MySQL RDBMS

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MySQL data types

create table test(c1 int, c2 int unsigned);

- RDBMS have similar data types (but not same).
- MySQL data types can be categorised as follows
  - Numeric types (Integers)
    - TINYINT (1 byte), SMALLINT (2 byte), MEDIUMINT (3 byte), INT (4 byte), BIGINT (8 byte), BIT(n bits)

      $\pm 2^7$, $\pm 2^{15}$, $\pm 2^{23}$, $\pm 2^{31}$, $\pm 2^{63}$
    - integer types can signed (default) or unsigned. ↳ 0 to 2^{24}, ↳ 0 to 2^{32}
  - Numeric types (Floating point)
    - approx. precision – FLOAT (4 byte), DOUBLE (8 byte) | DECIMAL(m, n) – exact precision

      IEEE-754 format

      DECIMAL(8, 3)

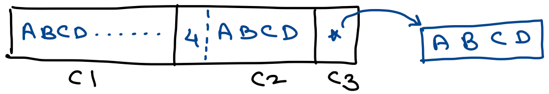
      ← 3 →

      1 2 3 4 5.6 7 8

      ← 8 →
  - Date/Time types
    - DATE, TIME, DATETIME, TIMESTAMP, YEAR
  - String types – size = number of chars * size of char
    - CHAR(1-255) – Fixed length, Very fast access.
    - VARCHAR(1-65535) – Variable length, Stores length + chars.
    - TINYTEXT (255), TEXT (64K), MEDIUMTEXT (16M), LONGTEXT (4G) – Variable length, Slower access.

      create table test(c1 CHAR(10), c2 VARCHAR(10), c3 ~~TEXT(10)~~);

      ↓ TINYTEXT (upto 255 char)



  - Binary types – size = number of bytes → Photos, Docs, Media, ...
    - BINARY, VARBINARY, TINYBLOB, BLOB, MEDIUMBLOB, LONGBLOB

      external storage.
  - Miscellaneous types
    - ENUM, SET

Size of char

Depends on char set.

1. ASCII → 1 byte
2. Unicode → 2 byte
3. EBCDIF → 4 byte (MBCS)

CHAR vs VARCHAR vs TEXT

- CHAR
  - Fixed inline storage.
  - If smaller data is given, rest of space is unused.
  - Very fast access.
- VARCHAR
  - Variable inline storage.
  - Stores length and characters.
  - Slower access than CHAR.
- TEXT
  - Variable external storage.
  - Very slow access.
  - Not ideal for indexing.
- CREATE TABLE temp(c1 CHAR(4), c2 VARCHAR(4), c3 TEXT(4));
- DESC temp;
- INSERT INTO temp VALUES('abcd', 'abcd', 'abcdef');

SQL → lang to communicate with RDBMS (any)

↳ Oracle, MySQL, MSSQL, ...

MySQL → a RDBMS.

INSERT – DML

- Insert a new row (all columns, fixed order).
  - INSERT INTO table VALUES (v1, v2, v3);
- Insert a new row (specific columns, arbitrary order).
  - INSERT INTO table(c3, c1, c2) VALUES (v3, v1, v2);
  - INSERT INTO table(c1, c2) VALUES (v1, v2);
  - Missing columns data is NULL.
  - NULL is special value and it is not stored in database.
- Insert multiple rows.
  - INSERT INTO table VALUES (av1, av2, av3), (bv1, bv2, bv3), (cv1, cv2, cv3).
- Insert rows from another table.
  - INSERT INTO table SELECT c1, c2, c3 FROM another-table;
  - INSERT INTO table (c1,c2) SELECT c1, c2 FROM another-table;

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Thank you!

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