Examples

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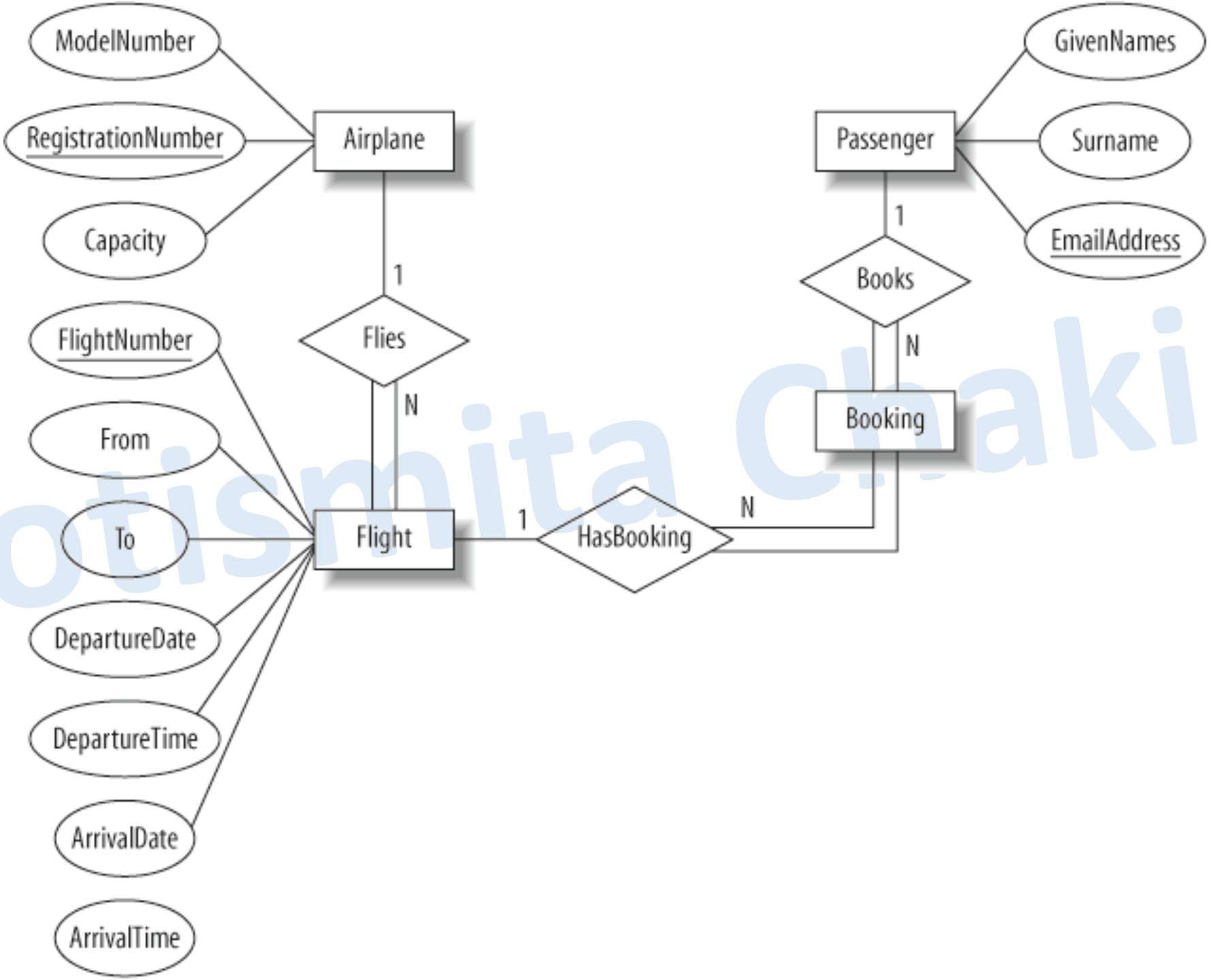
ER Diagram: 1

- Consider the following requirements list:
  - The airline has one or more airplanes.
  - An airplane has a model number, a unique registration number, and the capacity to take one or more passengers.
  - An airplane flight has a unique flight number, a departure airport, a destination airport, a departure date and time, and an arrival date and time.
  - Each flight is carried out by a single airplane.
  - A passenger has given names, a surname, and a unique email address.
  - A passenger can book a seat on a flight.

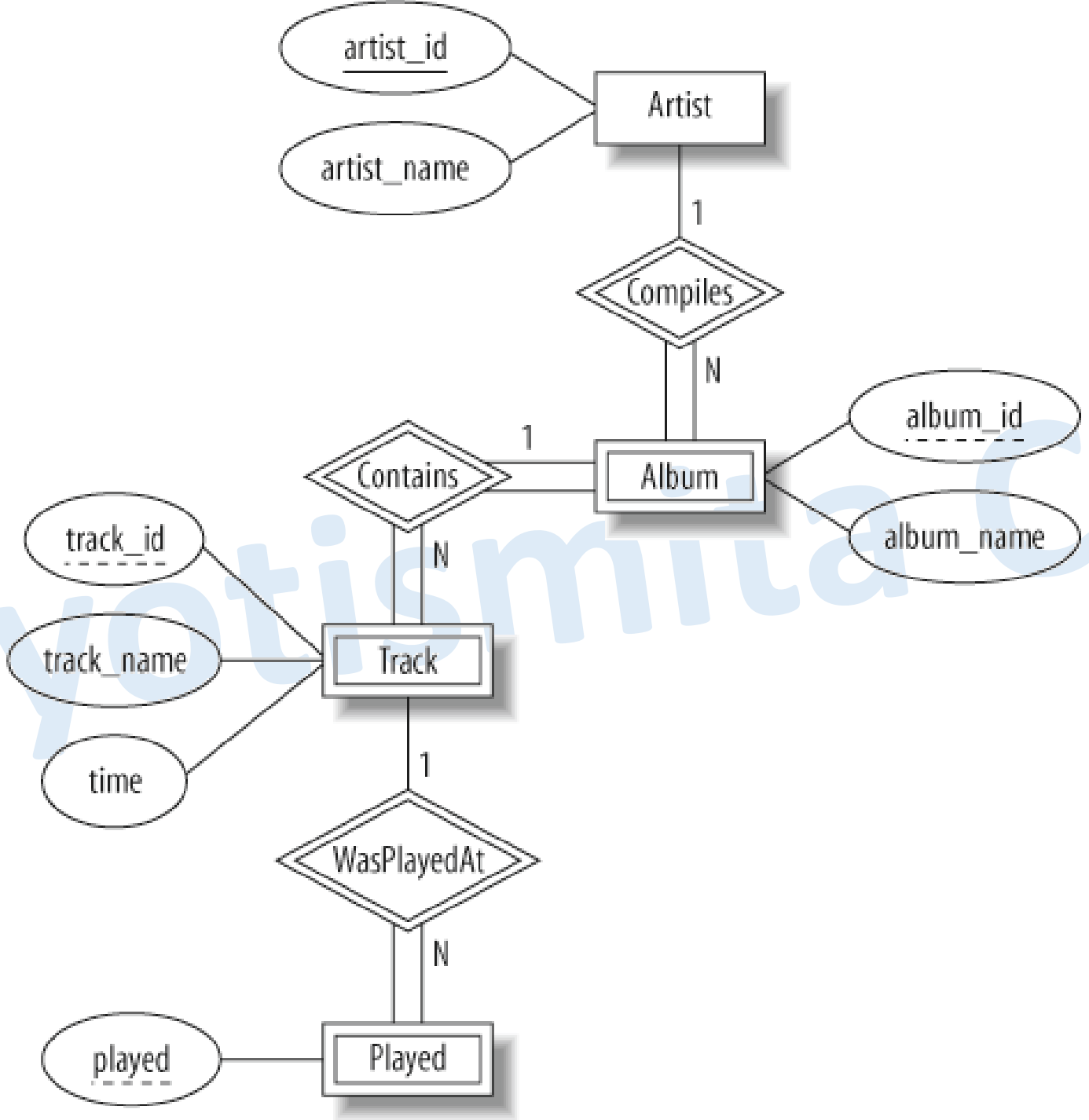
Solution



ER Diagram: 2

- Requirements for the music database:
  - The collection consists of albums.
  - An album is made by exactly one artist.
  - An artist makes one or more albums.
  - An album contains one or more tracks
  - Artists, albums, and tracks each have a name.
  - Each track is on exactly one album.
  - Each track has a time length, measured in seconds.
  - When a track is played, the date and time the playback began (to the nearest second) should be recorded; this is used for reporting when a track was last played, as well as the number of times music by an artist, from an album, or a track has been played.

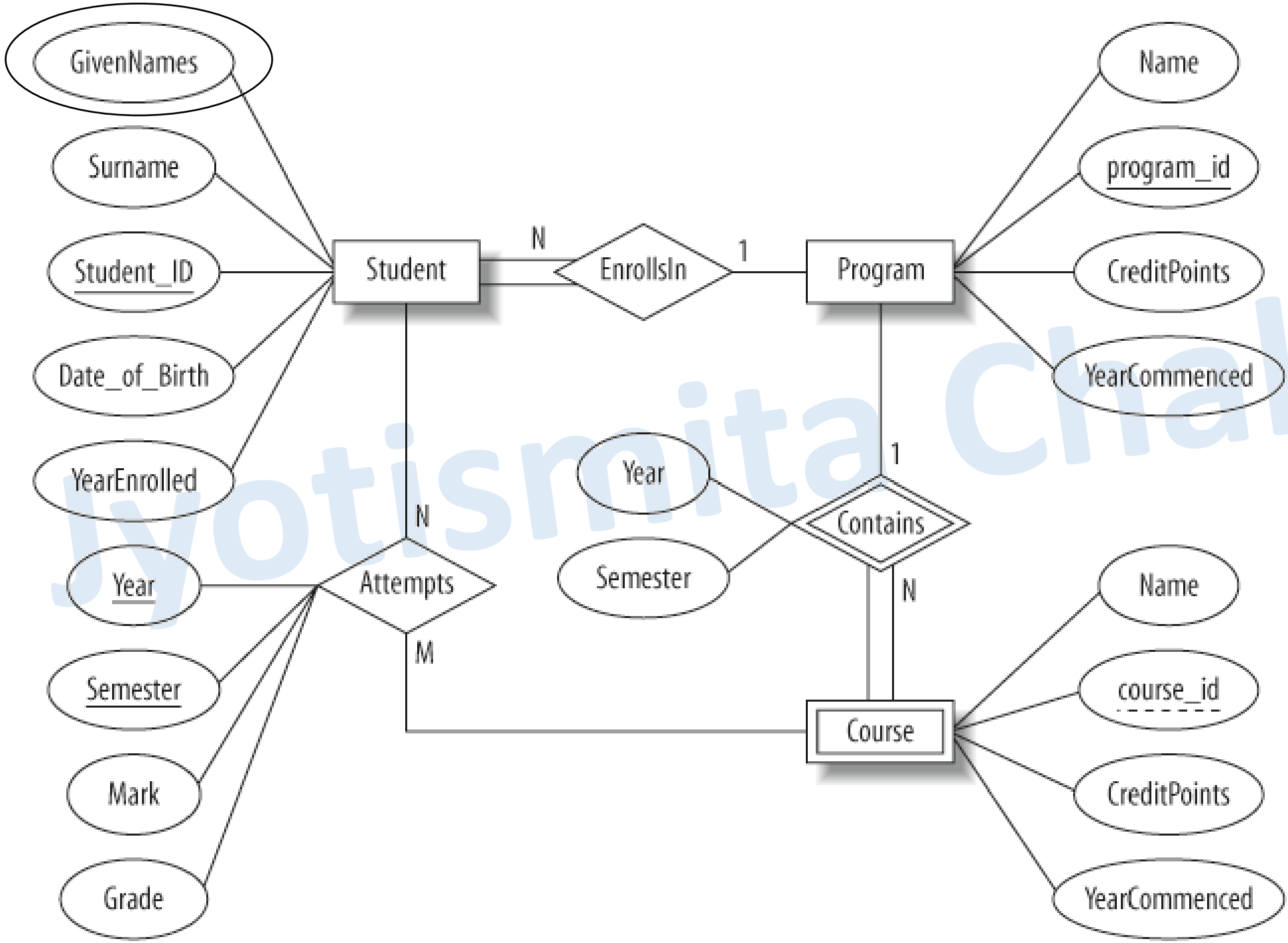
Solution



ER Diagram: 3

- Consider the following requirements list:
  - The university offers one or more programs.
  - A program is made up of one or more courses.
  - A student must enroll in a program.
  - A student takes the courses that are part of her program.
  - A program has a name, a program identifier, the total credit points required to graduate, and the year it commenced.
  - A course has a name, a course identifier, a credit point value, and the year it commenced.
  - Students have one or more given names, a surname, a student identifier, a date of birth, and the year they first enrolled. We can treat all given names as a single object—for example, “John Paul.”
  - When a student takes a course, the year and semester he attempted it are recorded. When he finishes the course, a grade (such as A or B) and a mark (such as 60 percent) are recorded.
  - Each course in a program is sequenced into a year (for example, year 1) and a semester (for example, semester 1).

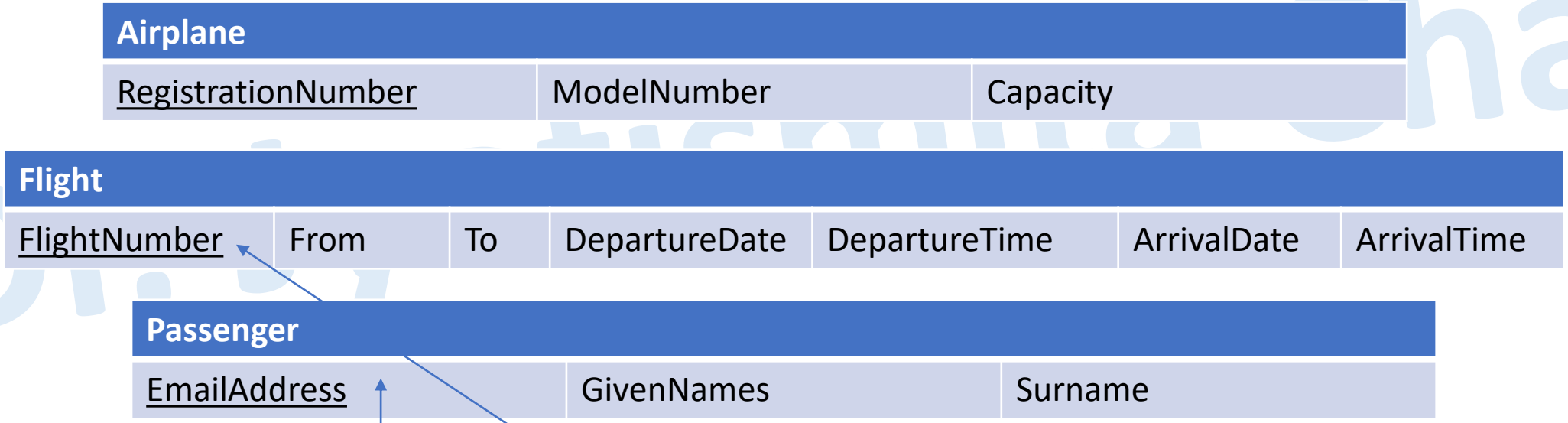
Solution



ER to Relational Model: 1

Solution

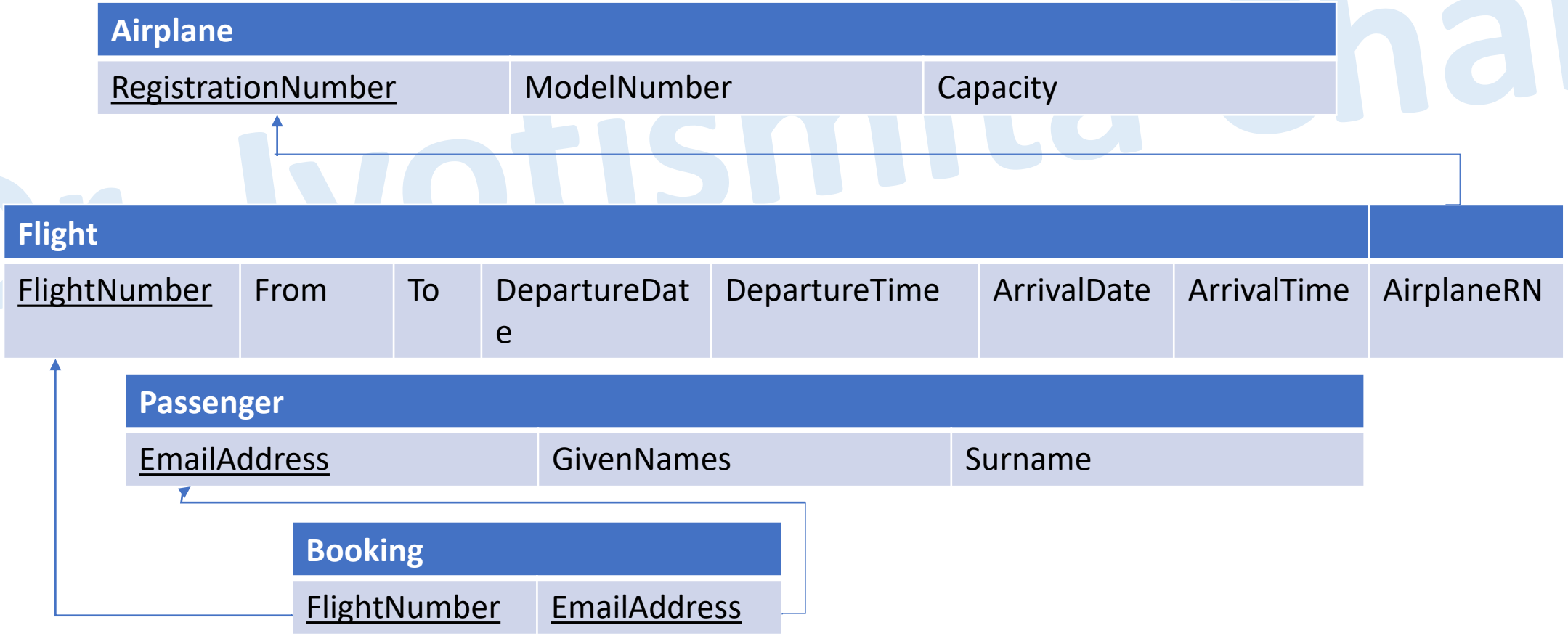
- Step 1: Mapping of Regular Entity Types.



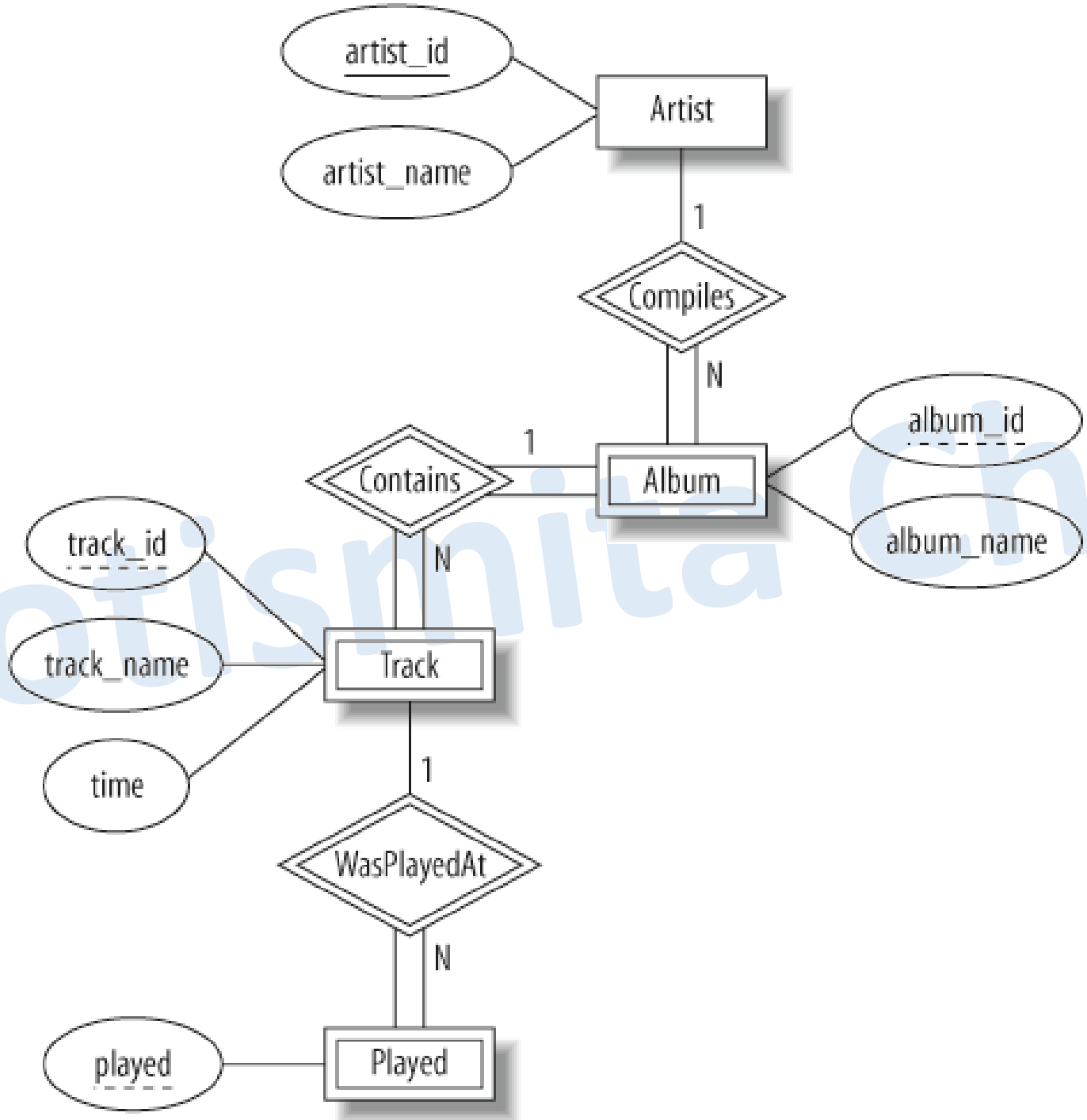
- Step 1: Mapping of Week Entity Types

Solution

- Step 2: Mapping of Binary 1:N Relationship Types



ER to Relational Model: 2



Solution

- Step 1: Mapping of Regular Entity Types

Artist	
Artist_ID	Artist_Name

- Step 2: Mapping of Weak Entity Types

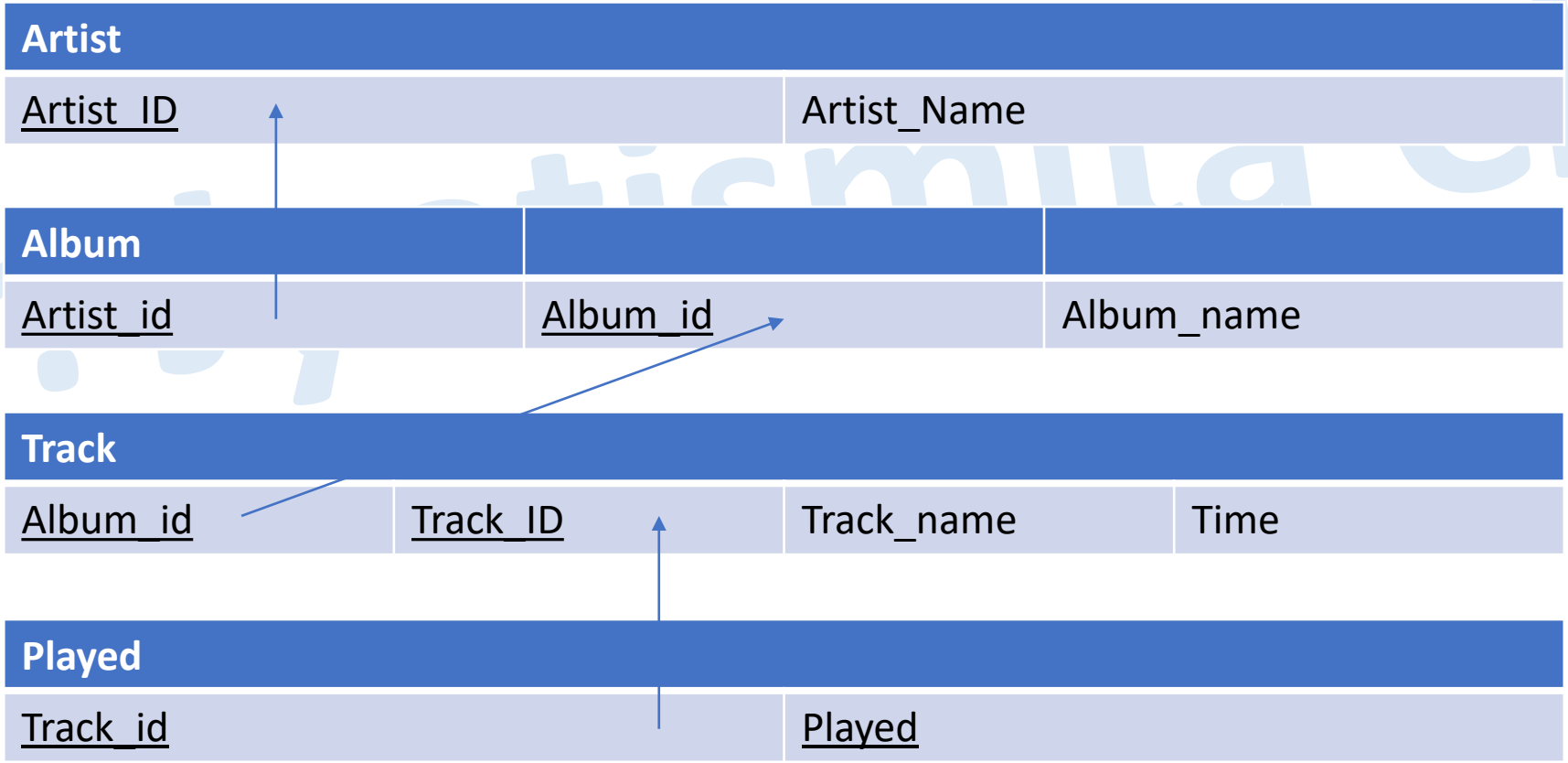
Album		
Artist_id	Album_id	Album_name

Track			
Album_id	Track_ID	Track_name	Time

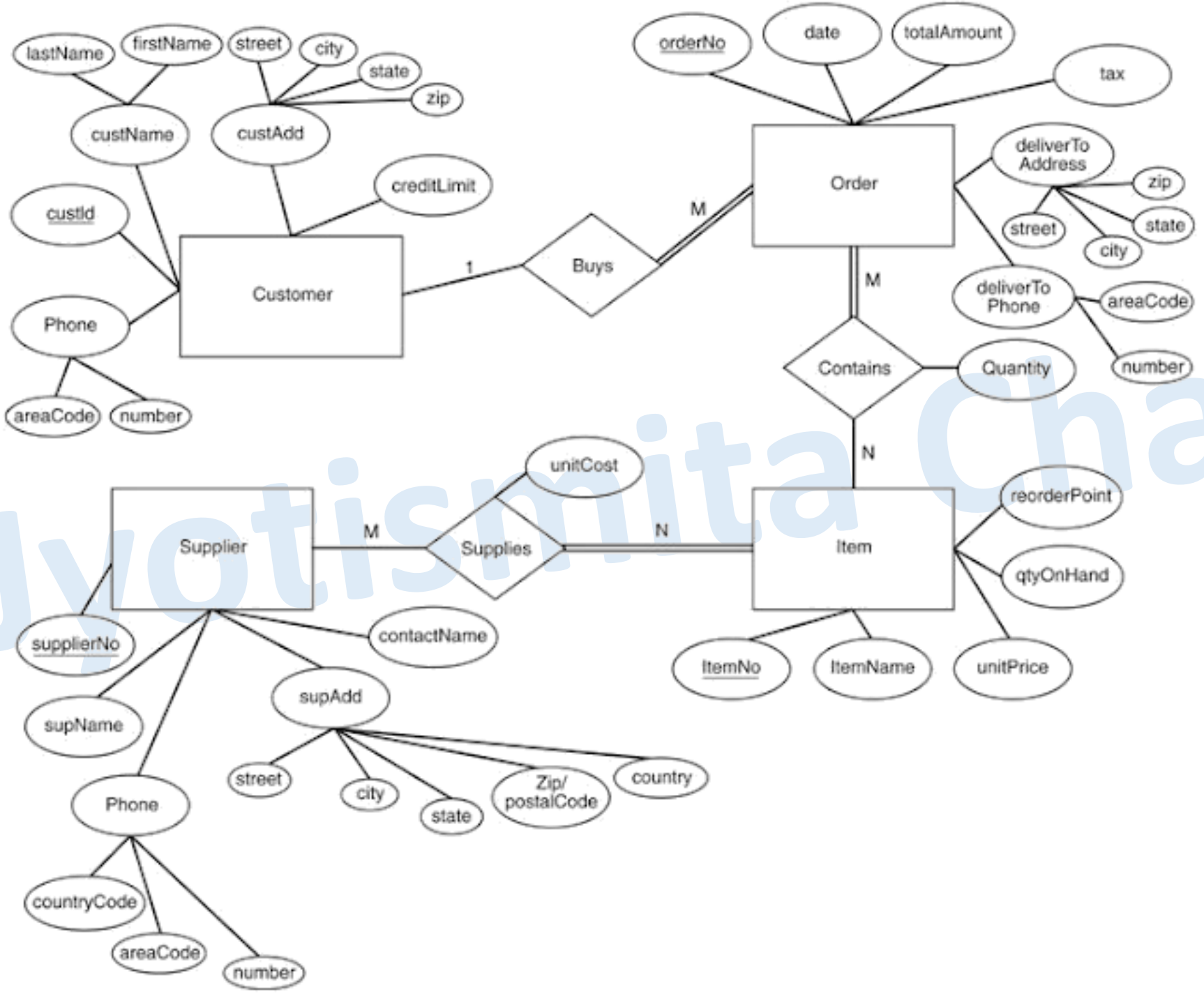
Played	
Track_id	Played

Solution

- Step 2: Mapping of Binary 1:N Relationship Types



ER to Relational model: 3



Solution

- Customer (custID, lastName, firstName, street, city, state, zip, creditLimit, areaCode, number)
- Order (orderNo, date, totalAmount, tax, street, city, state, zip, areaCode, number, custId)
- Supplier (supplierNo, supName, street, city, state, zip, country, contactName, countryCode, areaCode, number)
- Item (ItemNo, ItemName, unitPrice, qtyOnHand, reorderPoint)
- Contains (orderNo, ItemNo, Quantity)
- Supplies (supplierNo, ItemNo, unitCost)