### Primary Key
A primary key is a unique identifier for a record in a database table.

- **Symbol for creating primary key:**
  ```
  CREATE TABLE student12
  (
    student_id int UNIQUE,
    student_name varchar(30),
    student_age int NOT NULL
  );
  ```

### Constraints, Joins, Set Operators

#### Joins
- **Left Join:**
  ```
  SELECT * FROM employees11
  LEFT JOIN departments11 ON employees11.department_id = departments11.department_id;
  ```

- **Full Outer Join:**
  ```
  SELECT * FROM employees11
  FULL OUTER JOIN departments11 ON employees11.department_id = departments11.department_id;
  ```

- **Full Inner Join:**
  ```
  SELECT * FROM employees11
  FULL INNER JOIN departments11 ON employees11.department_id = departments11.department_id;
  ```

- **Right Join:**
  ```
  SELECT * FROM employees11
  RIGHT JOIN departments11 ON employees11.department_id = departments11.department_id;
  ```

#### Set Operators
- **Union:**
  ```
  SELECT department FROM departments11
  UNION
  SELECT department FROM departments21;
  ```

- **Union All:**
  ```
  SELECT department FROM departments11
  UNION ALL
  SELECT department FROM departments21;
  ```

- **Intersect:**
  ```
  SELECT department FROM departments11
  INTERSECT
  SELECT department FROM departments21;
  ```

- **Except Output:**
  ```
  SELECT department FROM departments11
  EXCEPT
  SELECT department FROM departments21;
  ```

### SQL Cheat Sheet
- **Set Operators:**
  - Union
  - Union All
  - Intersect
  - Except

- **Example:**
  ```
  SELECT * FROM employees11
  UNION
  SELECT * FROM employees21;
  ```

- **Result:**
  ```
<table>
<thead>
<tr>
<th>Empl_Name</th>
<th>Age</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike</td>
<td>30</td>
<td>5000</td>
</tr>
<tr>
<td>John</td>
<td>25</td>
<td>4000</td>
</tr>
<tr>
<td>Smith</td>
<td>40</td>
<td>7000</td>
</tr>
</tbody>
</table>
  ```

- **Foreign Key:**
  - A foreign key is a column or a set of columns in a database table that refers to the primary key of another table, establishing a link between the two tables.

- **Check Constraint:**
  - A check constraint ensures that all values in a specified column or combination of columns are distinct within a database table.

- **Unique Key:**
  - A unique constraint ensures that all values in a specified column or combination of columns are distinct within a database table.

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**Example SQL Statements for Creating Tables:**

**Create Table student_cours**
```
CREATE TABLE student_cours
(
  student_id int,
  student_name varchar(30),
  student_age int,
  student_email varchar(100)
);
```

**Create Table professor_cours**
```
CREATE TABLE professor_cours
(
  prof_id int,
  prof_name varchar(30),
  prof_email varchar(100)
);
```

**Create Table department**
```
CREATE TABLE department
(
  department_id int,
  department_name varchar(50)
);
```

**Create Table employee**
```
CREATE TABLE employee
(
  employee_id int,
  employee_name varchar(50),
  employee_email varchar(100)
);
```

**Create Table professor**
```
CREATE TABLE professor
(
  professor_id int,
  professor_name varchar(50),
  professor_email varchar(100)
);
```

**Create Table courses**
```
CREATE TABLE courses
(
  course_id int,
  course_name varchar(50)
);
```