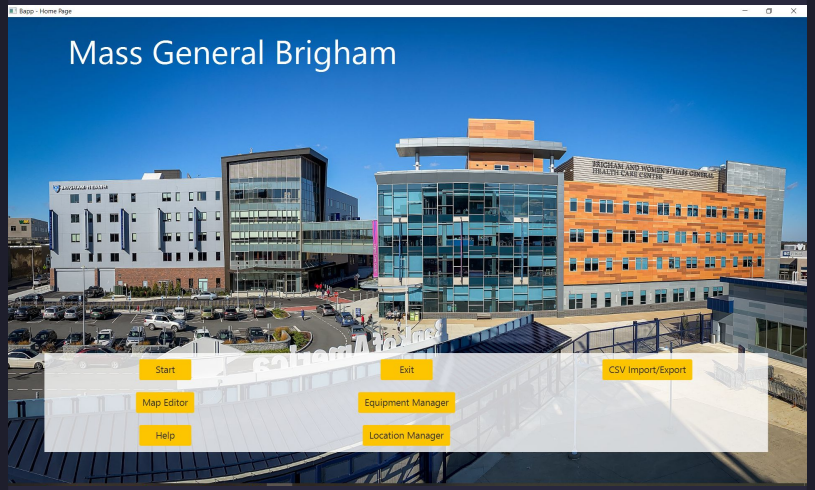
Software Application for Brigham & Women's Hospital

BEFORE & AFTER: APPLICATION

HOME PAGE

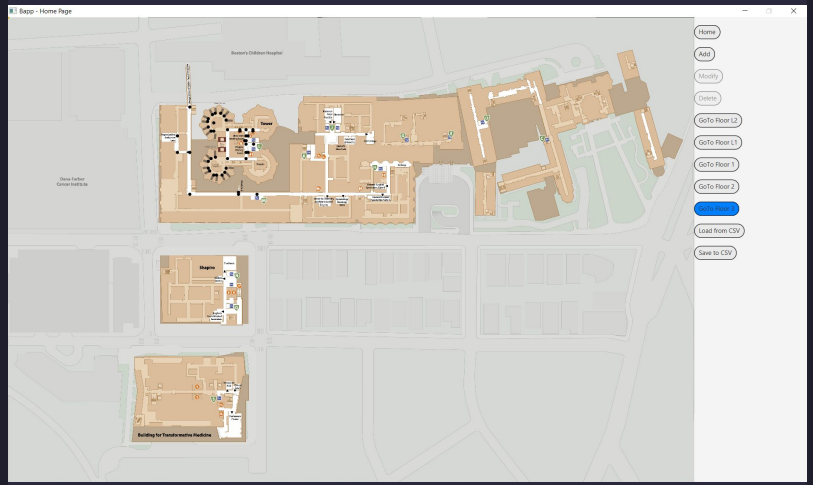
BEFORE



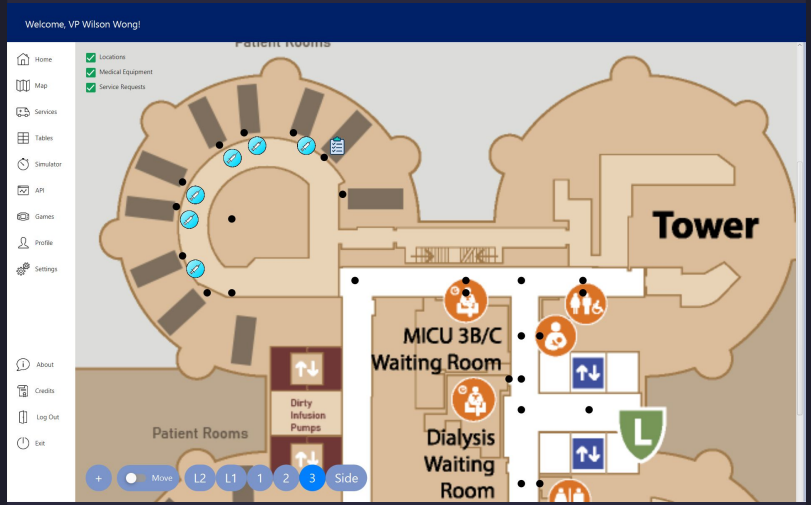
AFTER

MAP EDITOR

BEFORE

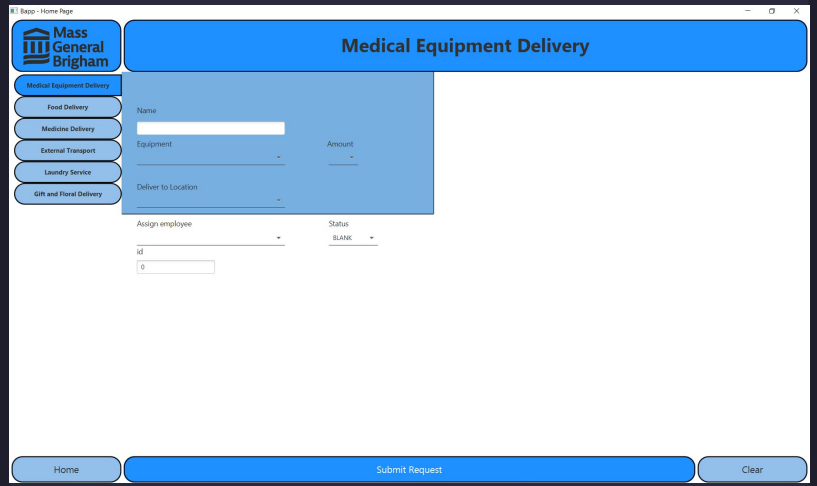


AFTER

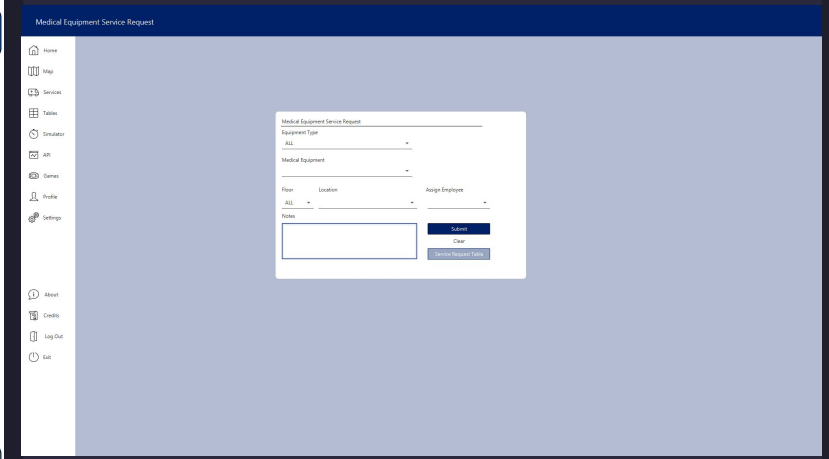


MEDICAL EQUIPMENT SERVICE REQUEST

BEFORE



AFTER



Goal of Team and My Role

Team

- Team of 10 people applying Agile Scrum methodology.
- Developed a desktop application for the hospital employees to access and use.
- Application focuses on creating and carrying out Service Requests.
- Database tables are maintained and implemented in an easy-to-use graphical interface
- Conducted daily scrums, sprint plannings and sprint reflections.

My Role

- Designed and developed back-end system including database management system and restore/backup subsystem.
- Implemented embedded and client-server database using Apache Derby and remote cloud-based database using MongoDB.
- As Assistant Lead Software Engineer, coordinated the other software engineers, particularly the back-end team, and performed code reviews through Git workflows.

118

JAVA CLASSES

5

INTERFACES

3

SUBSYSTEMS

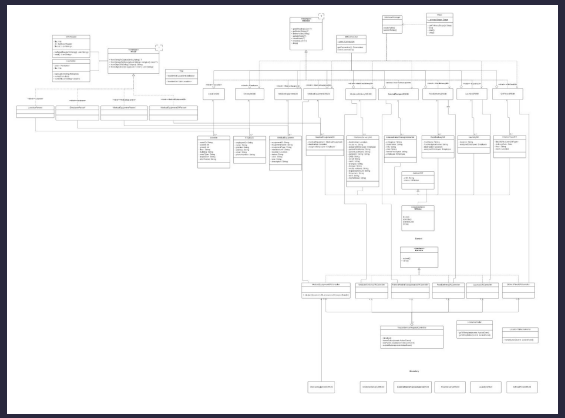
15,424

LINES OF JAVA CODE

Diagrams

First Iteration Vs. Last Iteration UML Diagrams

First



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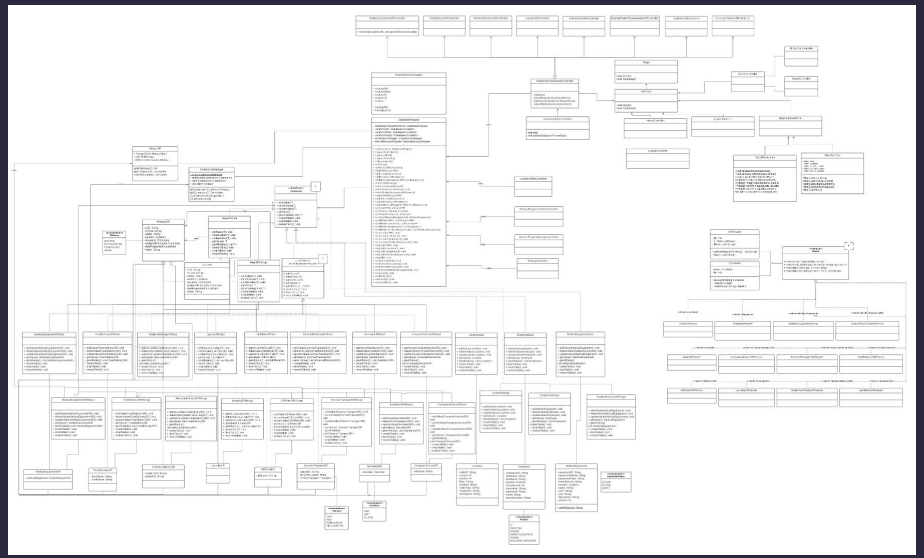
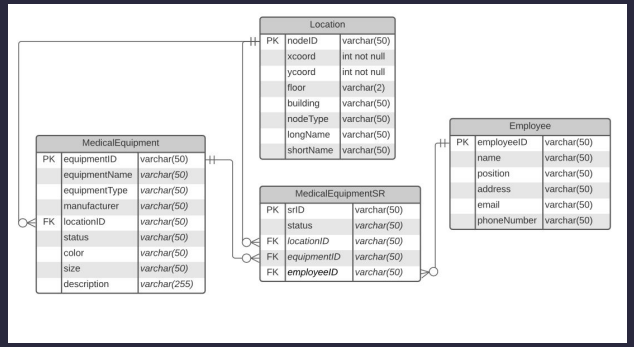


First Iteration Vs. Last Iteration ERDs

First



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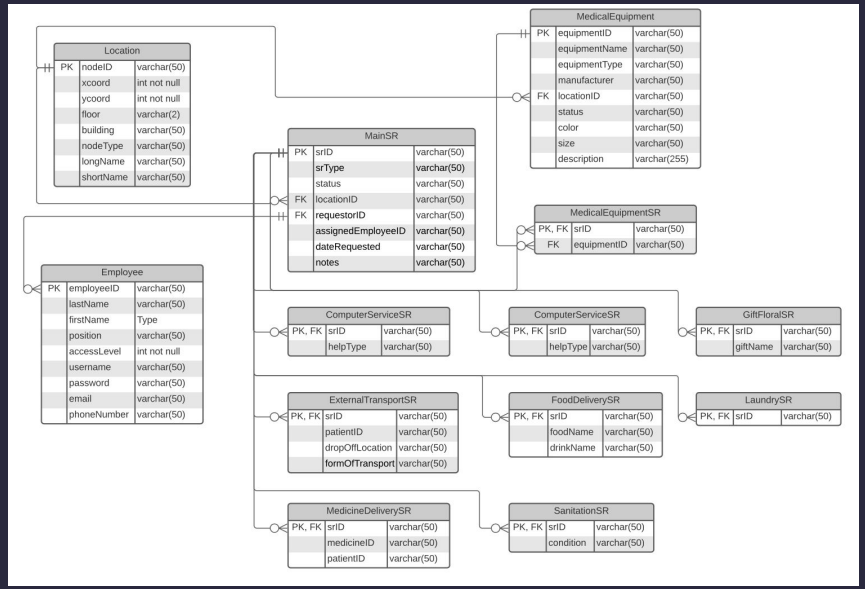
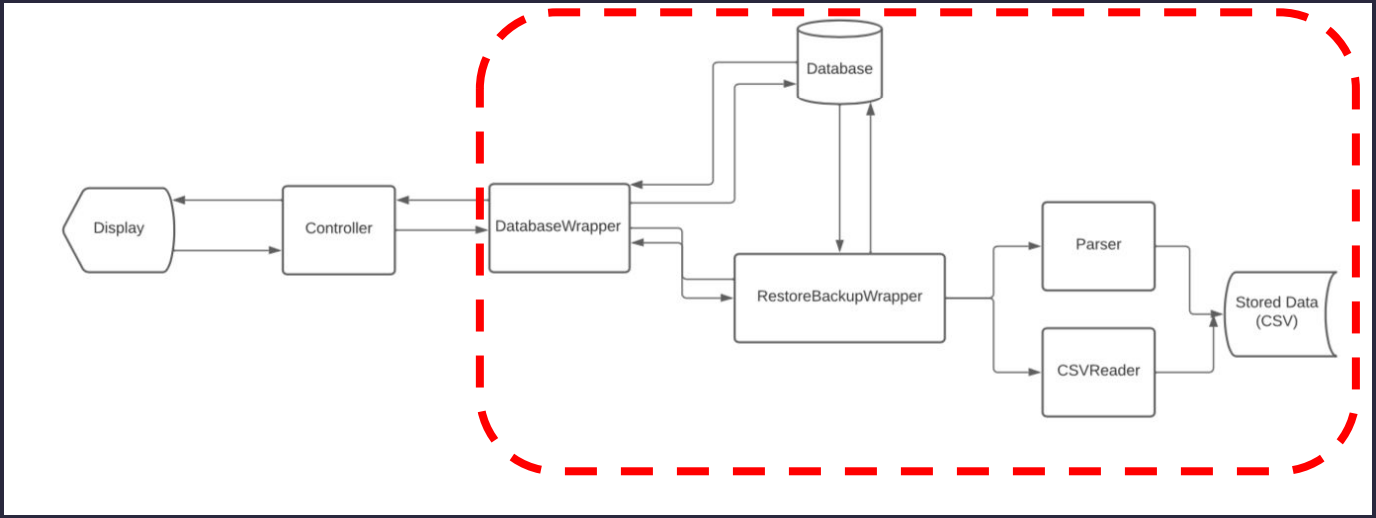
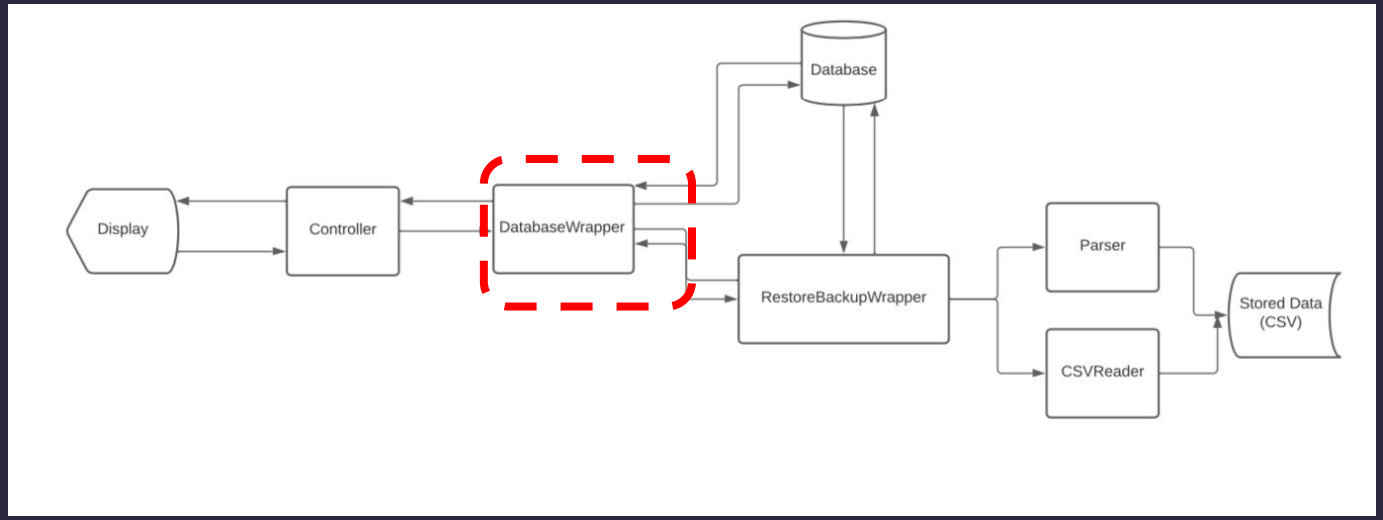


Diagram of Systems and Subsystems



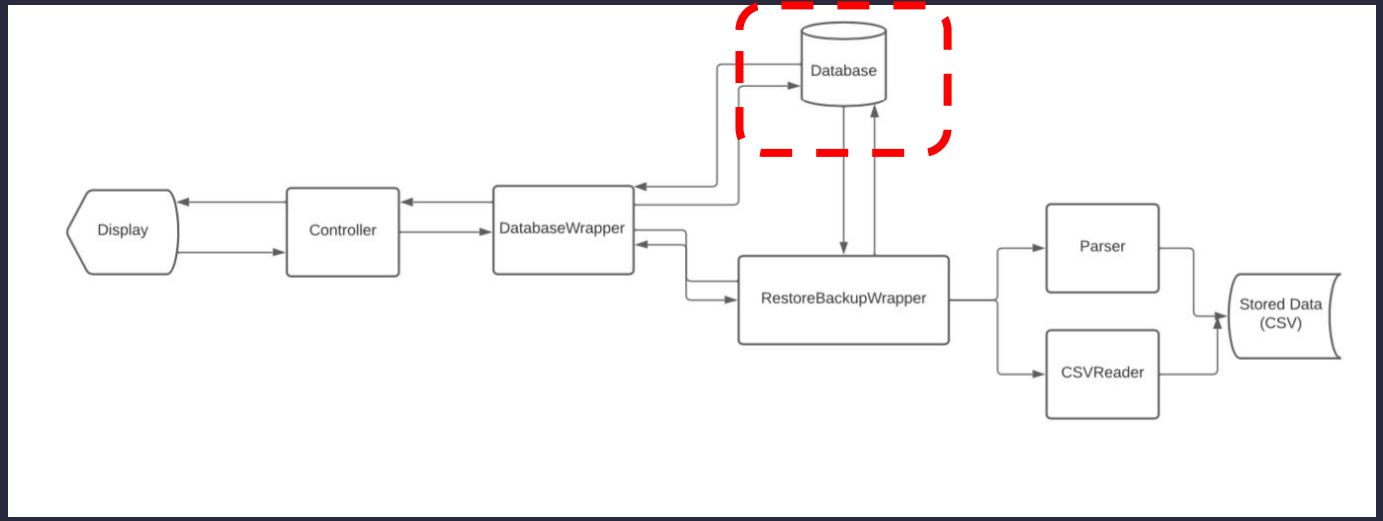
DatabaseWrapper



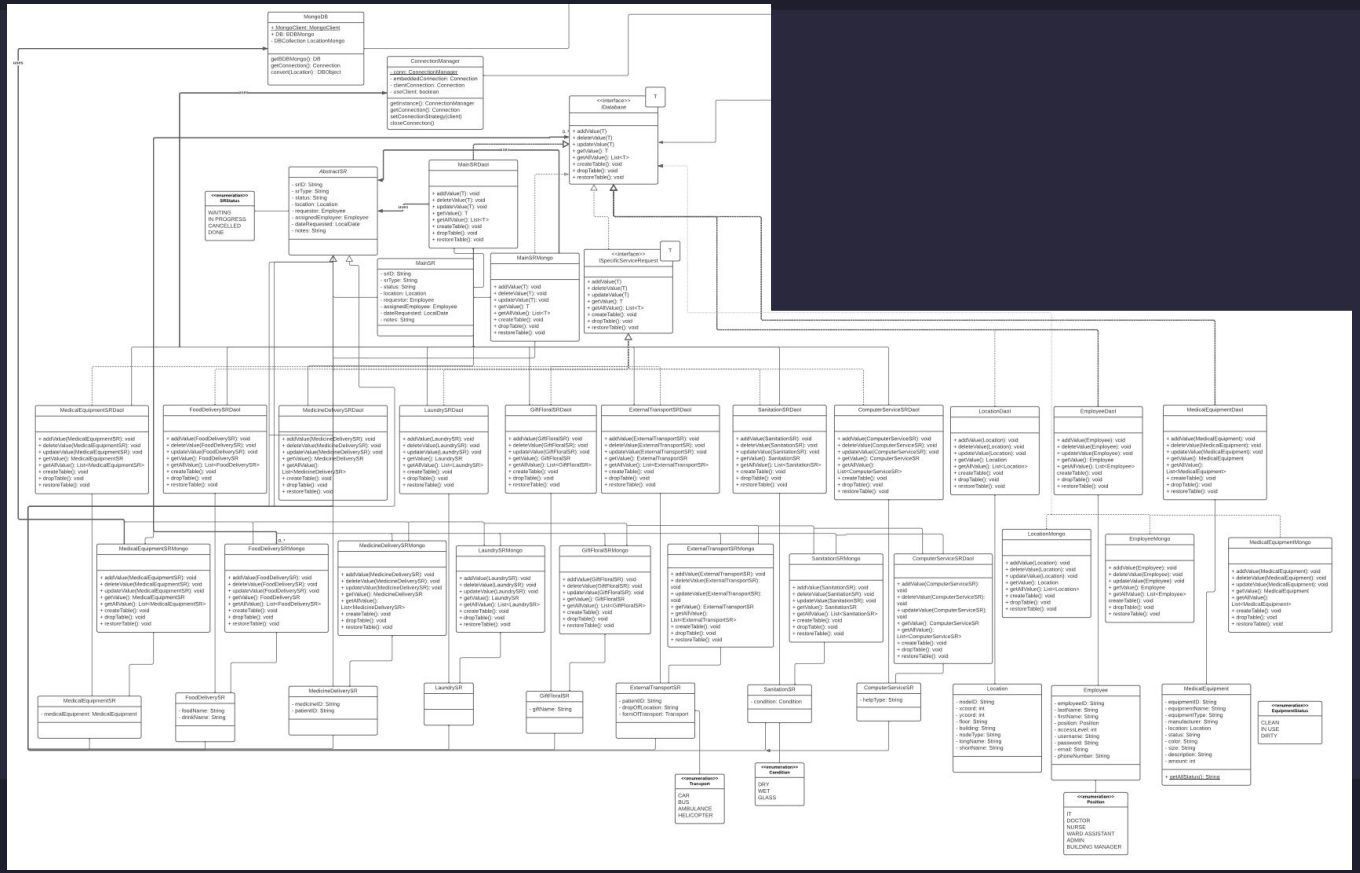
DatabaseWrapper

- Facade pattern
- Front-facing interface
- Masks complex database code and is what front-end uses to manipulate database
- Singleton pattern implementation

Databases Low-Level Code

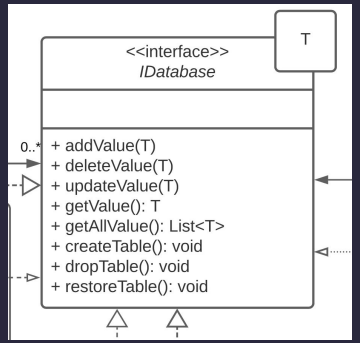


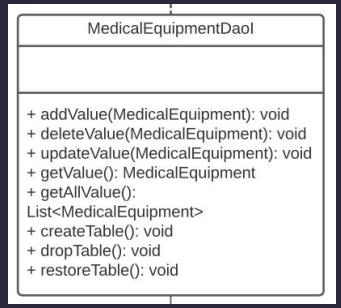
Databases Low-Level Code

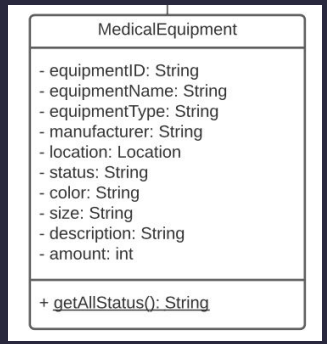


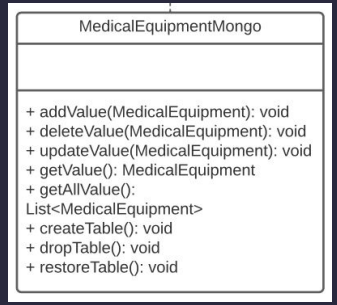
Databases Low-Level Code

- Used JDBC API for low-level access of databases
- Data access object (DAO) pattern using Generics
  - Data access object interface (e.g. **IDatabase**)
  - Data access object concrete class (e.g. **MedicalEquipmentDaoI**, **MedicalEquipmentMongo**)
  - Model object (e.g. **MedicalEquipment**)



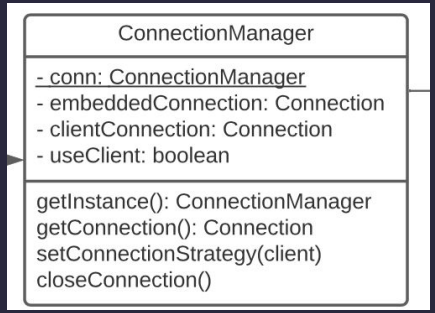


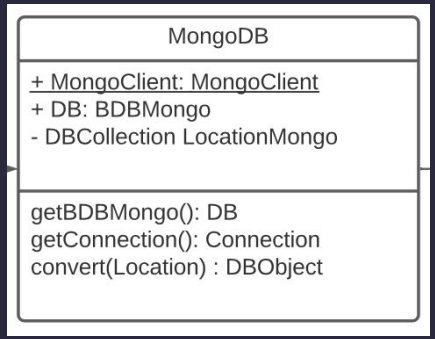




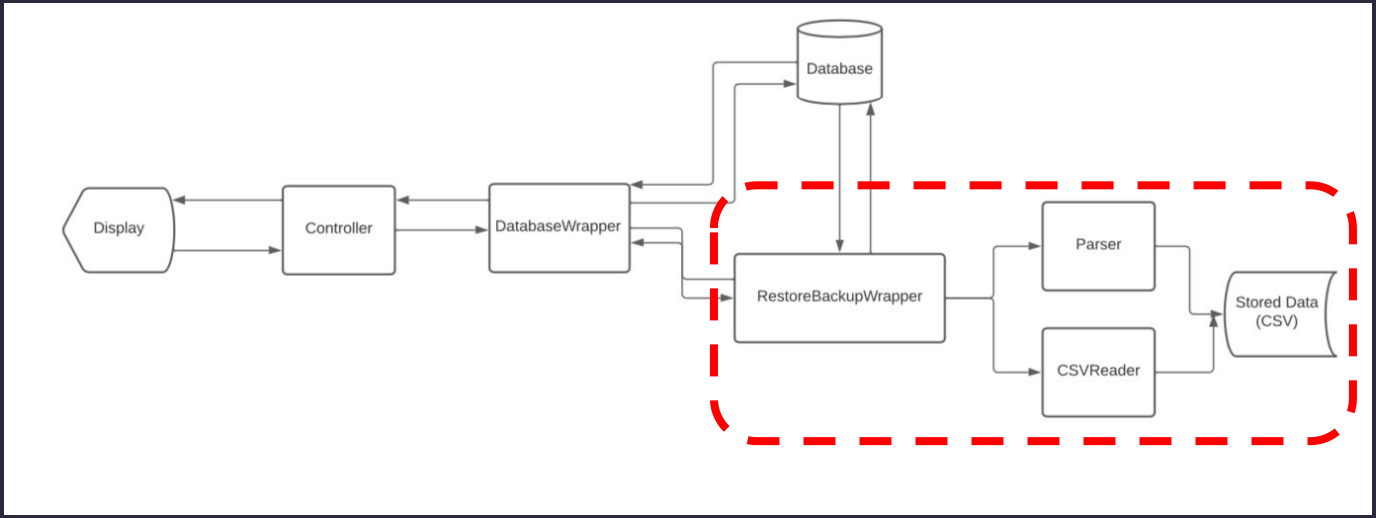
Databases Low-Level Code

- Classes to manage database connections
- **MongoDB** class
  - For cloud-based MongoDB database
- **ConnectionManager** class
  - For embedded and client-server Apache Derby databases
  - Switches between both connections





Restore/Backup Subsystem



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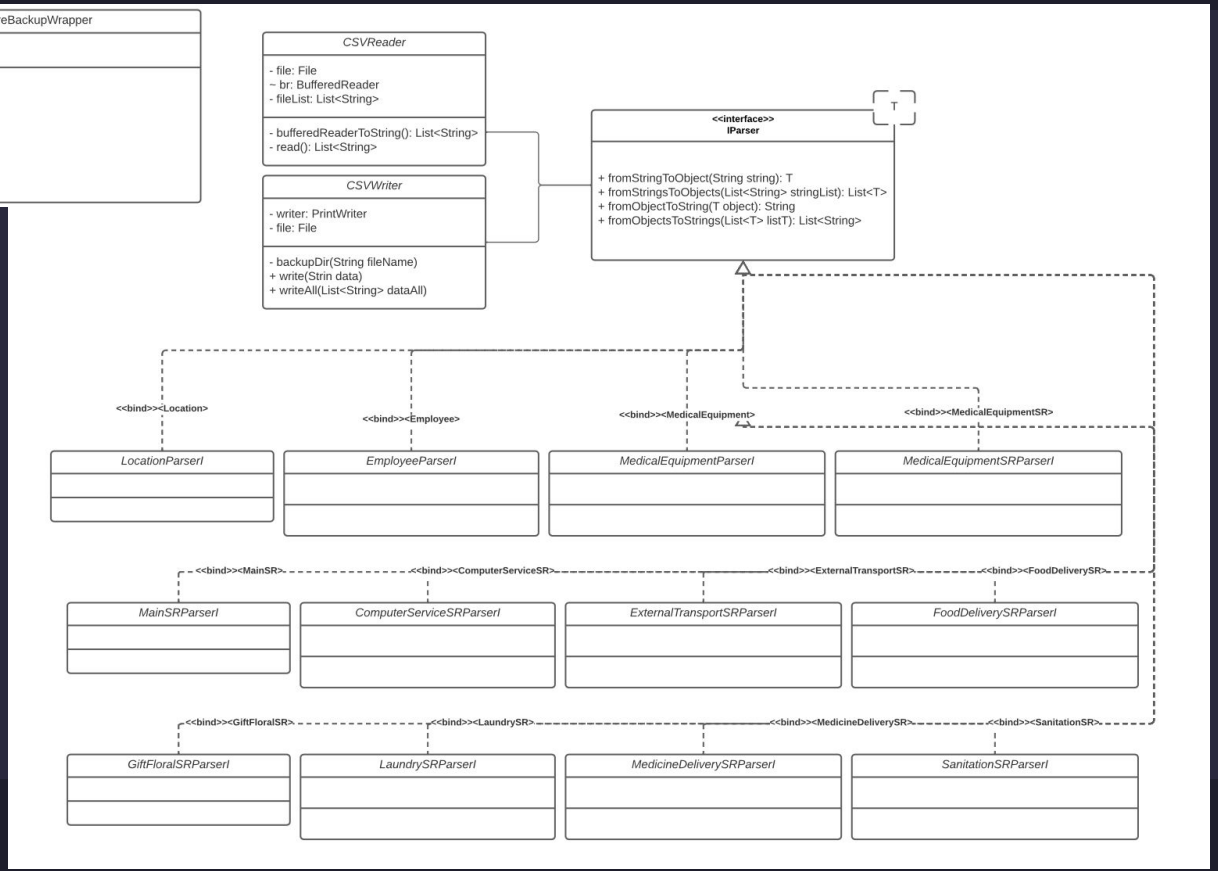
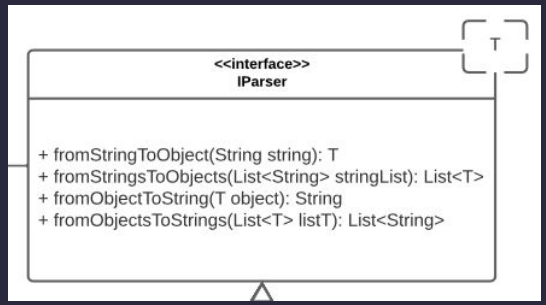
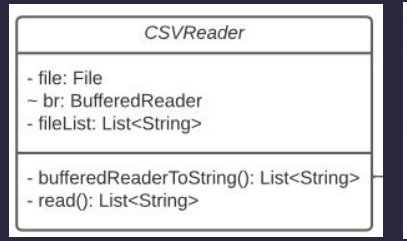
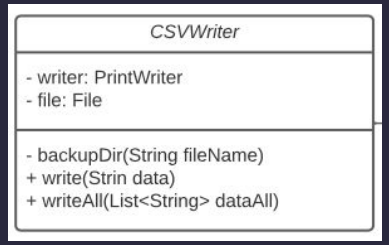


Restore/Backup Subsystem

- Purpose of subsystem was to read from (restore) and write to (backup) CSV files.
- **RestoreBackupWrapper** class
  - Interface between rest of back-end system and the subsystem (Facade pattern)
- **IParser** generic interface class
  - Converted from List of Strings to Collection of Objects
  - Converted from Collection of Object to List of Strings
- Implemented low-level **CSVReader** and **CSVWriter** classes







Demo