

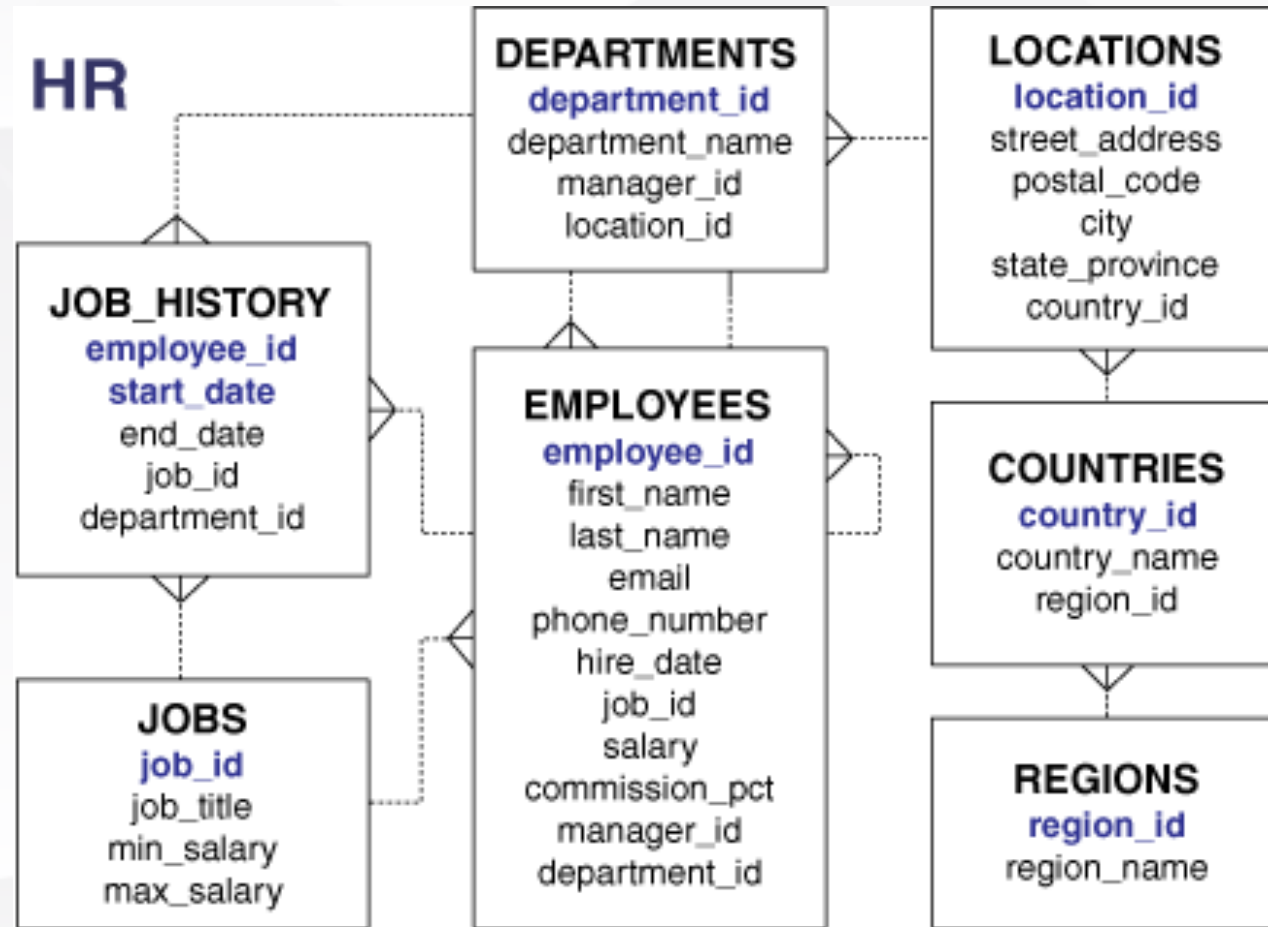
数据库基础

- 关系型数据库入门



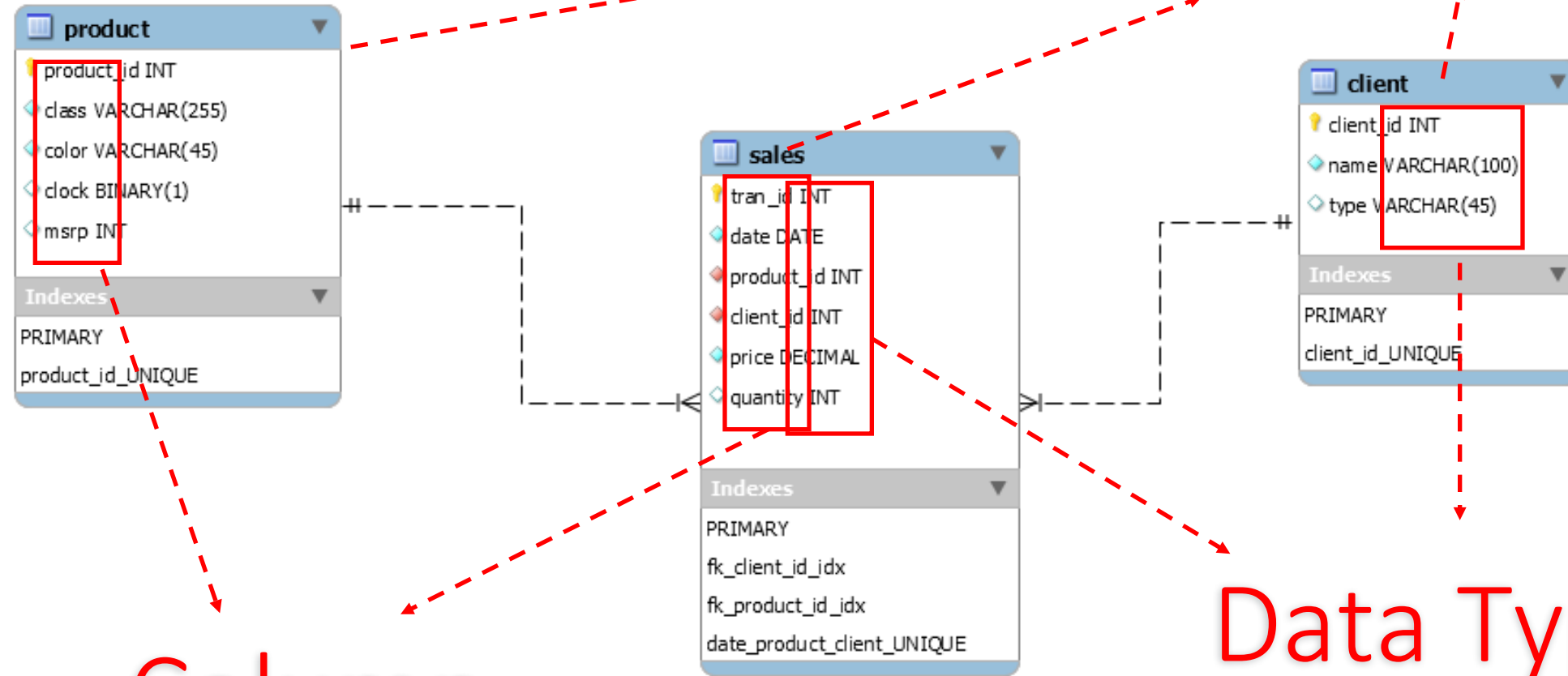


Relational DBMS





Database Model



Table

Column

Data Type



Constraints

Primary Key:

- Unique identifier to each record
- A relational database table must always have one and only one primary key
- Joint primary key can have multiple columns

Unique

| product | |
|--------------------|--|
| product_id INT | |
| class VARCHAR(255) | |
| color VARCHAR(45) | |
| clock BINARY(1) | |
| msrp INT | |
| Indexes | |
| PRIMARY | |
| product_id_UNIQUE | |

| sales | |
|----------------------------|--|
| tran_id INT | |
| date DATE | |
| product_id INT | |
| client_id INT | |
| price DECIMAL | |
| quantity INT | |
| Indexes | |
| PRIMARY | |
| fk_client_id_idx | |
| fk_product_id_idx | |
| date_product_client_UNIQUE | |

| client | |
|-------------------|--|
| client_id INT | |
| name VARCHAR(100) | |
| type VARCHAR(45) | |
| Indexes | |
| PRIMARY | |
| client_id_UNIQUE | |

Not Null



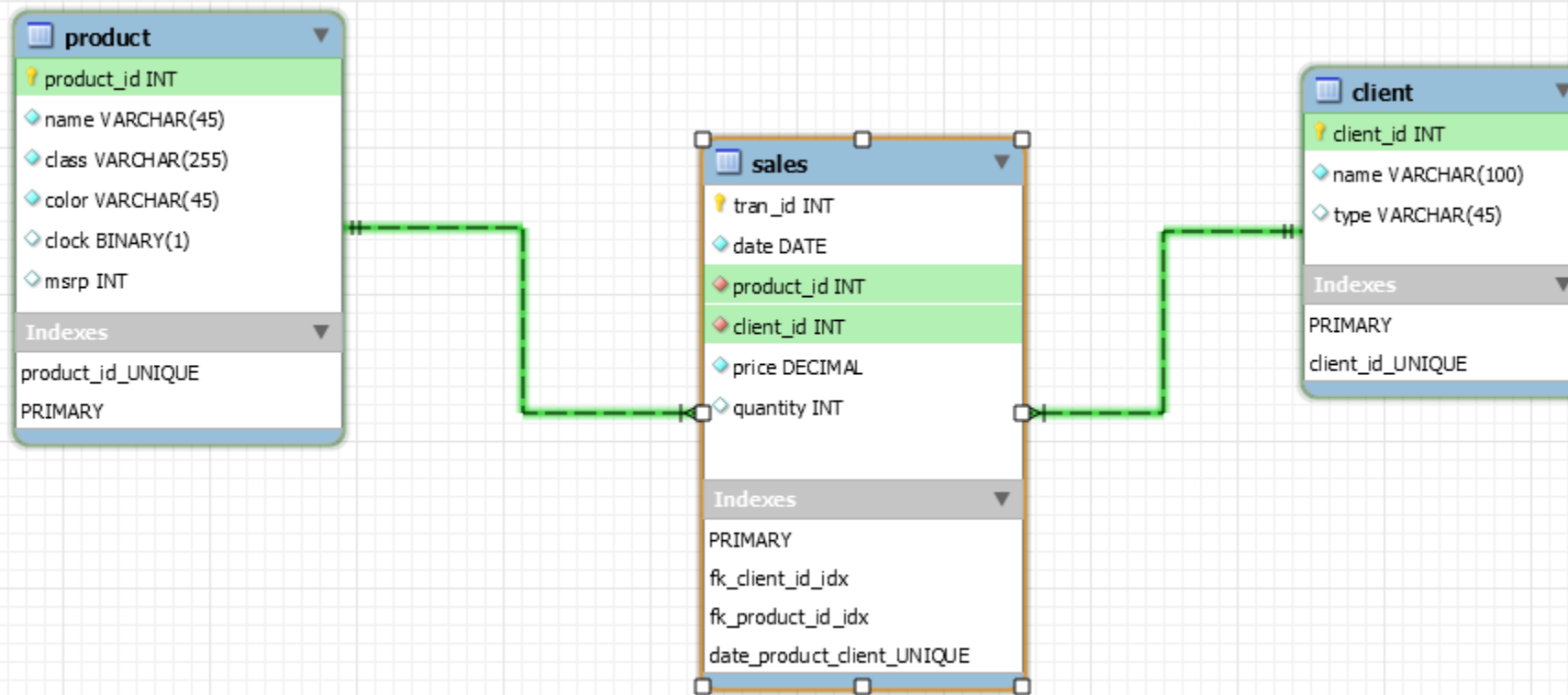
Constraints

- **Primary Key** constraint
 - Unique Identifier. Not Null.
- **NOT NULL** constraint
 - Ensures that column does not accept nulls
- **UNIQUE** constraint
 - Ensures that all values in column are unique
- **DEFAULT** constraint
 - Assigns value to attribute when a new row is added to table
- **CHECK** constraint
 - Validates data when attribute value is entered



Foreign Key

foreign key is a field (or collection of fields) in one table that uniquely identifies a row of another table. In simpler words, the **foreign key** is defined in a second table, but it refers to the primary **key** in the first table.





What Is a Join

- Link data from multiple tables to solve more complex problems
- You can ask your database system to perform a JOIN only on the columns you specify
- A JOIN defines a “logical table” that is the result of linking two tables or result sets



Join

| Name | Product_id |
|-------|------------|
| Flex | 2 |
| Blaze | 3 |
| Surge | 4 |

| Product_id | Tran_id |
|------------|---------|
| 2 | 3 |
| 2 | 4 |
| 3 | 5 |
| 3 | 6 |
| 4 | 7 |
| 4 | 8 |



| Product_id | Tran_id | Name |
|------------|---------|-------|
| 2 | 3 | Flex |
| 2 | 4 | Flex |
| 3 | 5 | Blaze |
| 3 | 6 | Blaze |
| 4 | 7 | Surge |
| 4 | 8 | Surge |



Different Types of Join

- Inner Join
- Left (Outer) Join
- Right (Outer) Join
- Full (Outer) Join





Inner Join

- An INNER JOIN returns only those rows where the linking values match in both of the tables or in result sets

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Left (Outer) Join

- All rows from left table included. Non-matched entries from right table will be NULL

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Right (Outer) Join

- All rows from right table included. Non-matched entries from left table will be NULL

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| NULL | |



Full (Outer) Join

- All rows from left and right table included. Non-matched entries from left and right table will be NULL

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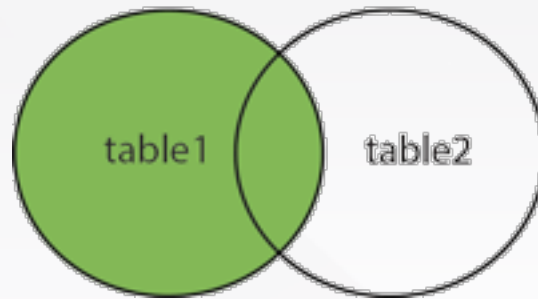


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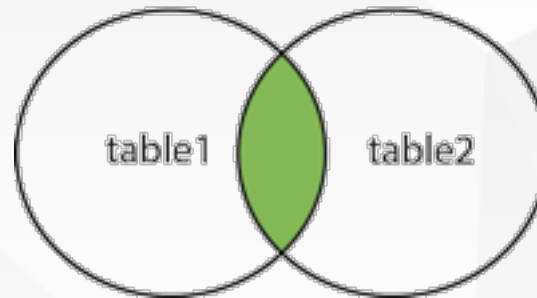


Recap of Join

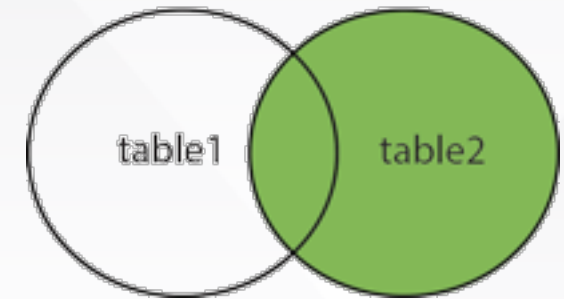
LEFT JOIN



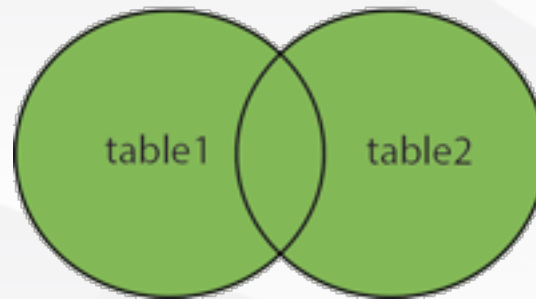
INNER JOIN



RIGHT JOIN



FULL OUTER JOIN





Coding

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