

# ICT\_104 Week 4

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**Unit : ICT\_104**

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## **Tutorial :**

1. For each table, identify the primary key and the foreign key(s). If a table does not have a foreign key, write None.

Answer :

1) EmployeeTable :

- Primary key : EMP\_CODE
- Foreign Key : STORE\_CODE

2) Store Table :

- Primary Key : STORE\_CODE
- Foreign keys : REGION\_CODE, EMP\_CODE

3) Region Table :

- Primary key : REGION\_CODE
- Foreign key : None

2. Do the tables exhibit entity integrity? Answer yes or no, and then explain your answer.

Answer :

- 1) Employee : Yes, because each row has a unique EMP\_CODE, ensuring entity integrity.
- 2) Store : Yes, as each STORE\_CODE is unique and serves as a unique identifier for each store.
- 3) Region : Yes, since REGION\_CODE is unique and identifies each region individually.

3. Do the tables exhibit referential integrity? Answer yes or no, and then explain your answer. Write NA (Not Applicable) if the table does not have a foreign key.

Answer :

- 1) Employee : Yes, because the STORE\_CODE values in EMPLOYEE reference existing record in the STORE table.
- 2) Store : Yes, because REGION\_CODE values in the STORE refer to existing REGION records, and EMP\_CODE values reference existing EMPLOYEE records.
- 3) Region : Not applicable, as REGION has no foreign keys.

4. Describe the type(s) of relationship(s) between STORE and REGION.

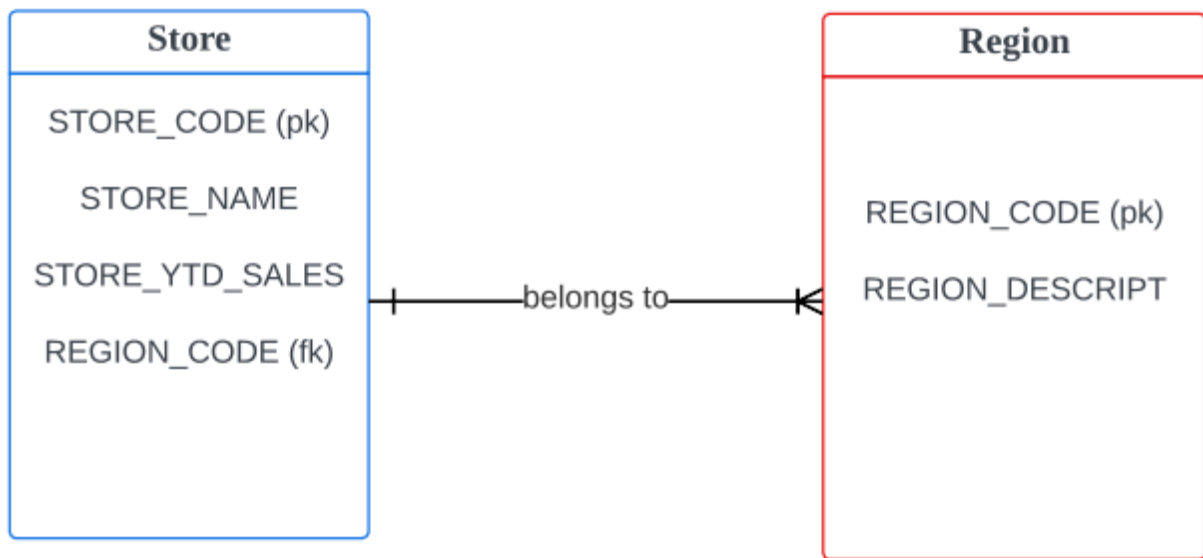
Answer : In this database, STORE and REGION are in a one-to-many relationship; that is , for every record of REGION, there could be numerous records of STORE. For instance, while the REGION\_CODE '1' can represent a region like "East", there could be many stores like "Tuple Charge" and "Primary Key Point" that would fall under "East"

and hence share the same REGION\_CODE. A store at any one time can belong to only one region, hence in this case, the relationship is directional from STORE to REGION.

This would be implemented at the database structure level: the STORE table would have a foreign key, REGION\_CODE, which would link each store to one and only one REGION record. This will ensure that each store is associated with a specific geographic or operational region and StoreCo can organize and manage stores by their regional locations. This structure also supports storing data referentially for integrity from the stores consistently with region data and helps to maintain the proper regional association across the database.

5. Create the ERD to show the relationship between STORE and REGION.

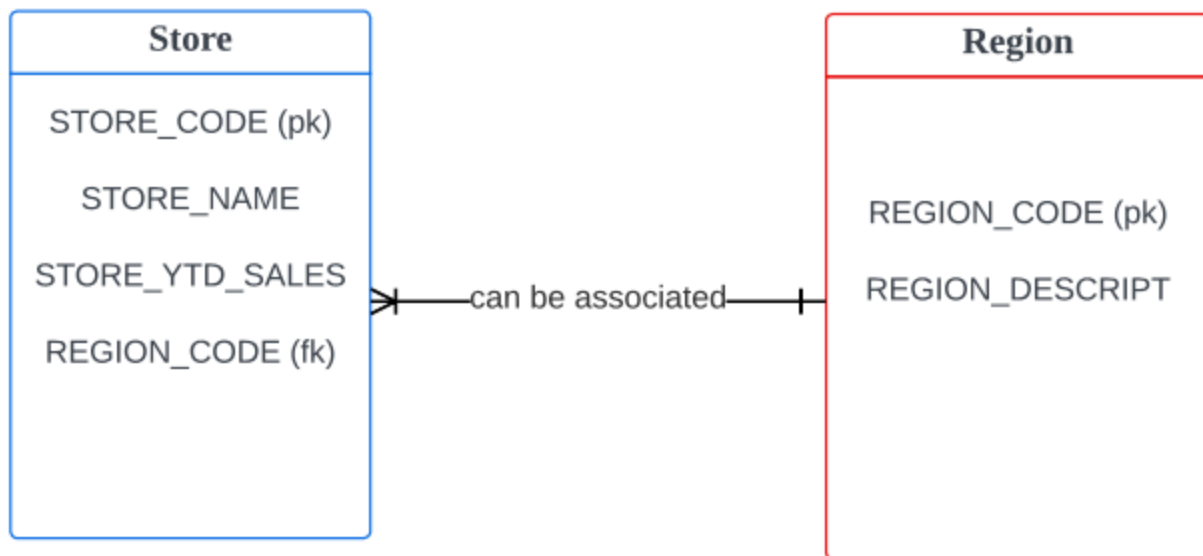
Answer :



Lucidchart, 2023. Lucidchart: Online Diagram Software. Available at:  
<https://www.lucidchart.com> [Accessed 29 October 2024].

6. Create the relational diagram to show the relationship between  
STORE and REGION.

Answer :



Lucidchart, 2023. Lucidchart: Online Diagram Software. Available at:  
<https://www.lucidchart.com> [Accessed 29 October 2024].

7. For each table, identify the primary key and the foreign key(s). If a table does not have a foreign key, write None in the space provided.

Answer :

1) PRODUCT Table:

- Primary Key: PROD CODE
- Foreign Key: VEND\_CODE (references VENDOR table)

2) VENDOR Table:

- Primary Key: VEND CODE
- Foreign Key: None

8. Do the tables exhibit entity integrity? Answer yes or no and then explain your answer.

Answer :

Yes. Entity integrity has been enforced in both tables because each of the primary keys on both tables (PROD CODE on the PRODUCT table and VEND.

9. Do the tables exhibit referential integrity? Answer yes or no and then explain your answer. Write

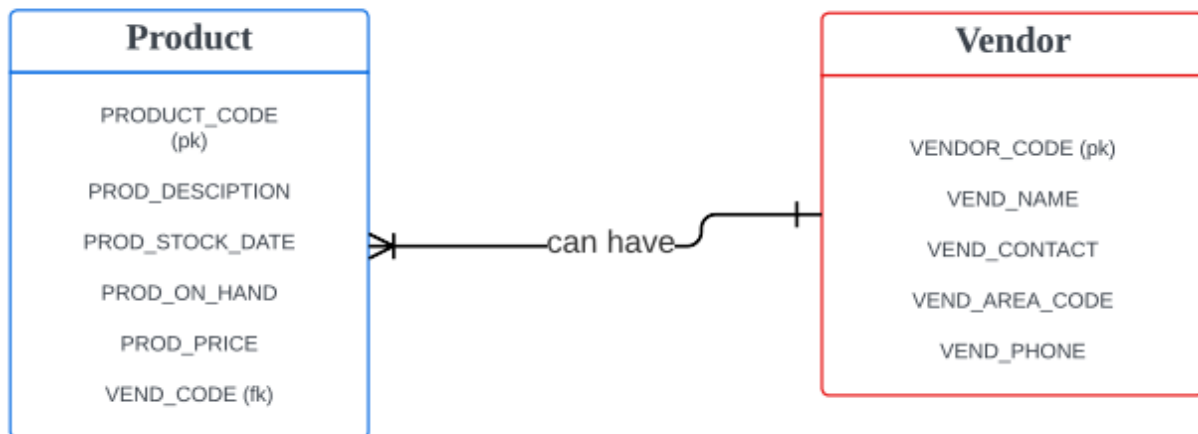
NA (Not Applicable) if the table does not have a foreign key.

Answer :

Yes. Referential integrity is maintained because the foreign key (VEND\_CODE in the PRODUCT table) correctly references an existing primary key (VEND CODE in the VENDOR table). There are no orphaned records in the PRODUCT table, meaning every VEND\_CODE in the PRODUCT table corresponds to a valid vendor in the VENDOR table.

10. Create the ERD for this database

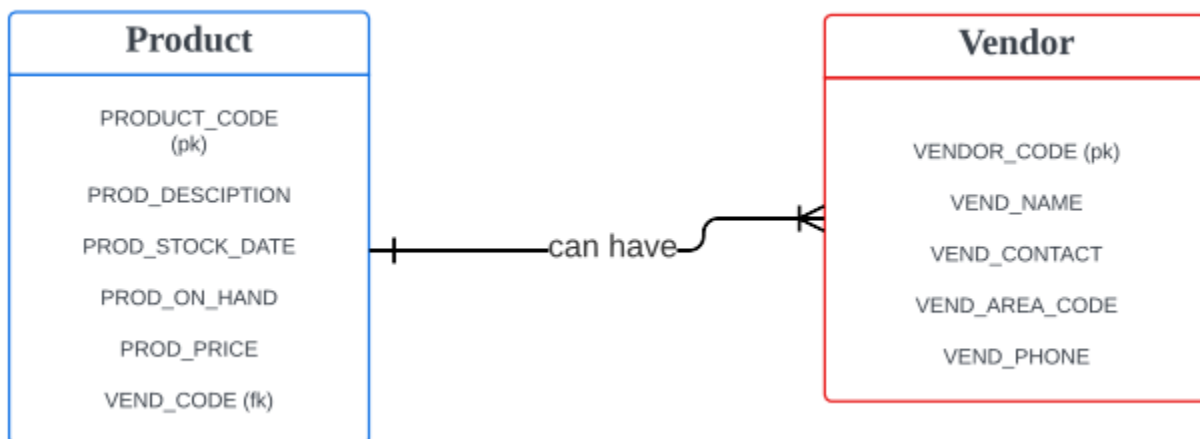
Answer :



Lucidchart, 2023. Lucidchart: Online Diagram Software. Available at: <https://www.lucidchart.com> [Accessed 29 October 2024].

11. Create the relational diagram for this database.

Answer :



Lucidchart, 2023. Lucidchart: Online Diagram Software. Available at: <https://www.lucidchart.com> [Accessed 29 October 2024].

12. Create the data dictionary for this database.

Answer :

Table Name	Field Name	Data Type	Description

PRODUCT	PROD CODE	VARCHAR	Unique Identifier for each product
	PROD DESCRIPTION	VARCHAR	Description of the product
	PROD STOCK DATE	DATE	Date the product was stocked
	PROD ON HAND	INTEGER	Quantity of the product available
	PROD PRICE	DECIMAL	Price of the product
	VEND CODE	INTEGER	Foreign Key referencing VENDOR
VENDOR	VEND CODE	INTEGER	Unique Identifier for each vendor
	VEND NAME	VARCHAR	Name of the vendor
	VEND CONTACT	VARCHAR	Contact person for the vendor



	VEND AREACODE	INTEGER	Area code for the vendor's phone
	VEND PHONE	VARCHAR	Phone number for the vendor

13. Use the small database shown in Figure Q3.5 to illustrate the difference between a natural join and outer join.

Answer : Student Table :

STU CODE	PROF CODE
100278	2
120569	4
512272	2
531235	1
531268	
5534	

Professor Table :

PROF CODE	DEPT CODE
1	2
2	6
3	6

4	4
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A natural join would combine rows from both tables based on the matching values found in the columns of the same name - for this problem, PROF CODE. Only the rows with the matching values will appear in the resulting table.

Natural join :

STU CODE	PROF CODE	DEPT CODE
100278	2	6
512272	2	6
120569	4	4
531235	1	2

Outer left join :

A LEFT OUTER JOIN returns all records from the left table, in this case STUDENT, as well as records from the right table, PROFESSOR, where there is a match. It also includes NULL values for records from the right if there is no match.

STU CODE	PROF CODE	DEPT CODE
100278	2	6

120569	4	4
512272	2	6
531235	1	2
531268	Null	Null
5534	Null	Null

Outer Right Join :

A right outer join returns all the records from the right of the table that is PROFESSOR and matching records from the left table, which is STUDENT. If no match occurs, it includes NULL values for columns contributed from the left table.

STU CODE	PROF CODE	DEPT CODE
100278	2	6
120569	4	4
512272	2	6
531235	1	2
Null	3	6

Reference :

Lucidchart, 2023. Lucidchart: Online Diagram Software. Available at: <https://www.lucidchart.com> [Accessed 29 October 2024].















