SQL Functions and Commands Summary

1. Data Types

- VARCHAR(n): Variable-length string (up to 65,535 bytes)
- CHAR(n): Fixed-length string, padded with spaces
- INT: Whole number (-2,147,483,648 to 2,147,483,647)
- DECIMAL(p,s): Fixed-point number with precision and scale
- FLOAT(p,d): Approximate floating-point number
- DOUBLE: Larger floating-point number than FLOAT
- DATE: Date in YYYY-MM-DD format
- DATETIME: Date and time in YYYY-MM-DD HH:MM:SS format
- TIMESTAMP: Time zone-aware date/time, can auto-update
- BINARY(n): Fixed-length binary data
- BLOB: Binary data (up to 65,535 bytes)

2. CREATE TABLE Statement

Used to create a new table with columns, datatypes, and constraints.

Syntax:

```
CREATE TABLE table_name (
    column1 datatype [constraint],
    column2 datatype [constraint],
    ...
    [table_constraints]
);
```

3. Integrity Constraints

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- NOT NULL: Ensures a column cannot be NULL
- UNIQUE: No duplicate values allowed (NULLs allowed)
- PRIMARY KEY: Uniquely identifies a row (NOT NULL + UNIQUE)
- CHECK (condition): Ensures values meet a condition
- DEFAULT: Provides default value for a column
- AUTO_INCREMENT: Automatically increases numeric values (IDs)

4. Foreign Key (Referential Integrity)

Maintains data consistency between related tables.

Syntax:

```
FOREIGN KEY (column) REFERENCES parent_table(column)
  ON DELETE SET NULL
  ON UPDATE CASCADE;
```

5. Table Constraints Syntax

Column-Level:

```
column_name datatype CONSTRAINT constraint_name constraint_type
```

Table-Level:

```
CONSTRAINT constraint_name PRIMARY KEY (col1, col2),
FOREIGN KEY (col) REFERENCES table(col),
CHECK (condition)
```

6. DROP TABLE

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Deletes an entire table and its definition.

Syntax:

DROP TABLE table_name;

7. ALTER TABLE

Modify structure of existing tables.

- Add column:

ALTER TABLE table_name ADD column_name datatype;

- Drop column:

ALTER TABLE table_name DROP COLUMN column_name CASCADE;

- Drop default constraint:

ALTER TABLE table_name ALTER column_name DROP DEFAULT;

8. INSERT INTO

Adds data rows to a table.

Syntax:

INSERT INTO table_name (column1, column2, ...)

VALUES (value1, value2, ...);