MediStore Manager

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Goals

During the fall semester in 2020, Kevin co-op'd at a local medical supply store named Accucare Home Medical Equipment. The software the store used for managing customers, inventory, and work tickets was old and was a regular source of headaches for the staff using it. Thinking back on that experience, Kevin believed he now had the ability and experience to make a software that was more user friendly than the old one he remembered. His teammate, Jackson, was also interested in creating a business management software, so he accepted the idea.

Intellectual Merits

- Efficient database design
  - Database structure was iterated on multiple times to be able to present all required data using the fewest number of tables and minimizing redundant data
- Data consistency and transaction management
  - Designed to make as few database transactions as possible during use
  - Fewer transactions lowers the risk of concurrent updates and conflicting data
- Multi-user role-based access control
  - Users are required to login with their own credentials
  - Each user is assigned a different role based on their position
  - Certain operations are limited depending on the role of the user. This prevents lower level users from making large changes to the database which helps maintain its integrity
- DeepSeek test data generation
  - Use of AI to generate data to populate the database for use in testing, rather than manually creating many different entries or finding partial data that is available to the public

Broader Impacts

- Medical supply stores provide necessary medical equipment to many people. Proper management of their inventory is needed in order to ensure the quality of their service.
- Our project can help medical supply stores manage their day-to-day operations by giving them tools to keep track of their inventory, order more inventory, and store customer information.
- Many pieces of medical equipment are too expensive for a patient to buy and therefore renting is necessary. Our application can help with this rental process and confirm the status of all pieces of equipment, along with repairs that have been performed on them.
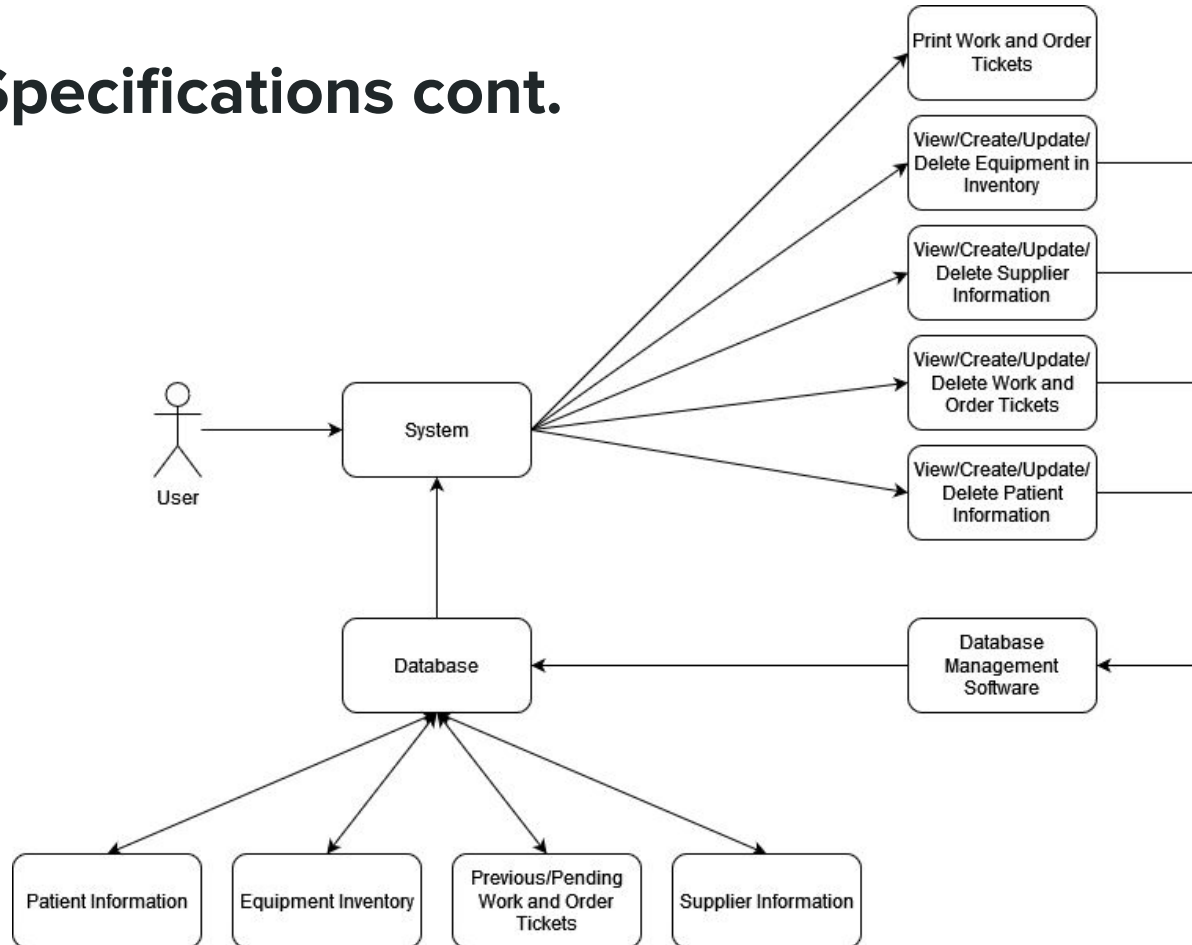
Design Specifications

Application

- User Interface includes tabs for Patient, Inventory, Supplier, and Orders
- Displays relevant information and includes options to edit/add data
- Code interacts with the database to perform requested operations
- Orders automatically update relevant inventory information

Database

- Stores all information in relevant tables
- User actions are converted into MySQL scripts to access and update the database

Design Specifications cont.

Technologies

- Windows Presentation Format (WPF) is what we used to design the user interface. This includes using data binding and MVVM to connect the application to the database.
- MySQL is the database management software we used to handle all of the data used by the MediStore Manager. Using the software's development environment, MySQL Workbench, we created a database on the machine hosting the MediStore Manager. We then feed the connection information to the MediStore Manager during setup to be able to access and modify the data through the MediStore Manager.
- DeepSeek was used to generate large amounts data used for testing the application.

Milestones

1. Set up the database - 1/12/25
2. Create front end application - 1/12/25
3. Connect the database to the application - 2/23/25
4. Test/Refine and complete the project - 3/30/25

Deliverables

1. Database
2. Front End Application
3. Complete Application

Results

- Database and all tables within have been created
- Most of the UI for the application has been developed. There is still work left on finer details along with additional features that need to be added.
- Development involving connecting the database to the application is in progress.
- Once the final development has been done on both the application and the code behind it, all that is left is thorough testing to ensure the quality and functionality of the application.

Challenges

- The user interface of the application presented a significant challenge as neither team member had much previous experience with this type of development. This was managed by using Microsoft WPF with C# in Visual Studio and learning about development with that, whether it was through online wiki's, tutorial pages, or videos.
- Gathering test data to populate the database with for the purposes of testing proved to be a challenge as well, as it was difficult to find real-world data that fit the tables in our database structure. We decided to use DeepSeek to help generate data to use in testing the application.

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