Usability

- Users don't interact with the database system directly
- Database catalogers can add new items from the GUI app
- User onboarding process is quick and self-guided

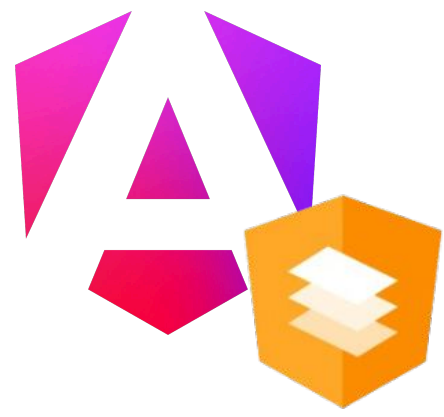
Simplicity

- Easy to understand GUI web application
- Utilizes Docker to facilitate easy set-up by database admins
- Works on any device capable of displaying web content

Customizability


- Account system allows for options and saved queries
- New item types can be added by administrators
- Item filters and sorting allow for user dashboard modification

Tech Stack



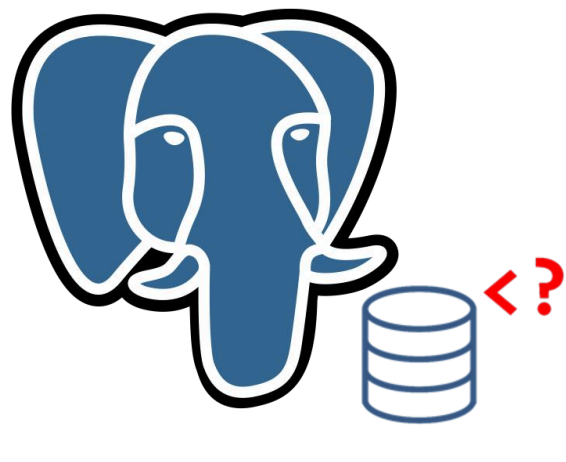
Frontend:

- Angular
- Mat. Design



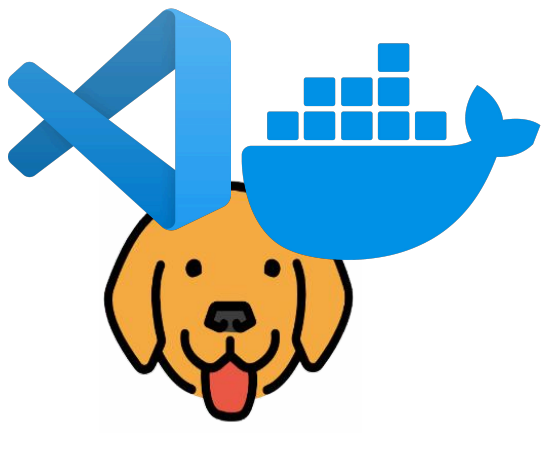
Middleware:

- Nodejs, Express
- Swagger API



Backend:

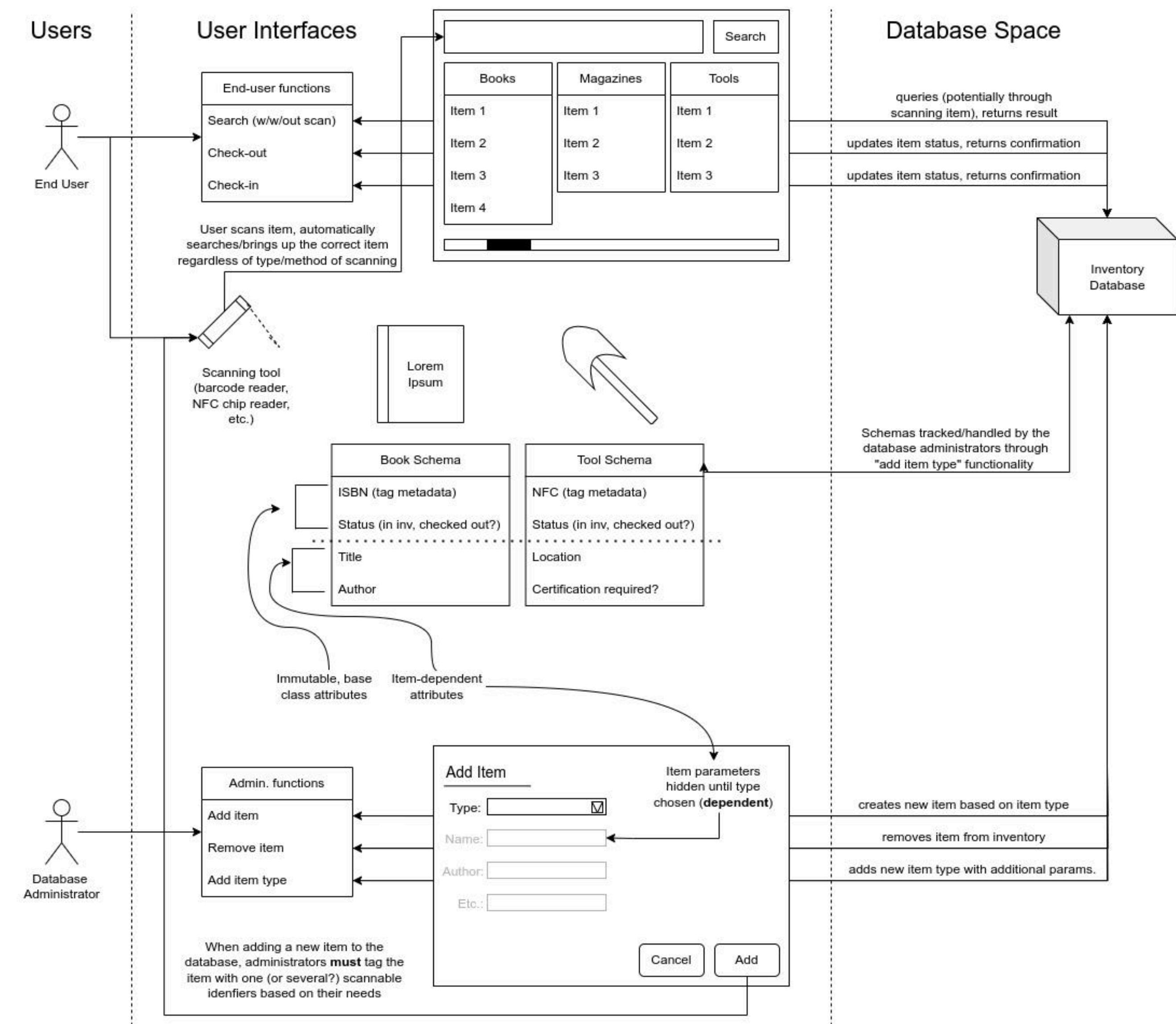
- PostgreSQL
- Adminer



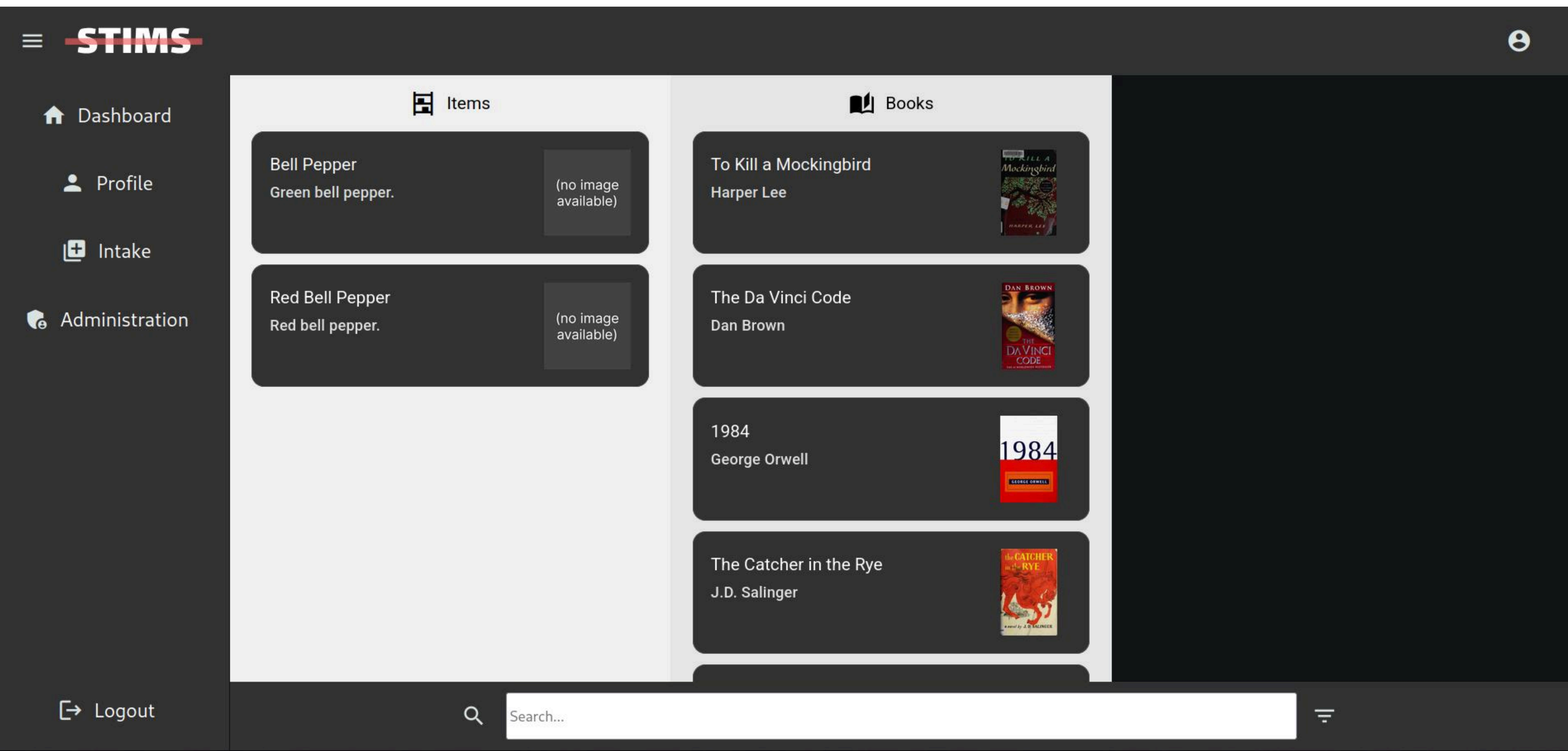
Development:

- VS Code
- Bruno
- Docker

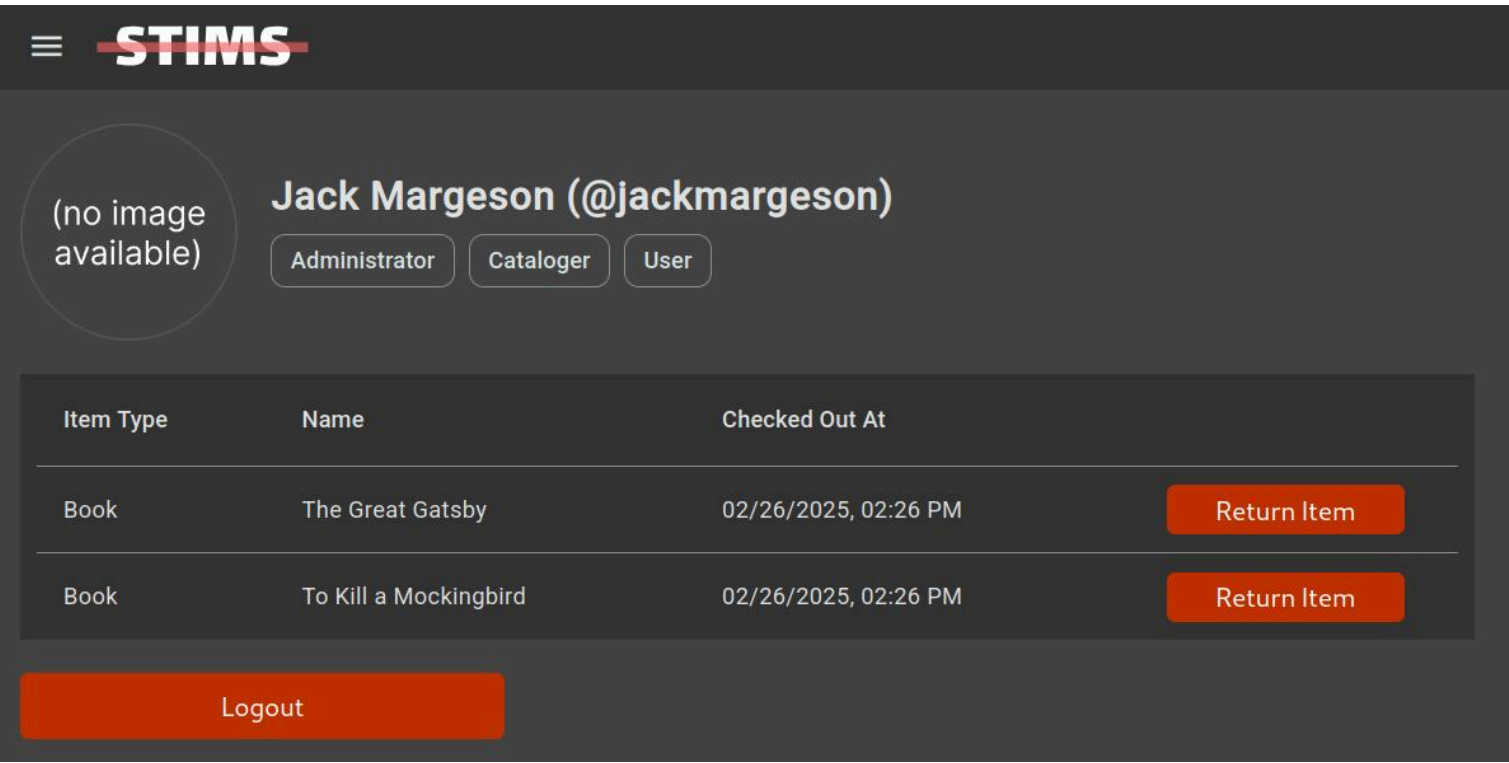
Original Design



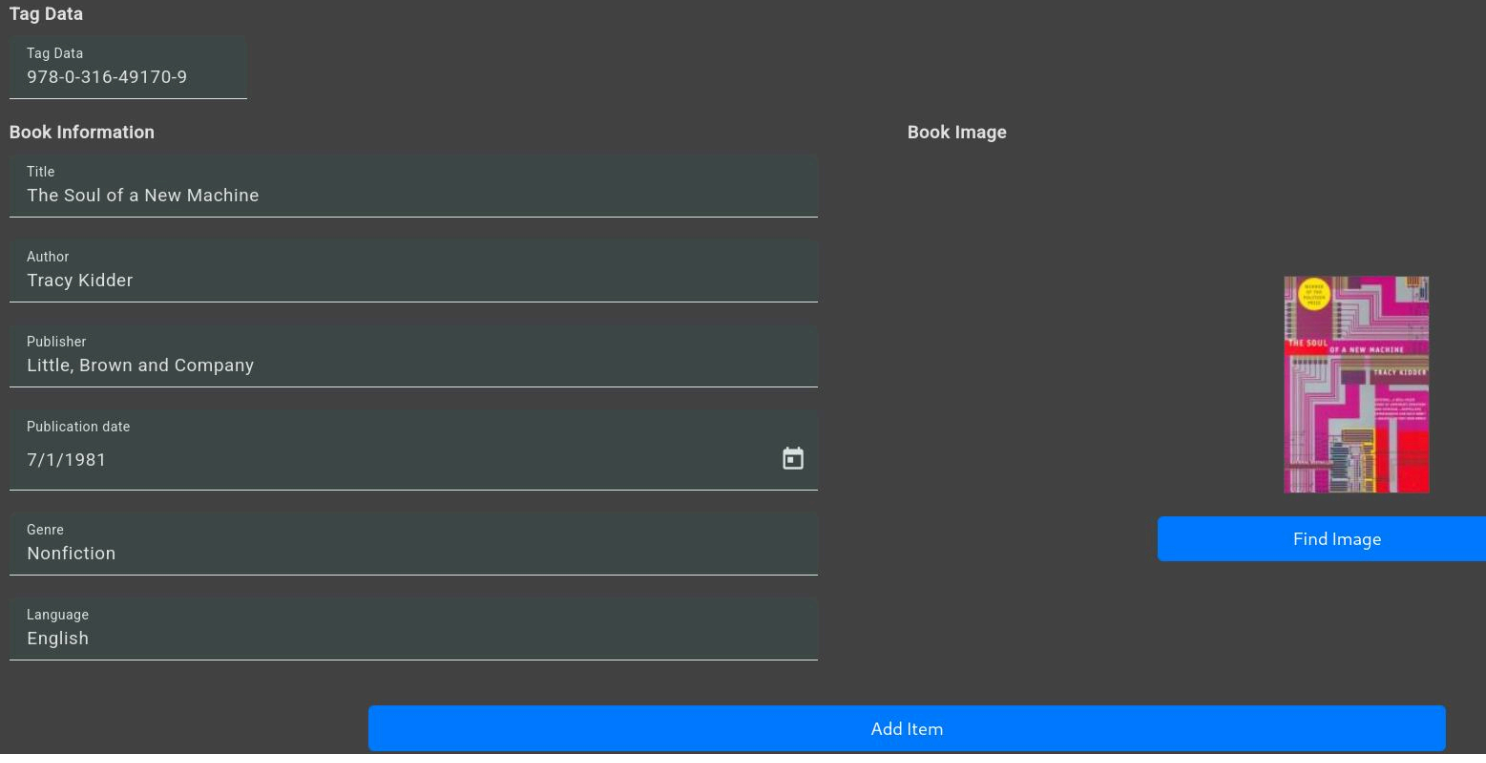
Dashboard



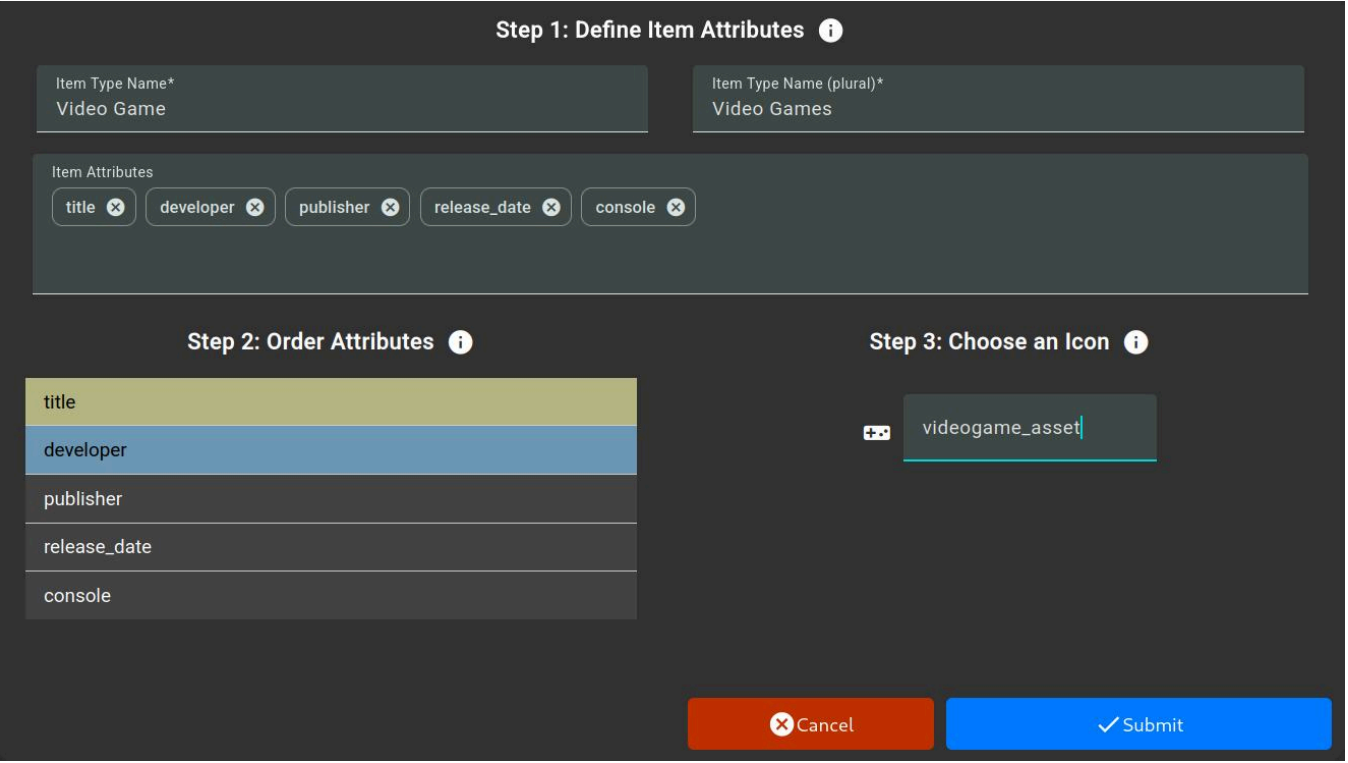
User Profile



Intake



New Category



Major Accomplishments

- Automated self-defined class system
 - Need to keep track of newspapers? Simply define what details a newspaper should track and STIMS takes care of the rest.
- Custom user authentication pipeline
 - Developed fully from the ground up
 - Integrated role system allows system administrators can give user accounts permissions to interact with certain features in the program, such as intake
- Clean, user-friendly UI and design
 - Maximizes usability over niche functionality
 - Designed as a web application to be portable and functional on any device

Broader Impact

- Improved alternative to current open-source ILS (integrated library software) systems
 - Newer code and technologies equals less set-up hassle and more performance
- Type generality expands the system's use-cases beyond libraries
 - Makerspaces (tool rentals)
 - Archival offices (research management)
 - Legal firms (document lookup)
 - Healthcare institutions (educational material, equipment)

Design Challenges

- Full-stack development
 - Project required frontend, backend, and middleware API development
 - Networking issues between services mitigated through the use of Docker
- Security
 - Proper authentication flow/hashing for password storage setup took time
 - API endpoints need JWT signature checks

Install Demo System (beta)

Bash (Unix)
\$ curl -fsSL marg.es/on/install/stims | bash

Powershell (Windows)
> irm marg.es/on/install/stims.ps1 | iex

Jack Margeson
Computer Science

William Hawkins III
Project Advisor

