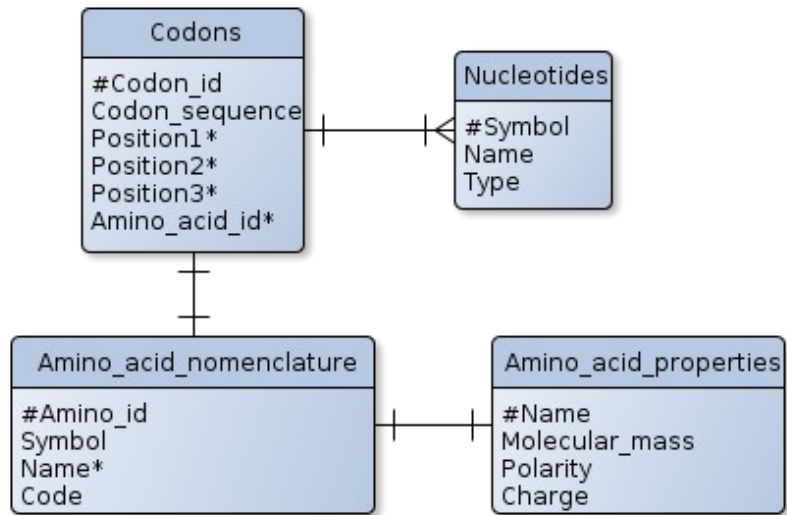


1)

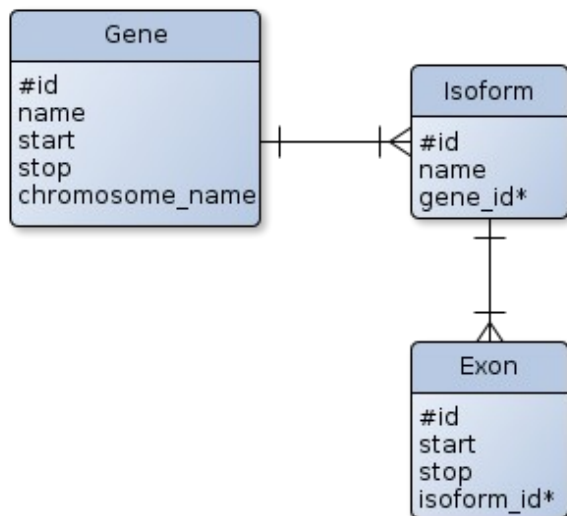


2)

i)

Gene, Exon, Isoform

ii)



iii)

Gene(#id, name, start, stop, chromosome_name)

Isoform(#id, name, gene_id*)

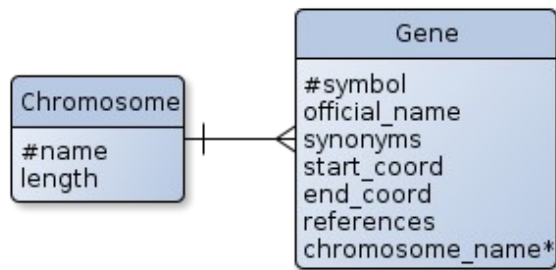
Exon(#id, start, stop, isoform_id*)

3)

i)

Gene, Chromosome

ii)



iii)

Gene(#symbol, official_name, start_coord, end_coord, chromosome_name*, reference_id*)

Chromosome(#name, length)

Synonyme(#id, name, gene_id*)

Reference(#id, authors, title, journal, year, gene_id*)

iv)

Gene(#symbol, official_name, start_coord, end_coord, chromosome_name*)

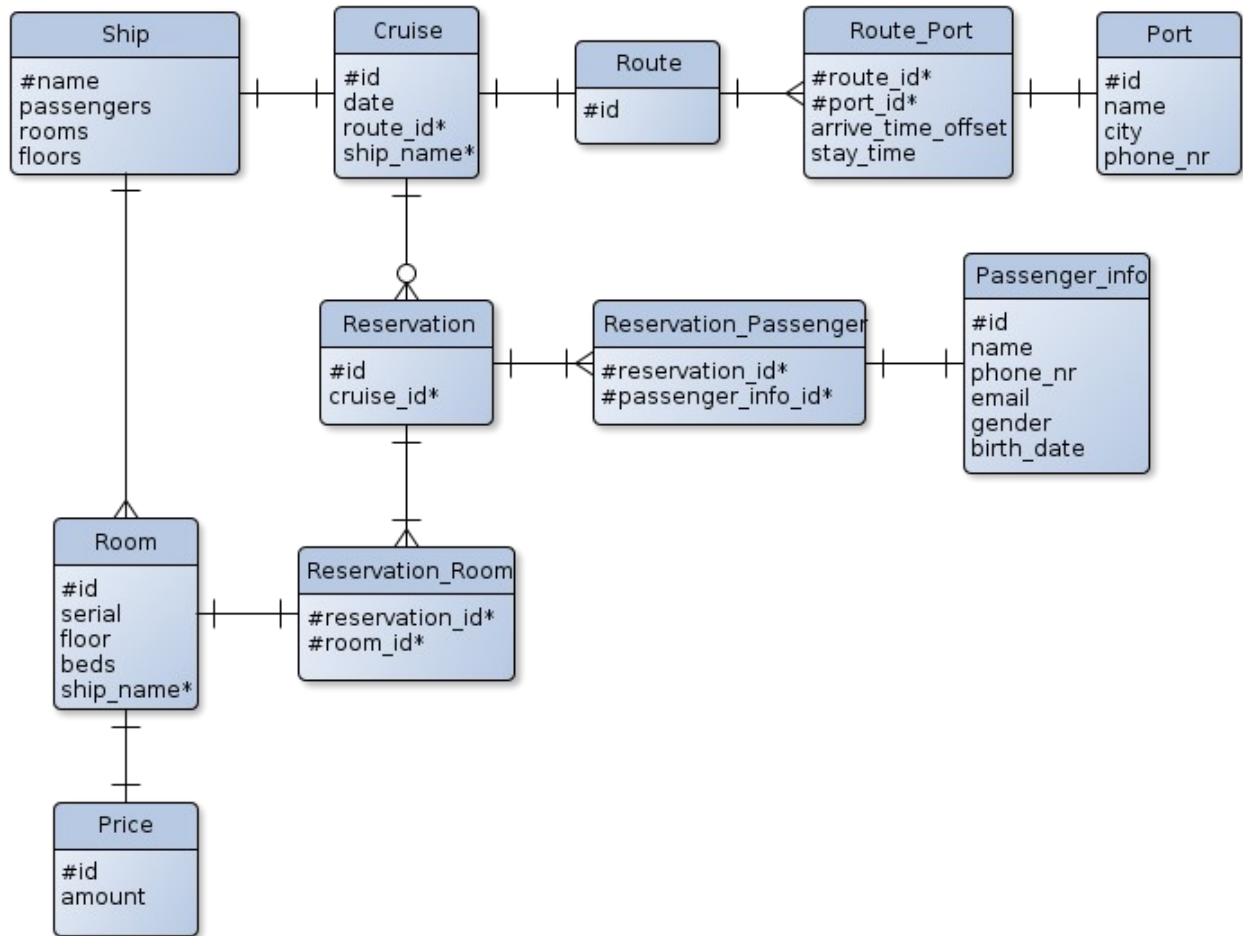
Chromosome(#name, length)

Synonyme(#id, name, gene_id*)

Reference(#id, authors, title, journal, year)

Gene_Reference(#gene_symbol, #reference_id)

4)



5)

i)

The table has no primary key.

If a truck has more than one assignment, leading to multiple rows of the same registration_number, then the registration_number can't act as primary key.

The truck "info" will also lead to a lot of unnecessary data replication.

Also, you can't have a many-to-many relation with a single table. An assignment can have multiple trucks, and a truck can have multiple assignments.

ii)

Registration_number -> Registration_year

Registration_number -> Model

Registration_number -> Maximum_weight

iii)

{registration_number, assignment_number}

iv)

Truck(#id, Registration_number, Registration_year, Model, Maximum_weight)

Truck_Assignment(#Truck_id*, #Assignment_number*)