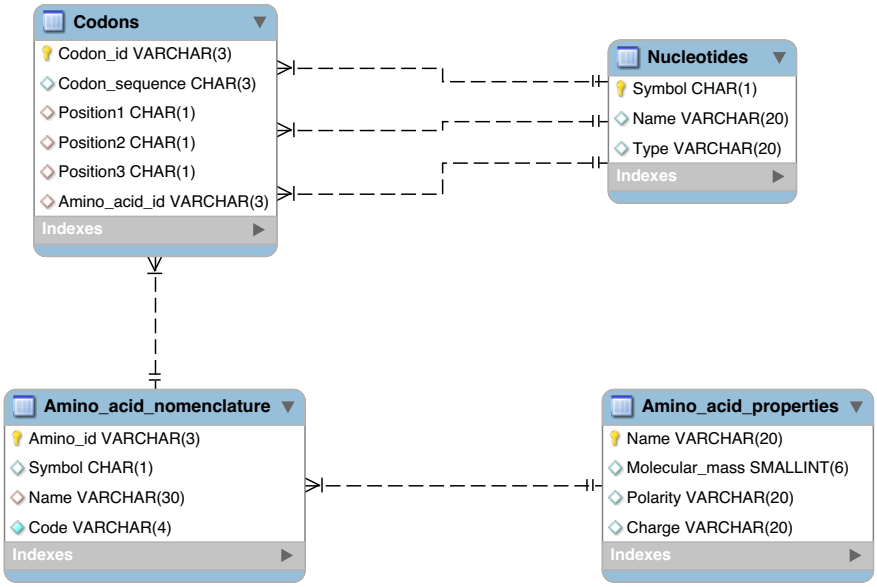
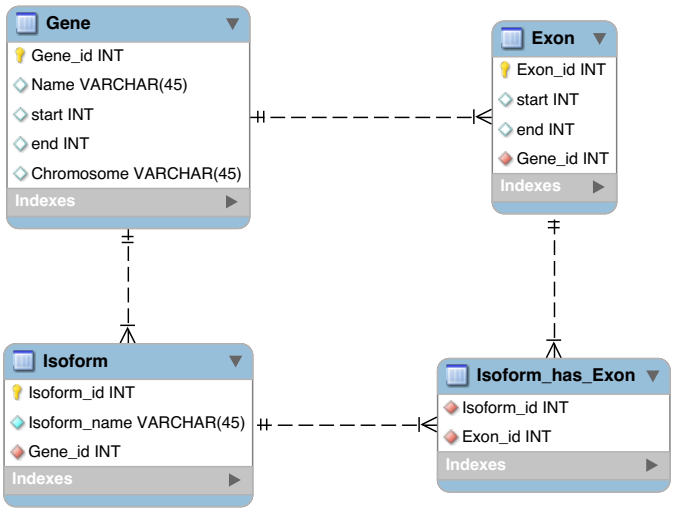
1)



2.i)

Gene, Exon, Isoform and Isoform_has_Exon

ii)



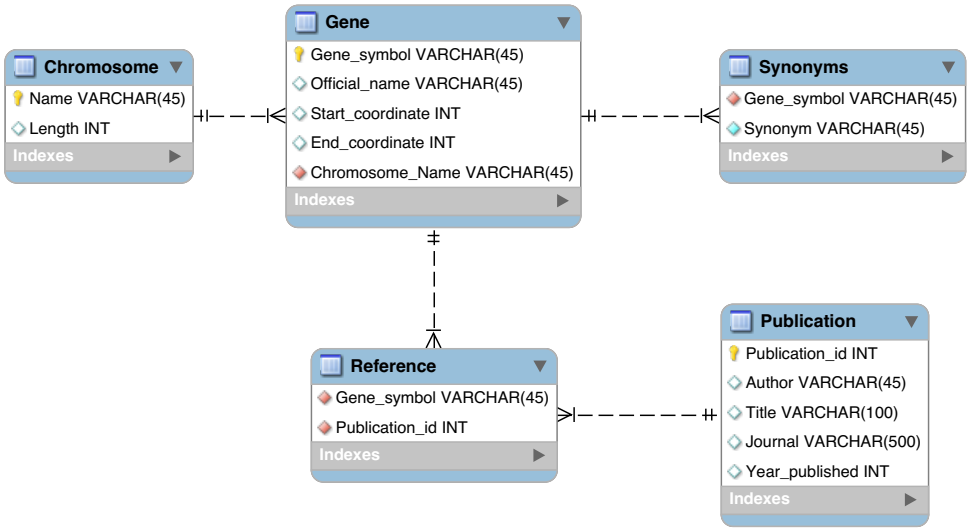
iii)

Gene(#Gene_id, Name, start, end, Chromosome)
Exon(#Exon_id, start, end, Gene_id*)
Isoform(#Isoform_id, Isoform_name, Gene_id*)
Isoform_has_Exon(Isoform_id*, Exon_id*)

3.i)

Gene, Chromosome, Synonyms, Reference and Publication

ii)



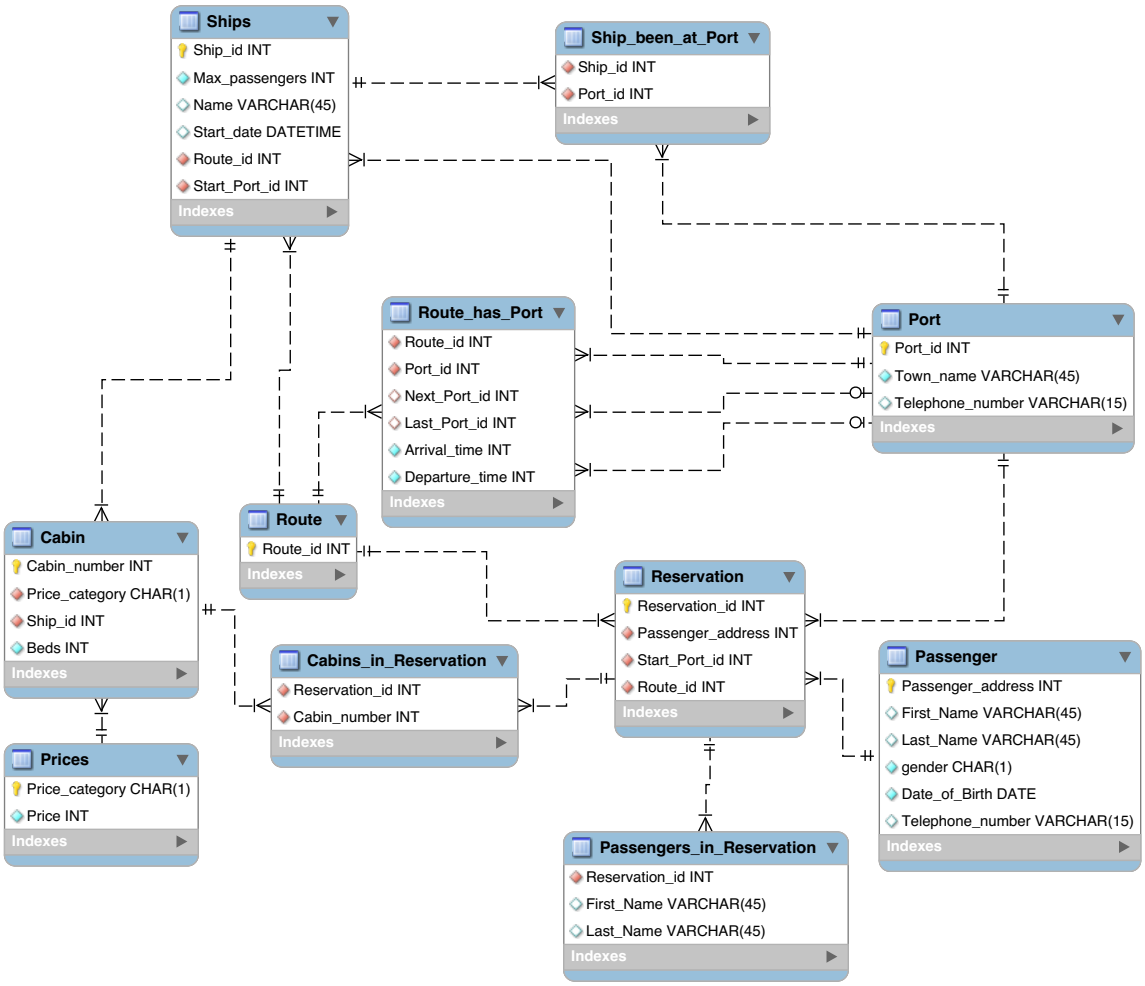
iii)

Gene(#Gene_symbol, Official_name, Start_coordinate, End_coordinate, #Chromosome_name, Chromosome_length)
Synonyms(Gene_symbol*, Synonym)
Reference(Gene_symbol*, Publication_id*)
Publication(#Publication_id, Author, Title, Journal, Year_published)

iv)

Gene(#Gene_symbol, Official_name, Start_coordinate, End_coordinate, Chromosome_name*)
Chromosome(#Name, Length)
Synonyms(Gene_symbol*, Synonym)
Reference(Gene_symbol*, Publication_id*)
Publication(#Publication_id, Author, Title, Journal, Year_published)

4)



Arrival_time and Departure_time in Route_has_Port are showing how many hours after the Start_date it is before the ship arrive and departure from the dock.

5.i)

When the truck has done many assignments, there will be many duplicates of the Registration number and year, model and max weight since it saves the information for each assignment.

Also the same model of trucks has the same maximum weight. Therefore we will break the 3NF. They could rather make another table called Truck_Type which contains Model and Maximum_Weight.

ii)

Registration_number —> Registration_year
Registration_number —> Model
Model —> Maximum_weight

iii)

Registration_number

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)

Truck(#Registration_number, Registration_year, Model*)

Model(#Model, Maximum_weight)

Truck_has_Assignment(Registration_number*, Assignment_number*)