The design of the project is based around a basic e-commerce setup. The database is designed around this, with tables for customers, inventory items, orders, and customer invoices. The databases are created with MySQL, using the InnoDB engine to support foreign key relationships. Once the databases are setup with the proper information, the Entity-Relationship (ER) diagram can be created based on the tables and key relationships. The ER diagram simply shows the tables, their keys, and the relationships between them including one-to-one and one-to-many relationships. In our case, the invoices and order tables will be mostly consisted of foreign keys to match the corresponding customer and inventory item IDs.

After the database is finalized, the backend API can be written to be able to manipulate the database. This will be written in PHP to connect to the local MySQL instance. The API will consist of commands such as adding and removing customers, adding and removing inventory items, modifying inventory count, creating, editing, and deleting orders, and generating invoices for customers. These will be done using POST calls to protect the data being sent, which may contain sensitive information such as a customer’s address.

The client that will utilize the API will be written in C++ designed for Windows, or written in Java to be cross platform compatible. The client will be designed as a standalone e-commerce application, with a view for the inventory, the ability to add items to a cart, create or edit your account, submit an order, and receive your invoice. It will utilize all features of the API created.