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Relational Model Design Narrative

We did not make any changes to our ER diagram because we felt everything there was important. The relational model mapping process was straightforward and fairly easy since everything was copied over and the ER diagram was not very large. We considered changes to the ER diagram but didn’t make those changes until we meet with Professor Obermyer.

While creating this model, we weren’t sure what to think of three separate relationships having the same primary and foreign keys (USER\_BUYS, SEARCHES\_FOR, and USER\_SELLS). It’s not a relationship that can be turned into a ternary relationship, but having three relations with the same data will make the database redundant. Nevertheless, these are all important pieces of data the database should record. We considered replacing the three relationships with one relationship - ACTION - that would have an attribute to identify the action of each instance in the database. However, it would make the model more complicated and we weren’t sure how it would work.

We also realized that we do not have an attribute to store the date at which a user buys or searches for an item in our database. We believe it is a very important attribute to record because it distinguishes unique searches, purchases, and sales. Plus, it shows user activity in the database and can help enhance machine learning. However, we were not sure if we should implement it as a multivalued attribute and give it its own table, or assign it as a normal attribute to the USER\_BUYS, SEARCHES\_FOR, and USER\_SELLS relationships. We thought about including the date as a primary key in these relationships, but we were not sure if an attribute of a relationship can be a primary key.

We have to be very diligent with how the database handles inserts, updates, and deletions to maintain referential integrity. In addition, many attributes are either primary keys or foreign keys to primary keys. Thus, our database has virtually no attributes which can accept NULL values, which is another important point to remember when designing how invalid operations are handled.