

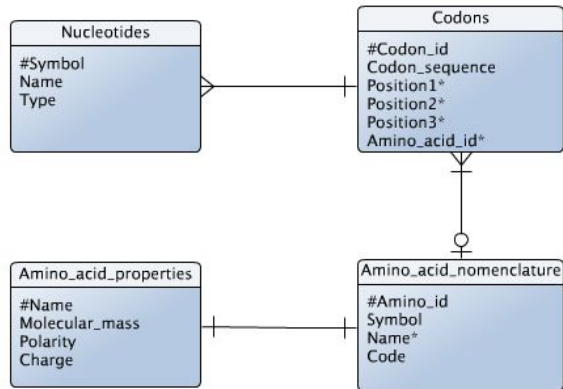
INF115

Compulsory Exercise 2

nsv044

1.

ER diagram of the entries and attributes from compulsory exercise 1.



2

2.1

The enteties are

Gene(#gene\_id, gene\_name location, start\_coordinate, stop\_coordinate, chromosone\_name\*)

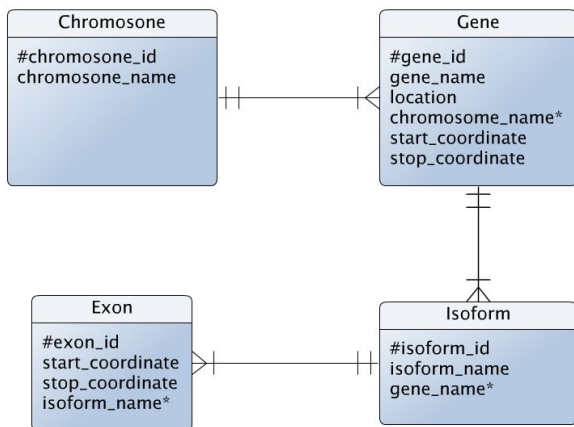
Exon(#exon\_id, start\_coordinate, stop\_coordinate, isoform\_name\*)

Isoform(#isoform\_id, isoform\_name, gene\_name\*)

Chromosome(#chromosome\_id, chromosone\_name)

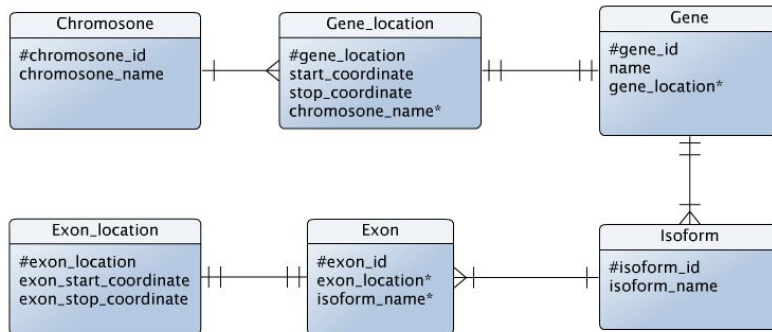
2.2

ER diagram from 2.1



## 2.3

ER diagram conforming to the third normal form.



## 3

### 3.1

The enteties are:

Genome(#gene\_symbol, offical\_name, chromosome\_name, chromosome\_length, start\_coordinate, stop\_coordinate)

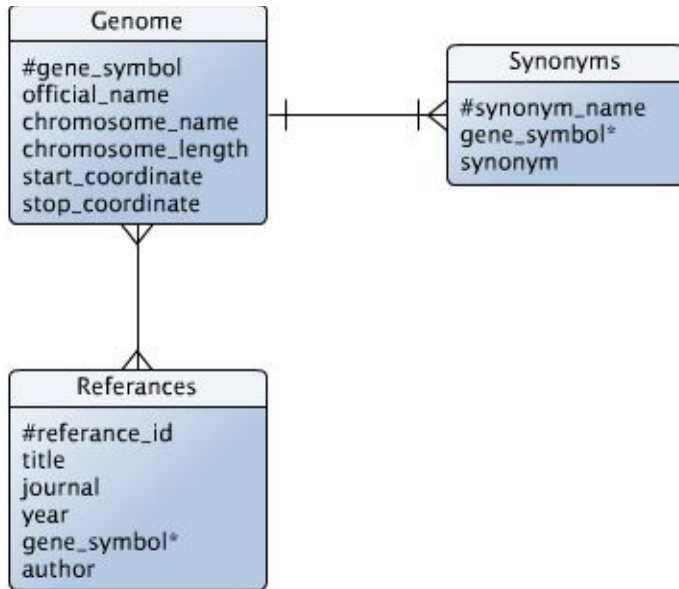
Synonyms(#synonym\_name, gene\_symbol\*, synonym)

Referance(#referance\_id, title, author, journal, year, author, gene\_symbol\* )

I have created Synonyms incase there are multiple synonyms that need to be listed to comply with First normal Form

### 3.2)

E/R diagram of the tables from 3.1.



3.3)

Tables conforming to the first normal form and not the second. 3.1 already satisfied this condition.

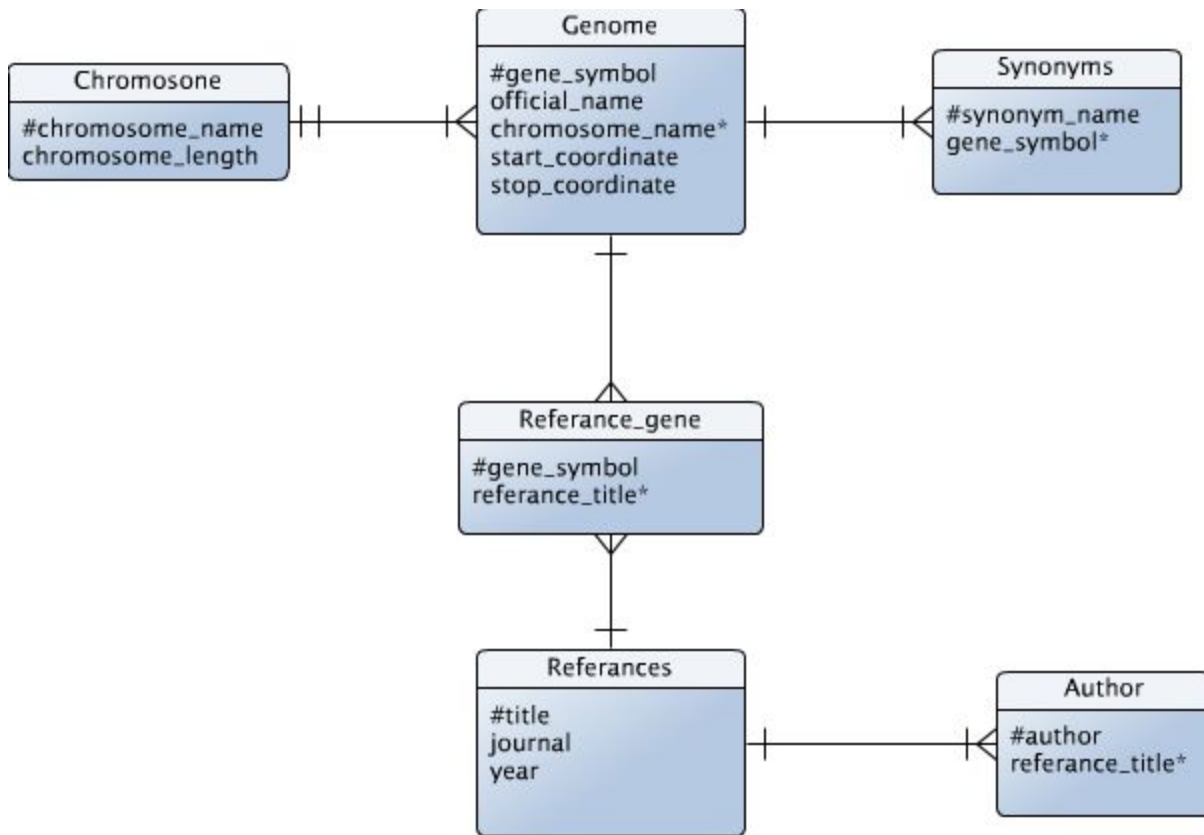
Genome(#gene\_symbol, official\_name, chromosone\_name, chromosone\_length, start\_coordinate, stop\_coordinate)

Synonyms(#synonym\_name, gene\_symbol\*, synonym)

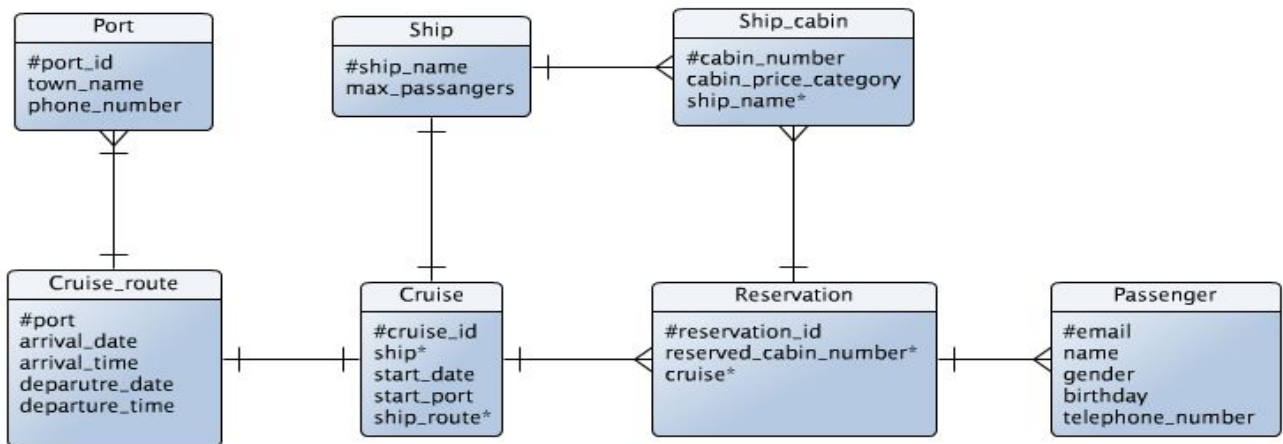
Referances(#reference\_id, title, journal, year, author, gene\_symbol\*)

3.4)

Diagram converted to BCNF



4.  
E/R diagram for Global\_cruises.



5

5.1

The truck entity does not have a primary key

Max\_weight and Maximum\_weight are not descriptive enough and can be confused. Should be more akin to Max\_truck\_weight and Max\_container\_weight .

A trucks registration number, model and max\_weight is not dependent on the assignment and should be in its own

table. So you would have Model(#model, max\_weight) and Truck(#registration\_number, registration\_year, assignment\_number\*, modell\* )

5.2

The the functional dependencies are

registration\_number -> registration\_year

model -> max\_weight

5.3

The candidate keys are "registration\_number" and "model".

5.4

BCNF of the table

Container\_type (#Type\_id, Type\_name, Max\_weight, Cubic\_quantity, Nightly\_rate)

Container (#Container\_number, Type\_id\*)

Customer (#Telephone\_number, Address)

Assignment (#Assignment\_number, Telephone\_number\*, Container\_number\*, Start\_date, End\_date)

Model(#model, max\_weight, model)

Truck(assignment\_number, registration\_year, model\* registration\_number\*)