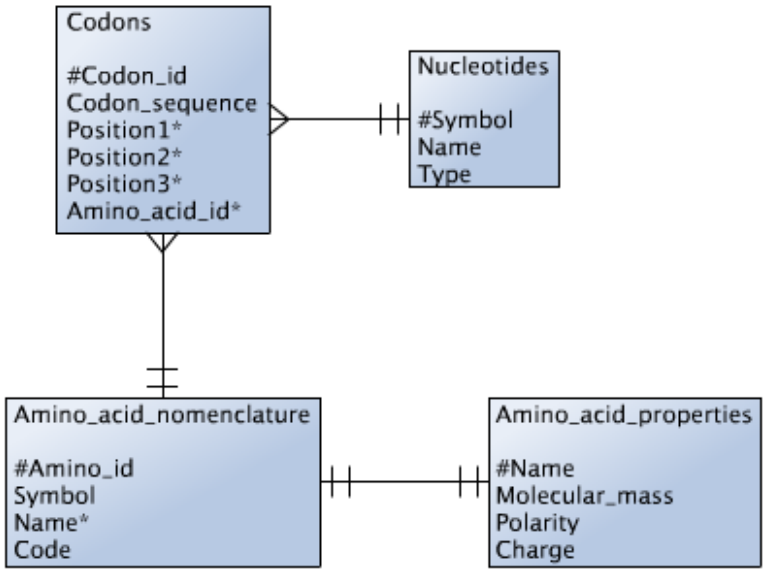
Task 1)



Task 2)

A)

The entities are as follows:

Chromosome(#Chromosome_id)

Gene(#Gene_id, Chromosome_id*, Location_start(address on chromosome),Location_end)

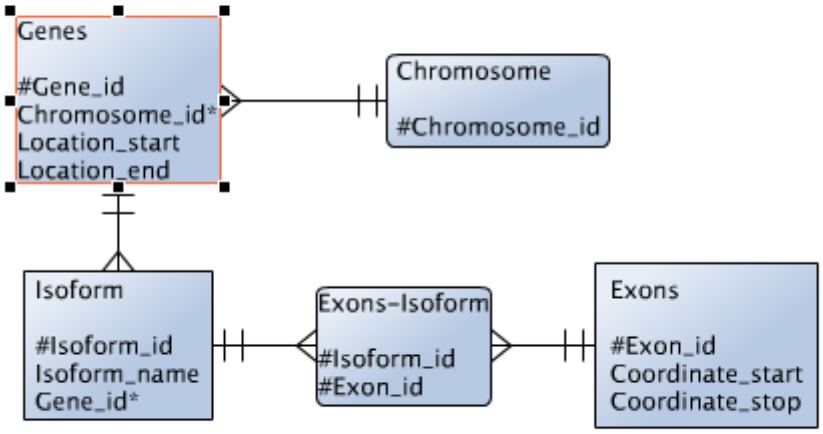
Isoform(#Isoform_id,Isoform_name, Gene_id*)

Exon(#Exon_id, Coordinate_start, Coordinate stop)

Exon-Isoform connection(#Isoform_id, #Exon_id)

B) + C)

Since how to produce the ER-diagram in task 2.b) is unspecified I choose to combine task 2.b) and 2.c). This is because the ER-diagram produced in 2.c) also conforms to the specifications give in task 2.b)(the way I understood it anyway).



Task 3)

A)

Gene(#Gene_symbol, Official_name, Synonyms_reference, Chromosome_name, Start_coordinate, Stop_coordinate, References*)

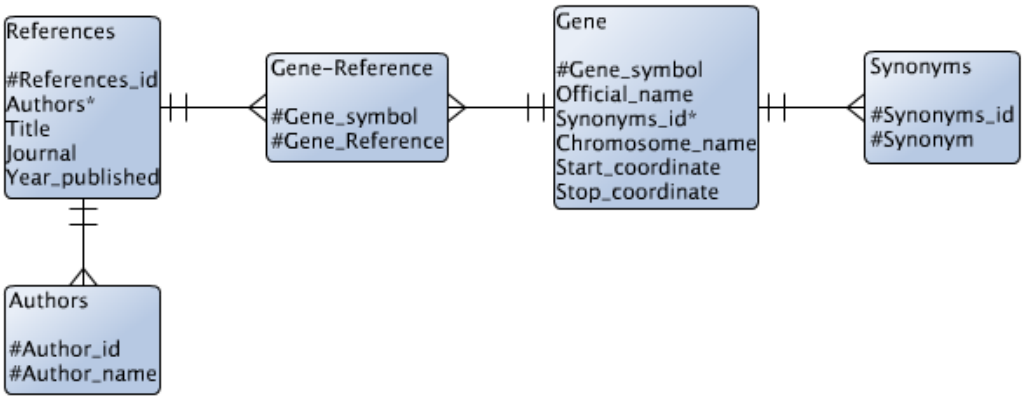
Synonyms(#Synonym_id, #Synonym)

Reference(Reference_id, Authors, Title, Journal,Year_published)

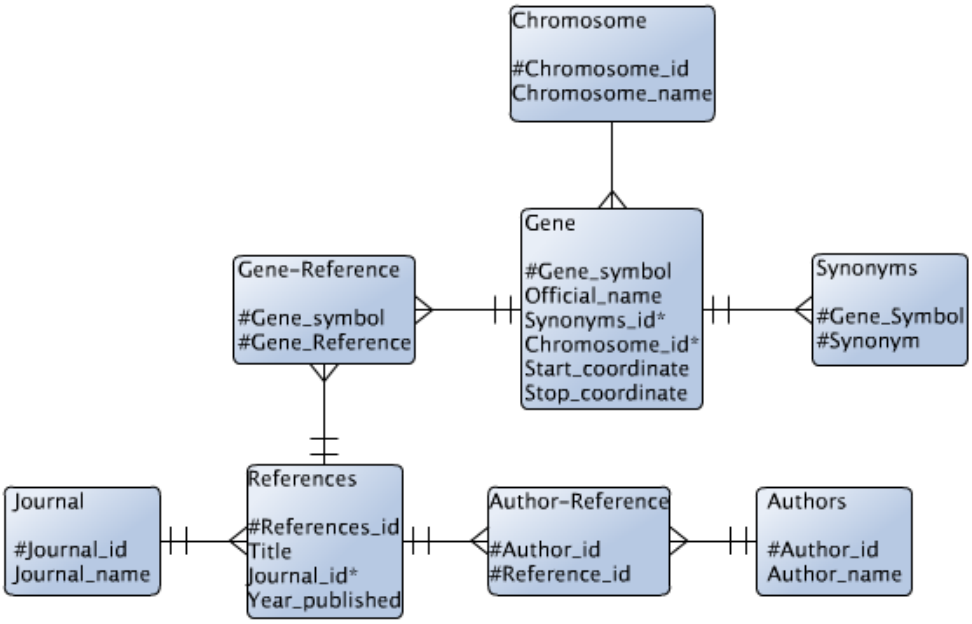
Authors(Author_id, Author_name)

Gene-Reference(Gene Symbol, Reference_id)

B) + C) using the same rationale as in task 2.B) + 2.C), these two tasks are combined into one


References
#References_id
Authors*
Title
Journal
Year_published
Gene-Reference
#Gene_symbol
#Gene_Reference
Gene
#Gene_symbol
Official_name
Synonyms_id*
Chromosome_name
Start_coordinate
Stop_coordinate
Synonyms
#Synonyms_id
#Synonym
Authors
#Author_id
#Author_name

D)


Chromosome
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Chromosome_name
Gene
#Gene_symbol
Official_name
Synonyms_id*
Chromosome_id*
Start_coordinate
Stop_coordinate
Gene-Reference
#Gene_symbol
#Gene_Reference
Synonyms
#Gene_Symbol
#Synonym
Journal
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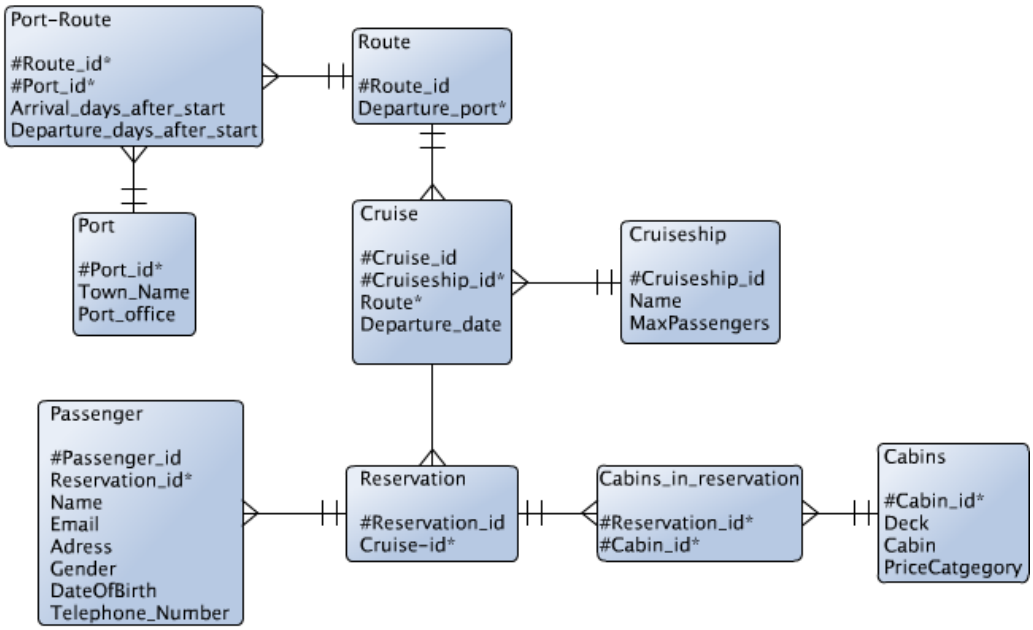
Journal_name
References
#References_id
Title
Journal_id*
Year_published
Author-Reference
#Author_id
#Reference_id
Authors
#Author_id
Author_name

Task 4)



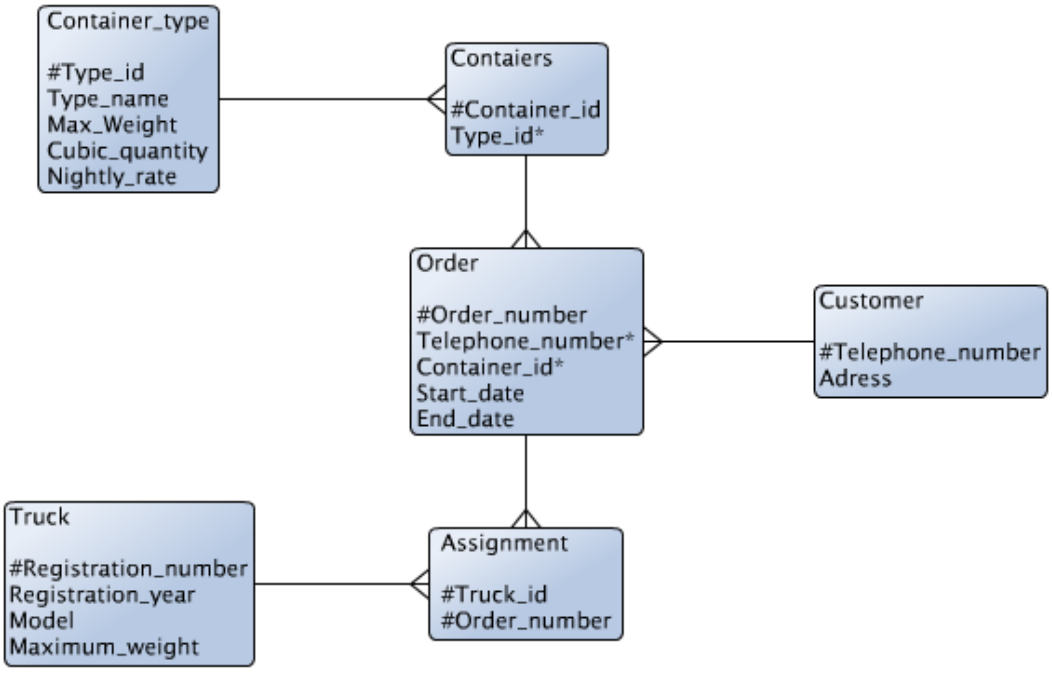
Task 5)

A) The reason the proposed truck-table is problematic is because:
   1) It does not have any registered primary key
   2) The truck has to be registered over again for each new assignment. This leads to a large redundancy of truck registrations.

B) Registration_number->{Registration_year,Model, Max_weight}(Here assuming a truck is never registered with the same registration number as another truck)
   Model->{Max_weight}

C) If we assume the unlikely scenario that a truck is registered with the same number, another truck in the database was earlier deregistered with, Registration number alone will be a sufficient candidate key. If we cannot be certain that this scenario will never occur, we can use registration year as well as registration number, to further decrease the likelihood of there ever being a conflict in primary keys. To be completely certain, using a autogenerated registration id for all trucks would ensure no duplicate candidate keys in the future.

D)


Container_type
#Type_id
Type_name
Max_Weight
Cubic_quantity
Nightly_rate
Containers
#Container_id
Type_id*
Order
#Order_number
Telephone_number*
Container_id*
Start_date
End_date
Customer
#Telephone_number
Adress
Truck
#Registration_number
Registration_year
Model
Maximum_weight
Assignment
#Truck_id
#Order_number