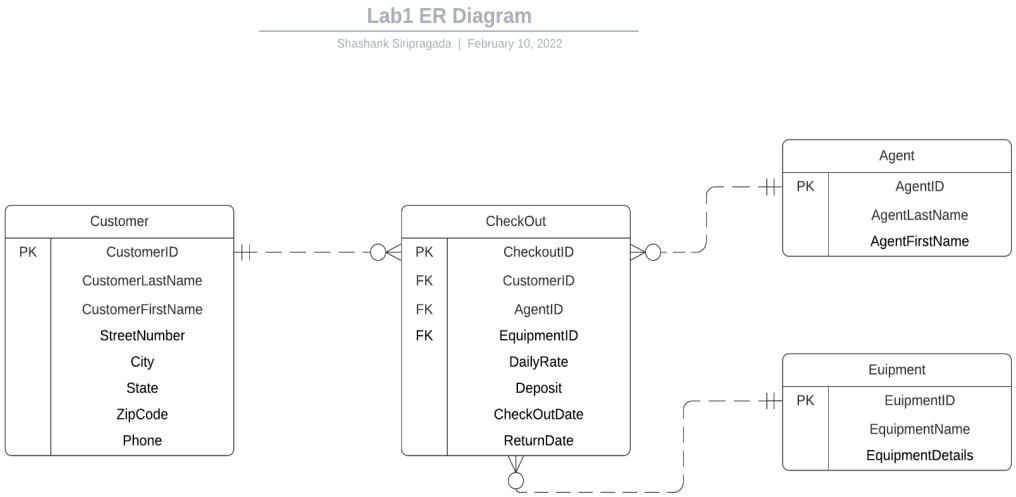
DMDD Spring 2022
Lab 1

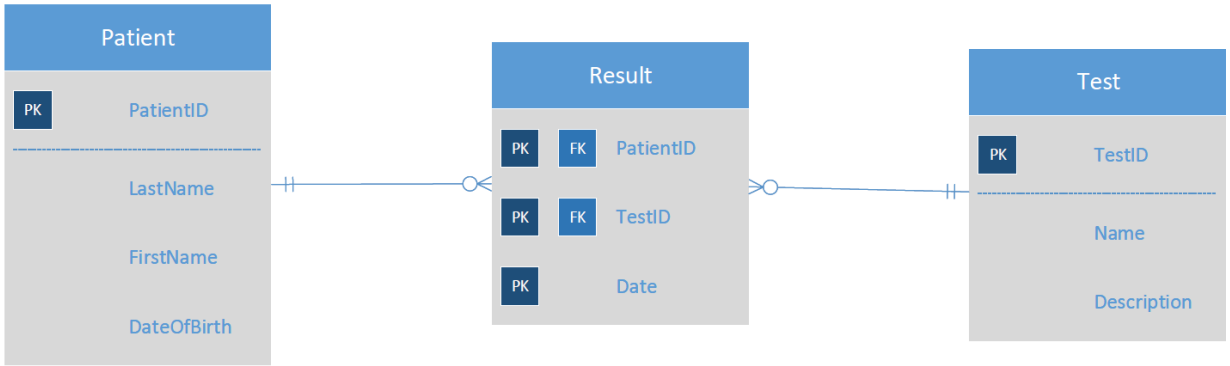
Shashank Siripragada
002193773

Part 1:

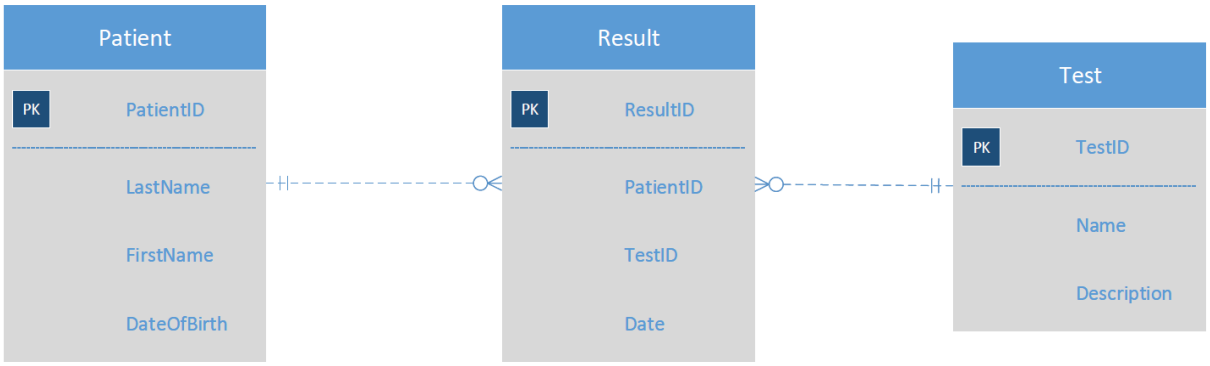
ERD



Part 2:



The above design has two identifying relationships for Result. When we change the design to the model below, what else do we need to do to ensure the business rules can still be maintained? Please elaborate.



For the below design, in order to maintain the data integrity and follow the business rules, the following rules are to be implemented

- Patient, Test entities are having a non-identifying relationship with the Result entity, the PatientID, TestID will be required to be set as Foreign key in the Result entity.

- The original key attributes are to be made mandatory: the fields mentioned above will be the foreign keys for the Result entity and will be required to have mandatory values and cannot be null.

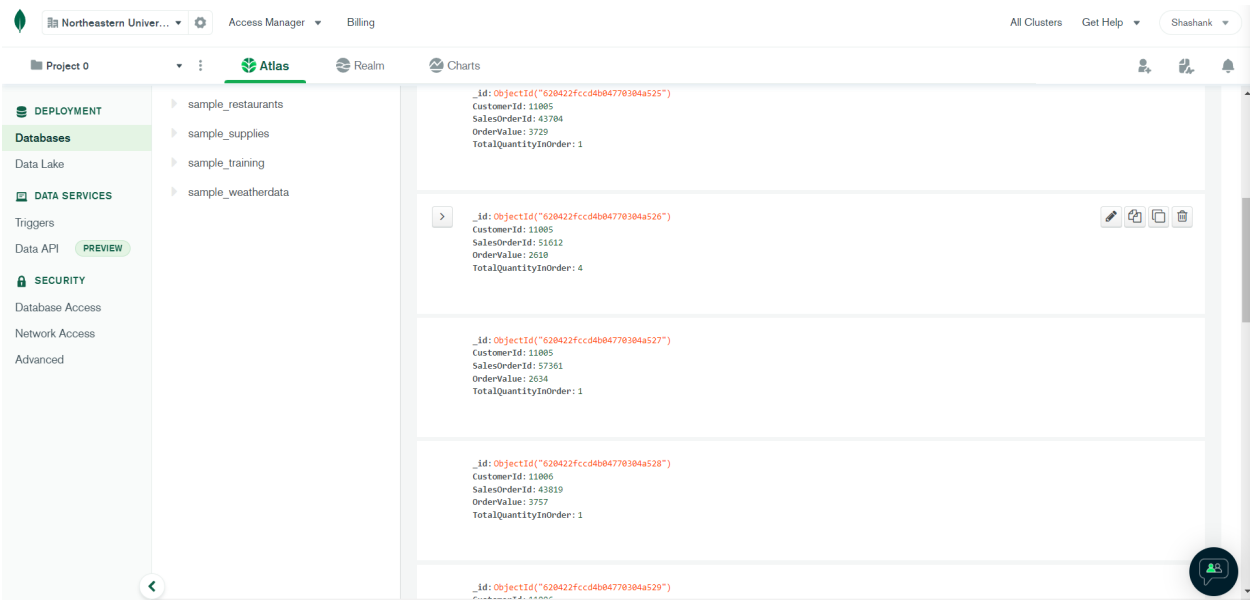
- Setup referential integrity for the original key attributes. When the original key attribute is entered for PatientID, TestID the Result entity we need to compare the value in the respective parent entity (i.e Patient, Test) to ensure if it is a good value.

- Unique indexes should be created by combining the original key attributes(PatientID, TestID) to enforce data integrity.

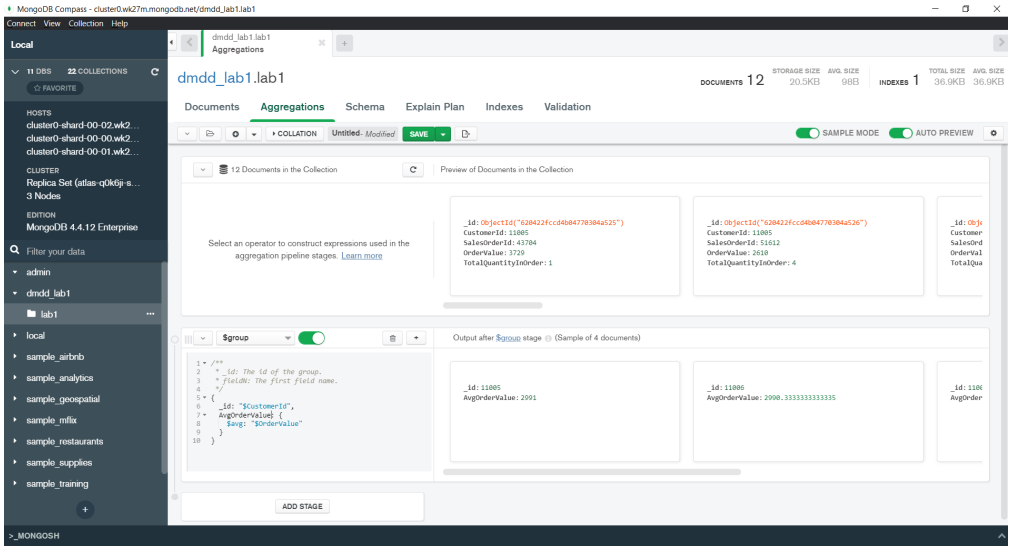
Part 3: MongoDB

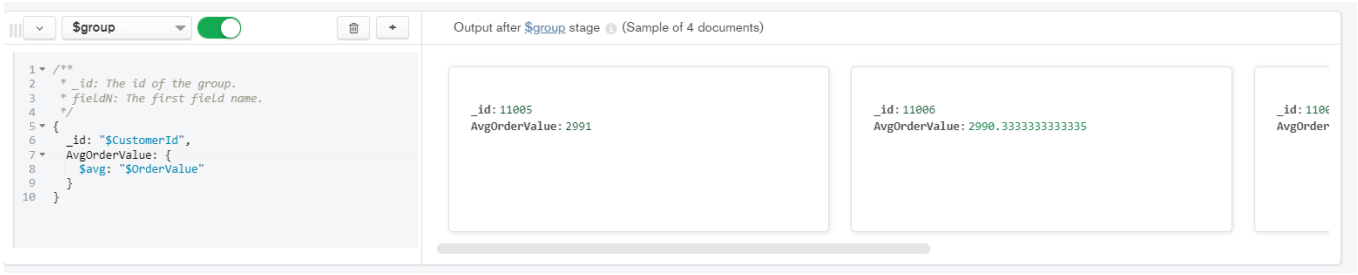
- Created a MongoDB document collection in a MongoDB Atlas database that according to the attached file.
- Connected to MongoDB atlas using MongoDB compass and used the MongoDB Compass, JavaScript, and MongoDB Aggregation Pipeline to obtain the average order value for each customer.

Step 1:



Step 2:





Query:

```
{
  _id: "$CustomerId",
  AvgOrderValue: {
    $avg: "$OrderValue"
  }
}
```

Values obtained:

- _id:11005
- AvgOrderValue:2991
- _id:11006
- AvgOrderValue:2990.3333333333335
- _id:11008
- AvgOrderValue:2985.6666666666665
- _id:11007
- AvgOrderValue:3024.3333333333335