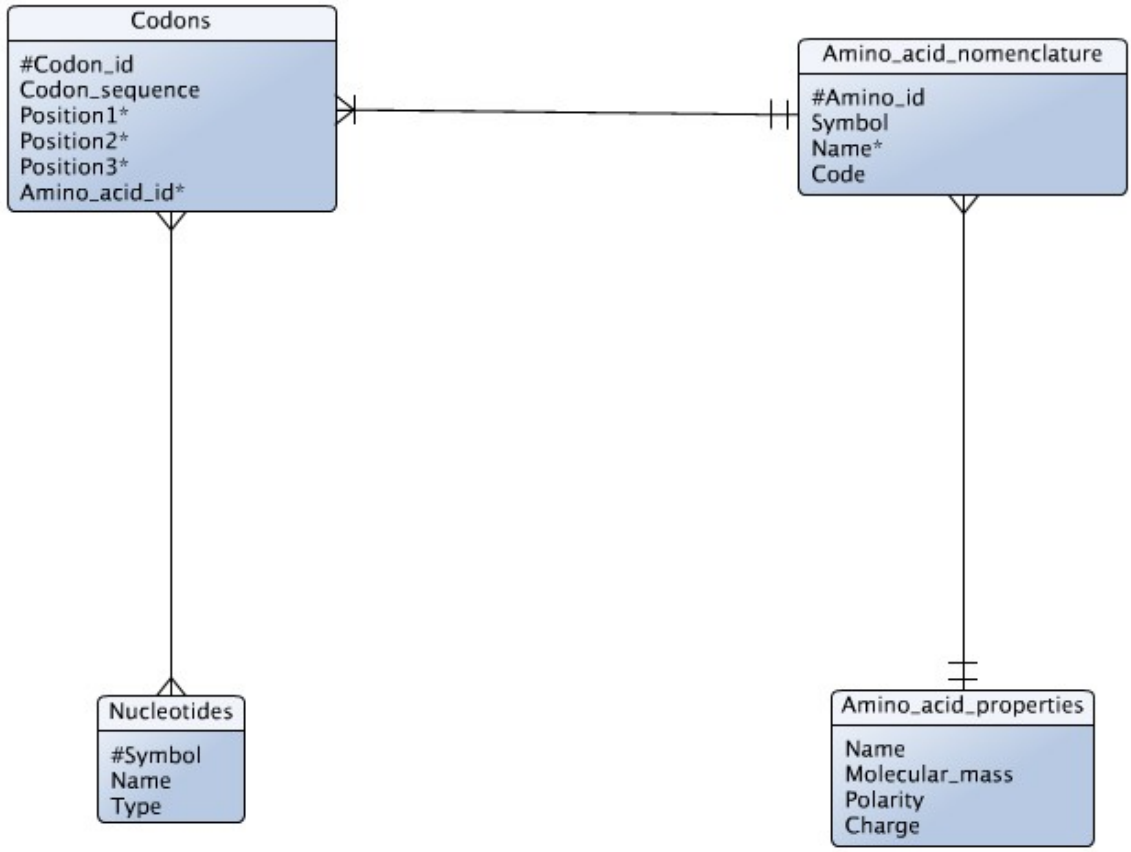
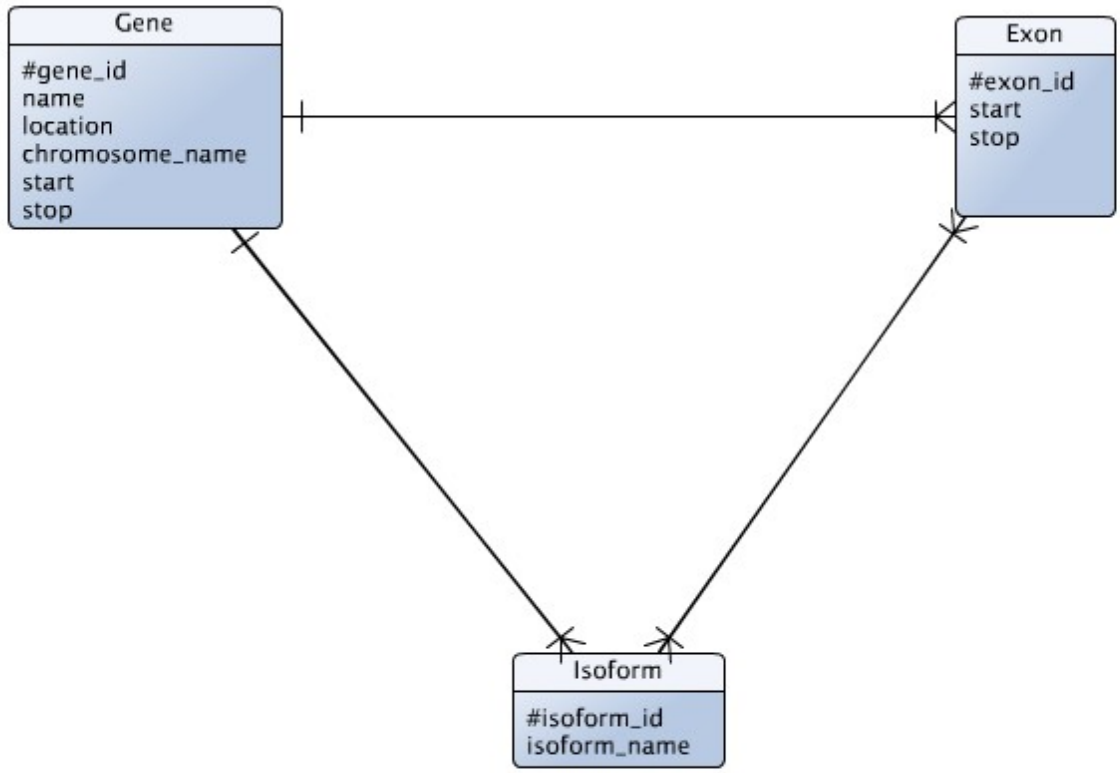
1.



2.
i)
the entities in the database are:
Gene
Exon
Isoform

ii)



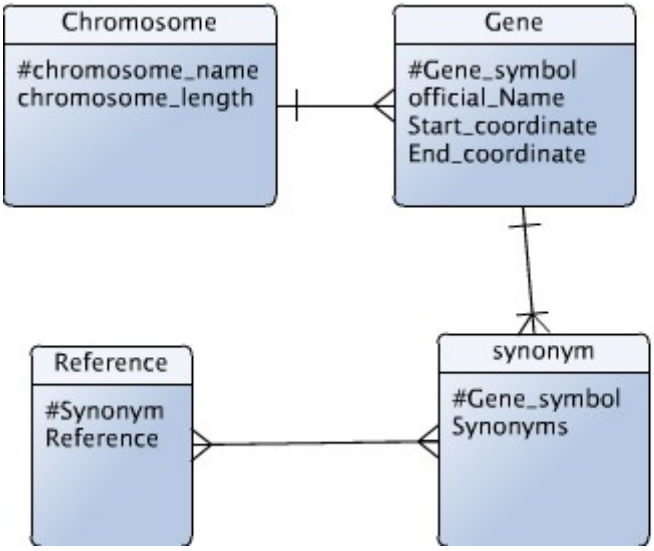
2. iii)

Gene(#gene_id, name, location, chromosome_name, start, stop)
Exon(#exon_id, start, stop, gene_id*)
isoform(#isoform_id, isoform_name, gene_id*)
isoformexon(isoform_id*, exon_id*)

3.

Entities:
Chromosome
Gene
Synonym
Reference

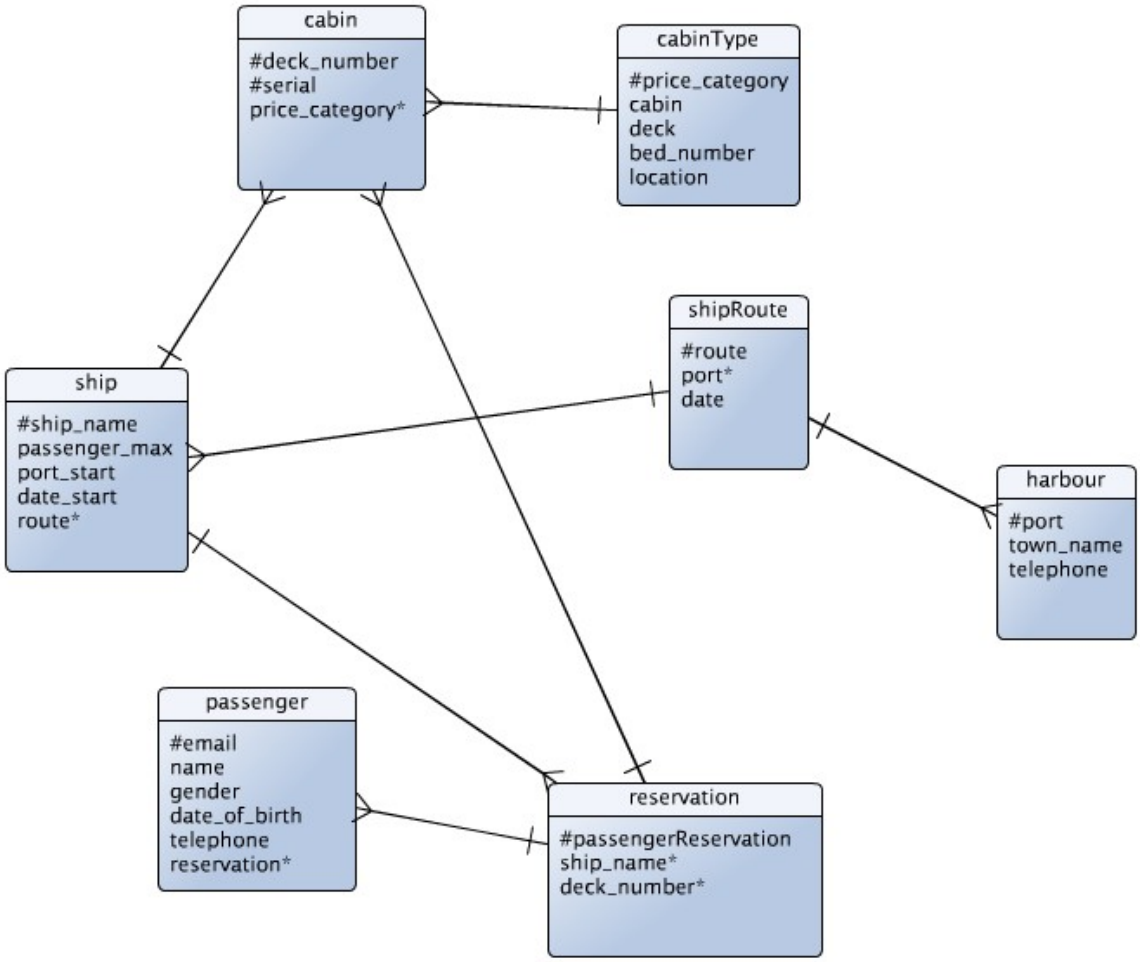
ii)



iii)

Chromosome(#chromosome_name, chromosome_length)
Gene(#gene_symbol, official_name, start_coordinate, end_coordinate, chromosome_name*)
Synonym(#gene_symbol, synonyms)
synonymReference(gene_symbol*, Synonym*)
Reference(#synonym, reference)
4.

Global_cruises



5.

I) The reason that it is problematic is because it does not have a primary key. If Registration_number were to be the primary key, then we would have a problem with redundancy. This is because a registration number can be assigned to multiple assignments. Also, the attribute maximum_weight is functional dependent on model. This could be solved by creating a new table.

II)
Registration_number → Registration_year
Registration_number → Model
Registration_number → Maximum_weight
Registration_number → Assignment_list
Model → Maximum_weight

III) Candidate key is Registration_number, but we have to do something with assignment_number to make it possible.

IV)

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)
assignmentTruck(Registration_number*, Assignment_number*)
Truck (#Registration_number, Registration_year, Model*)
Maximum_weight(#Model, Maximum_weight)