1)

Amino_acid_properties
- 🔑 Name VARCHAR(20)
- ◇ Molecular_mass SMALLINT(6)
- ◇ Polarity VARCHAR(20)
- ◇ Charge VARCHAR(20)
- Indexes ▶

Amino_acid_nomenclature ▼
- 🔑 Amino_id VARCHAR(5)
- ◇ Symbol VARCHAR(1)
- ◆ Name VARCHAR(20)
- ◇ Code VARCHAR(4)
- Indexes ▶

Nucleotides ▼
- 🔑 Symbol CHAR(1)
- ◇ Name VARCHAR(20)
- ◇ Type VARCHAR(20)
- Indexes ▶

Codons ▼
- 🔑 Codon_id VARCHAR(3)
- ◇ Codon_sequence CHAR(3)
- ◆ Position1 CHAR(1)
- ◆ Position2 CHAR(1)
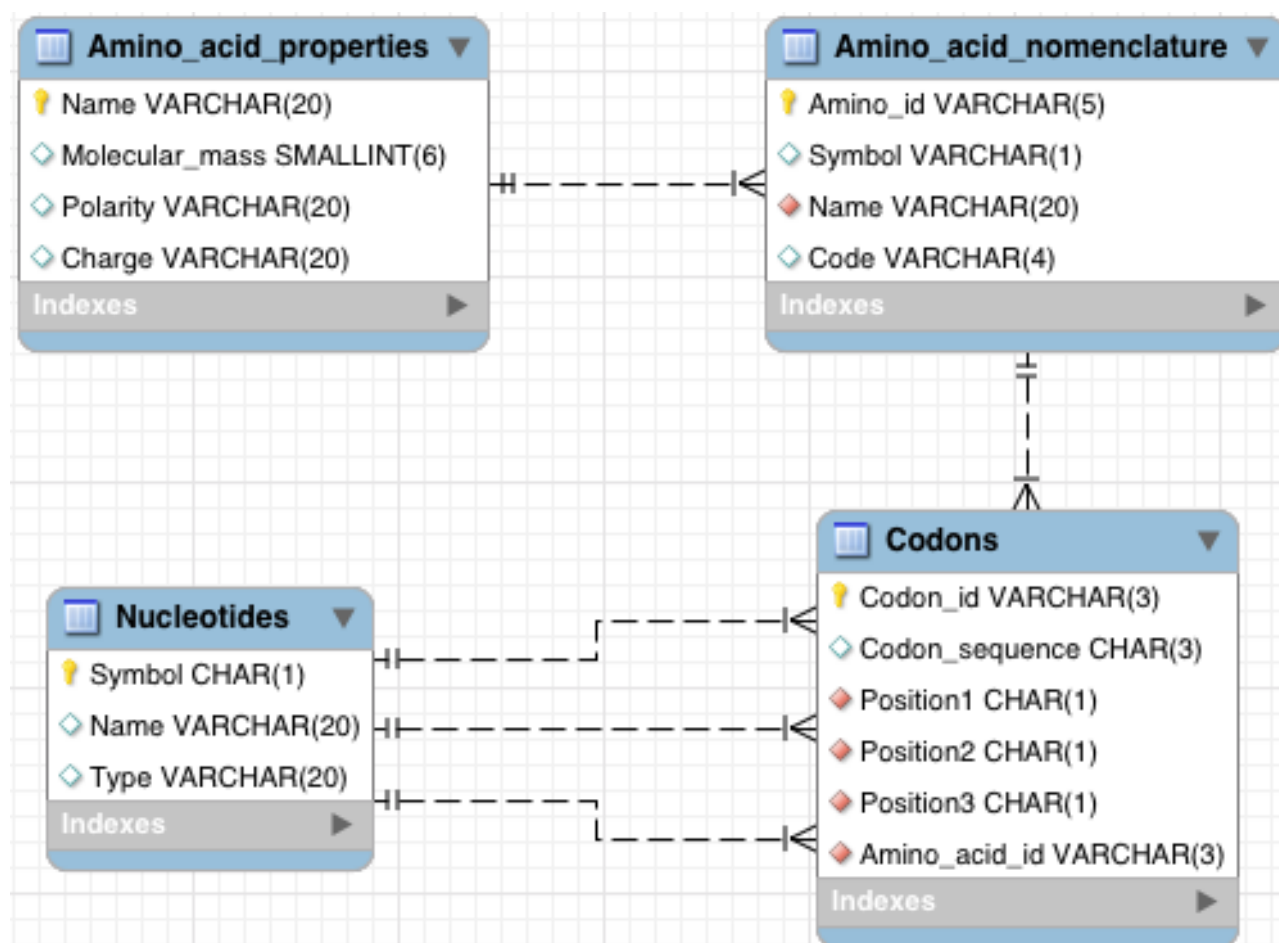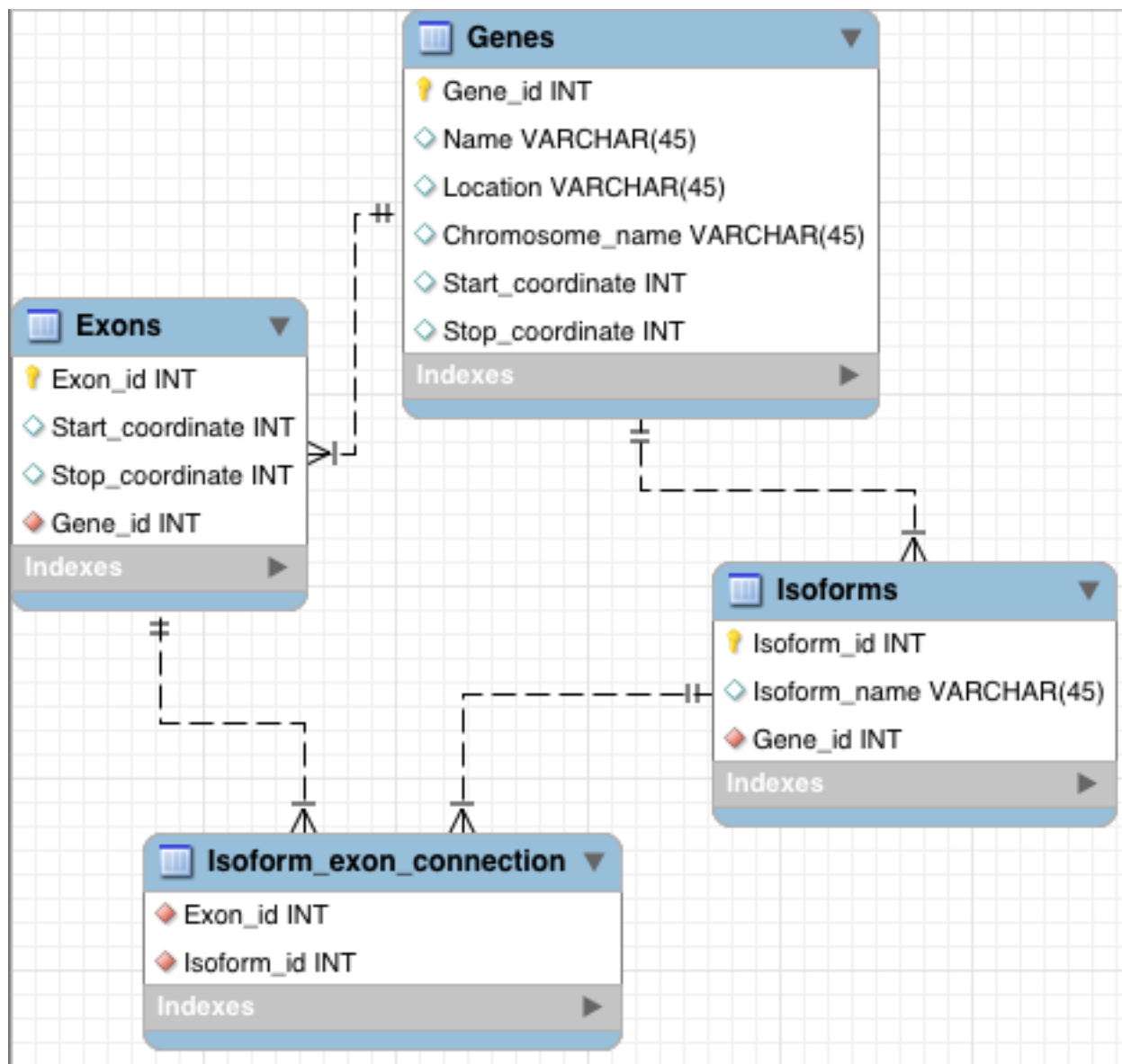- ◆ Position3 CHAR(1)
- ◆ Amino_acid_id VARCHAR(3)
- Indexes ▶

2.i)

Genes, Exons, Isoforms

2.ii)

2.iii)

Genes(#Gene_id, Name, Location, Chromosome_name, Start_coordinate, Stop_coordinate)
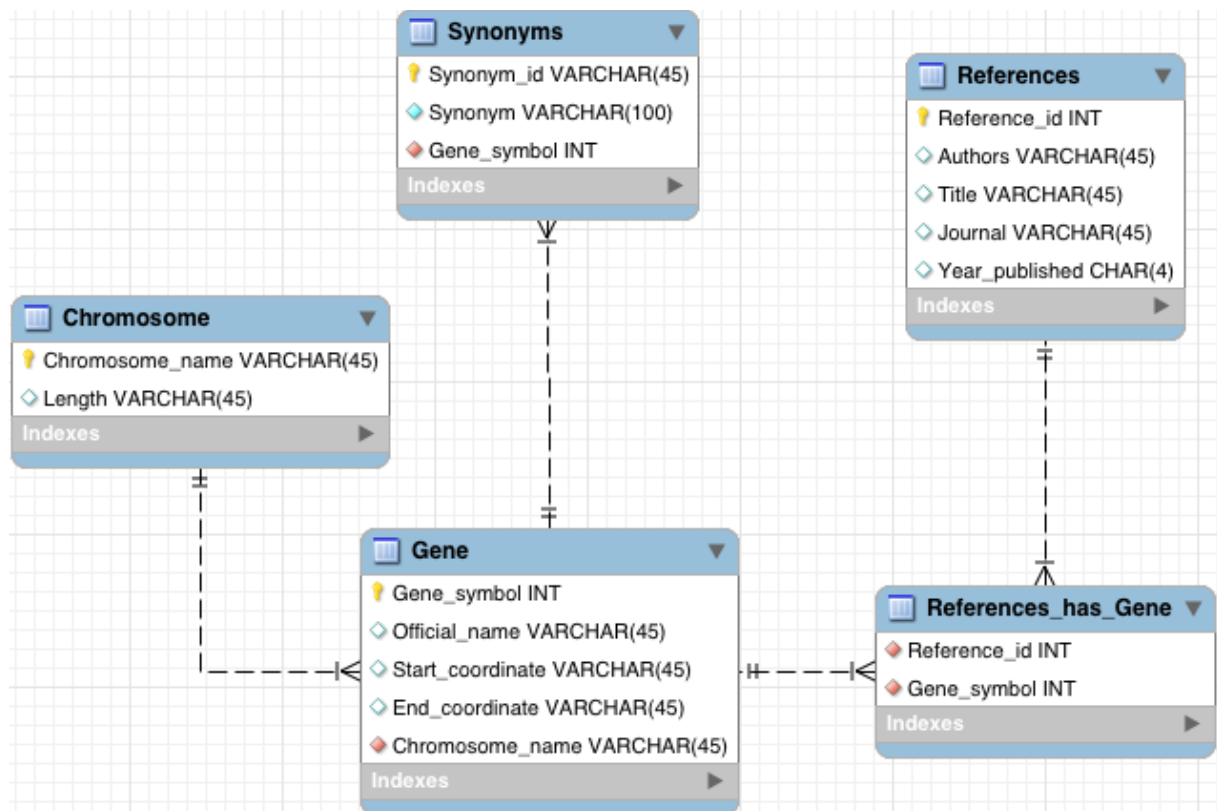Exons(#Exon_id, Start_coordinate, Stop_coordinate, Gene_id*)
Isoforms(#Isoform_id, Isoform_name, Gene_id*)
Isoform_exon_connection(Exon_id*, Isoform_id*)

3.i)

Chromosome, Gene, Synonyms, References

3.ii)

3.iii)

Gene(#Gene_symbol, Official_name, Start_coordinate, End_coordinate, #Chromosome_name, Chromosome_length)
Synonyms(#Synonym_id, Synonym, Gene_symbol*)
References(#Reference_id, Authors, Title, Journal, Year_published)
References_has_Gene(Reference_id*, Gene_symbol*)

3.iv)

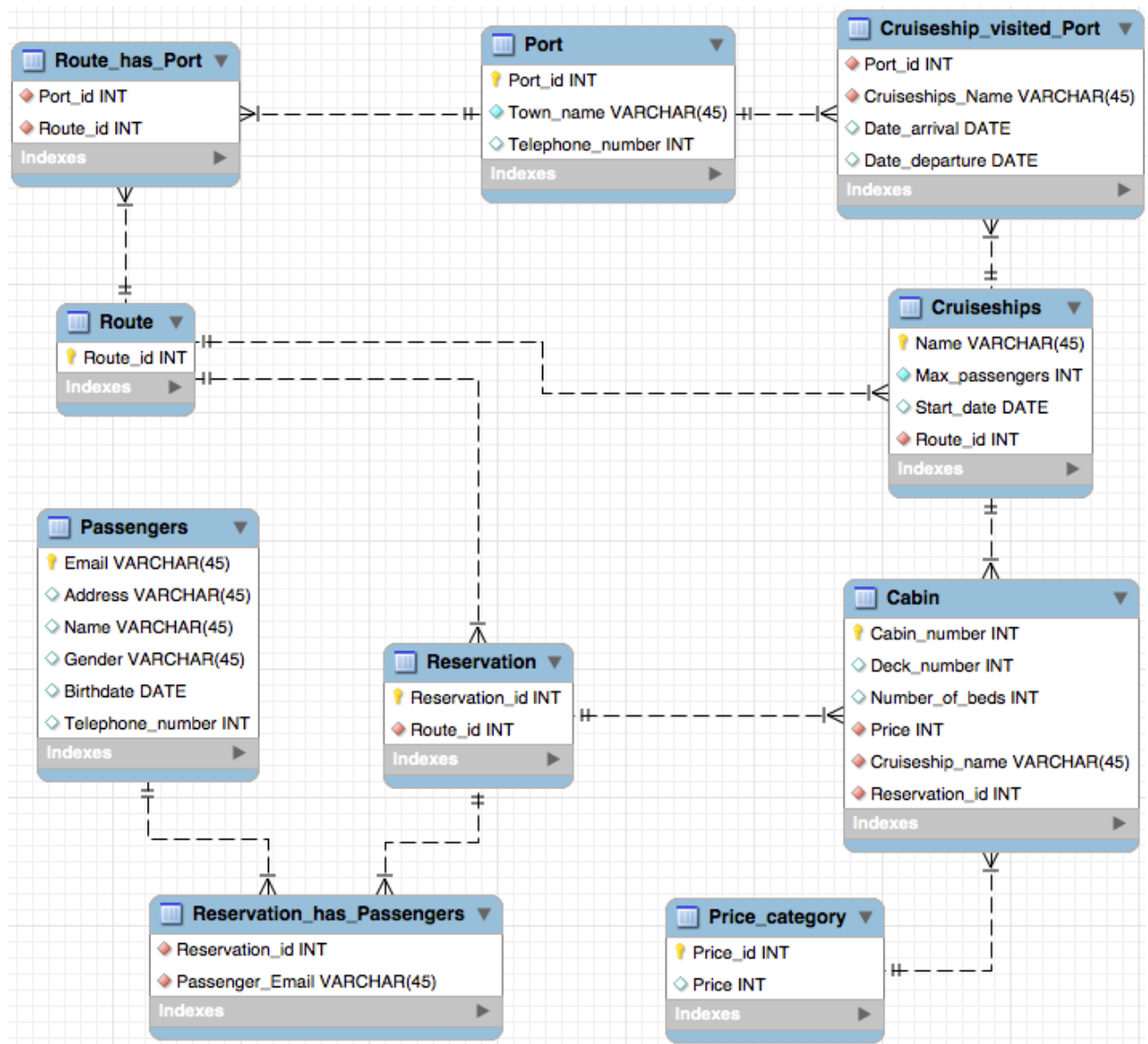Chromosome(#Chromosome_name, Length)
Gene(#Gene_symbol, Official_name, Start_coordinate, End_coordinate, Chromosome_name*)
Synonyms(#Synonym_id, Synonym, Gene_symbol*)
References(#Reference_id, Authors, Title, Journal, Year_published)
References_has_Gene(Reference_id*, Gene_symbol*)

4)

Route_has_Port
- Port_id INT
- Route_id INT
- Indexes

Port
- Port_id INT
- Town_name VARCHAR(45)
- Telephone_number INT
- Indexes

Cruiseship_visited_Port
- Port_id INT
- Cruiseships_Name VARCHAR(45)
- Date_arrival DATE
- Date_departure DATE
- Indexes

Route
- Route_id INT
- Indexes

Cruiseships
- Name VARCHAR(45)
- Max_passengers INT
- Start_date DATE
- Route_id INT
- Indexes

Passengers
- Email VARCHAR(45)
- Address VARCHAR(45)
- Name VARCHAR(45)
- Gender VARCHAR(45)
- Birthdate DATE
- Telephone_number INT
- Indexes

Reservation
- Reservation_id INT
- Route_id INT
- Indexes

Cabin
- Cabin_number INT
- Deck_number INT
- Number_of_beds INT
- Price INT
- Cruiseship_name VARCHAR(45)
- Reservation_id INT
- Indexes

Reservation_has_Passengers
- Reservation_id INT
- Passenger_Email VARCHAR(45)
- Indexes

Price_category
- Price_id INT
- Price INT
- Indexes

5i)

This solution is problematic because it is a breach of the second normal form; Registration_year, Model and Maximum_weight are all dependent on the Registration_number.

5ii)

Registration_number -> Registration_year
Registration_number -> Model
Model -> Maximum_weight

5iii)

Registration_number

5iv)

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*, Assignment_number*)
Truck_registration(#Registration_number, Registration_year, Model_name*)
Model(#Model_name, Maximum_weight)