AS - Chapter 8 Practice1

Question 1

Allen owns an online store. He has a database that stores details about the Customers, Employees, Products and Orders. The database, **Online_Shopping**, has the following structure:

CUSTOMERS *(CustomerID, CustomerName, ContactName, Address, City, PostalCode, Country)*

Employees *(EmployeeID, LastName, FirstName, BirthDate, Photo, Notes)*

Products *(ProductID, ProductName, SupplierID, CategoryID, Unit, Price)*

Orders *(OrderID, CustomerID, EmployeeID, OrderDate, ShipperID)*

(a) Give the definition of the following database terms, using an example from the database **Online_Shopping** for each definition. [Definition of Terminology]

Term	Definition and Example
Field	
Entity	
Foreign key	
Primary key	

[6]

(b) Tick (3) **one** box to identify whether the database **Online_Shopping** is in Third Normal Form (3NF) or not in 3NF. [Normalization process]

Justify your choice using one or more examples from the database**Online_Shopping**.

In 3NF	
Not in 3NF	

Justification: ----------

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[2]

(c) Example data from the table **Orders** are given:

OrderID	CustomerID	EmployeeID	OrderDate	ShipperID
10248	90	5	1996-07-04	3
10249	81	6	1996-07-05	1
10250	34	4	1966-07-08	2
10251	48	3	1996-07-08	1

(i) Write a Data Definition Language (DDL) statement to define the table **Orders**.
[CREATE, TABLE, PRIMARY KEY]

[6]

(ii) After creating the Orders table, Allen found that he had not added a foreign key. Please write a **Data Definition Language** (DDL) statement to add foreign key **ShipperID** to **Orders** table. [ALTER TABLE, ADD, FOREIGN KEY…REFERENCES…]

[2]

(iii) Those DDL statements are interpreted by the DDL interpreter and recorded in the database's data dictionary. Please give **three** items that are stored in a **data dictionary**.
[Data dictionary]

[3]

(iv) Write a **Data Manipulation Language** (DML) statement to add a record to the Orders table. (OrderID: 10444, CustomerID: 66, EmployeeID: 5, OrderDate: 2022-01-31, ShipperID: 1)

[INSERT INTO, VALUES]

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[2]

(v) Allen wants to use a **Database Management System** (DBMS) to set up and manage the database. [Query Processor]

Describe, using examples, how the online store can use the following DBMS tools:

Development interface

Query Processor

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[5]

(vi) Write a Data Manipulation Language (DML) statement to change the EmployeeID as 4, where OrderID is 10444 in ExampleOrders. [UPDATE, SET, WHERE]

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[2]

(vii) Write a **Data Manipulation Language** (DML) statement to delete the record where OrderID is 10444 in the ExampleOrders table. [DELECT, WHERE]

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[2]

(viii) Write a Date Manipulation Language (DML) statement to return CustomerID and OrderDate after 1996-07-04 and sort the records with **descending** order of CustomerID.
[SELECT, FROM, ORDER BY, WHERE]

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[5]

Question 2

Unnormalized data - 0NF (ORDER TABLE)

Order ID	Customer	City	Province	Country	Product Code	Product Name	Product Price
5	Bill Jones	London	Greater London	UK	1	Table	US$ 50.00
					2	Desk	US$ 35.00
					3	Chair	US$ 20.00
8	Maria Torres	Barcelona	Catalonia	Spain	2	Desk	US$ 35.00
					7	Cupboard	US$ 70.00
14	Anne Smith	Chicago	Illinois	USA	5	Cabinet	US$ 60.00
2	Li Zhang	Suzhou	Jiangsu	China	7	Cupboard	US$ 70.00
					1	Table	US$ 50.00
					2	Desk	US$ 35.00

1NF

1NF (ORDER TABLE)

Order ID	Customer	City	Province	Country	Product Code	Product Name	Product Price

2NF

ORDER TABLE

Order ID	Product Code

PRODUCT TABLE

Product Code	Product Name	Product Price

CUSTOMER TABLE

Order ID	Customer	City	Province	Country

3NF

ORDER TABLE

Order ID	Product Code

PRODUCT TABLE

Product Code	Product Name	Product Price

Customer TABLE

Order ID	Customer	City

City TABLE

City	Province	Country

Qeustion 3

The database In 3NF as follows:

Order (OrderID, ProductCode)
Product (ProductCode, ProductName, ProductPrice)
Customer (OrderID, Customer, City)
City (City, Province, Country)

(a) Create the entity-relationship (E-R) diagram for the database