Q1] Create an ERD using the following requirements:

• An INVOICE is written by a SALES REP. Each sales representative can write many invoices, but each invoice is written by a single sales representative.

• The INVOICE is written for a single CUSTOMER. However, each customer can have many invoices.

• An INVOICE can include many detail lines (LINE), each of which describes one product bought by the customer.

• The product information is stored in a PRODUCT entity. The product's vendor information is found in a VENDOR entity.

Q2] Draw an ER diagram for the given scenario of buying an

article. Entities:

Article, Source, Order, Copyright Agency, Country, Buyer

Attributes:

Article: Title(PK),authors, pdf file, fee

Source: Title(PK), publisher,issue,date, pages

Order: Order number(PK),total payment, date, tax status

Copyright Agency: name, address

Country: copyright from, taxrate

Buyer: name, address, email(PK), billing info

Following relationships are to be set:

a. Article is published in source. Many articles can be published in many

sources. b. Buyer places order. He can place zero or more orders.

c. Orders deliver articles. One article can be delivered in many orders and one order can deliver many articles as well.

d. Source pays fees to Copyright agency for every article published. Every country has a single source of publication

Q3] The local city youth league needs a database system to help track children who sign up to play soccer. Data needs to be kept on each team, the children who will play on each team, and their parents. Also, data needs to be kept on the coaches for each team. Draw a data model with the entities and attributes described here.

Entities required: Team, Player, Coach, and Parent

Attributes required:

Team: Team ID number, Team name, and Team colors
Player: Player ID number, Player first name, Player last name, and Player age

Coach: Coach ID number, Coach first name, Coach last name, and Coach home phone number

Parent: Parent ID number, Parent last name, Parent first name, Home phone number, and Home address (Street, City, State, and Zip code)

The following relationships must be defined:

1. Team is related to Player.

2. Team is related to Coach.

3. Player is related to Parent.

Connectivity and participations are defined as follows:

• A Team may or may not have a Player.

• A Player must have a Team.

• A Team may have many Players.

• A Player has only one Team.

• A Team may or may not have a Coach.

• A Coach must have a Team.

• A Team may have many Coaches.

• A Coach has only one Team.

• A Player must have a Parent.

• A Parent must have a Player

. • A Player may have many Parents. A Parent may have many Players.

Q4] Suppose you are given the following requirements for a simple database for the National Hockey League (NHL): The NHL has many teams, each team has a name, a city, a coach, a captain, and a set of players, Each player belongs to only one team, each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records, a team captain is also a player, A game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 1999) and a score (such as 4 to 2).