



RDBMS & SQL Introduction

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MySQL data types

TINYINT (1) $\swarrow \searrow$
8 bits $\rightarrow \pm 2^7$ (signed)
 $\rightarrow 2^8$ (unsigned).

SMALLINT (2) $\swarrow \searrow$
16 bits $\rightarrow \pm 2^{15}$
 $\rightarrow 2^{16}$

- RDBMS have similar data types (but not same).
- MySQL data types can be categorised as follows

$\pm 2^{23}$ or 2^{24} $\pm 2^{31}$ or 2^{32} $\pm 2^{63}$ or 2^{64}

- ✓ Numeric types (Integers)

- TINYINT (1 byte), SMALLINT (2 byte), MEDIUMINT (3 byte), INT (4 byte), BIGINT (8 byte), BIT(n bits)
- integer types can signed (default) or unsigned.

- ✓ Numeric types (Floating point)

- approx. precision – FLOAT (4 byte), DOUBLE (8 byte) | DECIMAL(m, n) – exact precision

- ✓ Date/Time types

- DATE, TIME, DATETIME, TIMESTAMP, YEAR(1)

- ✓ 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.

- ✓ Binary types – size = number of bytes

- BINARY, VARBINARY, TINYBLOB, BLOB, MEDIUMBLOB, LOB

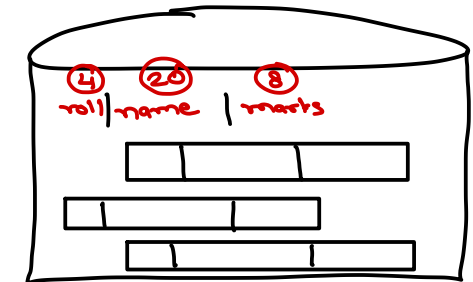
- ✓ Miscellaneous types

- ENUM, SET

total places/digits.

↓
up to decimal places

↑
precision up to 2/3 places.



CHAR vs VARCHAR vs TEXT

String {data must be in '____';
date/time}

• CHAR

- ✓ Fixed inline storage.
- ✓ If smaller data is given, rest of space is unused.
- ✓ Very fast access.

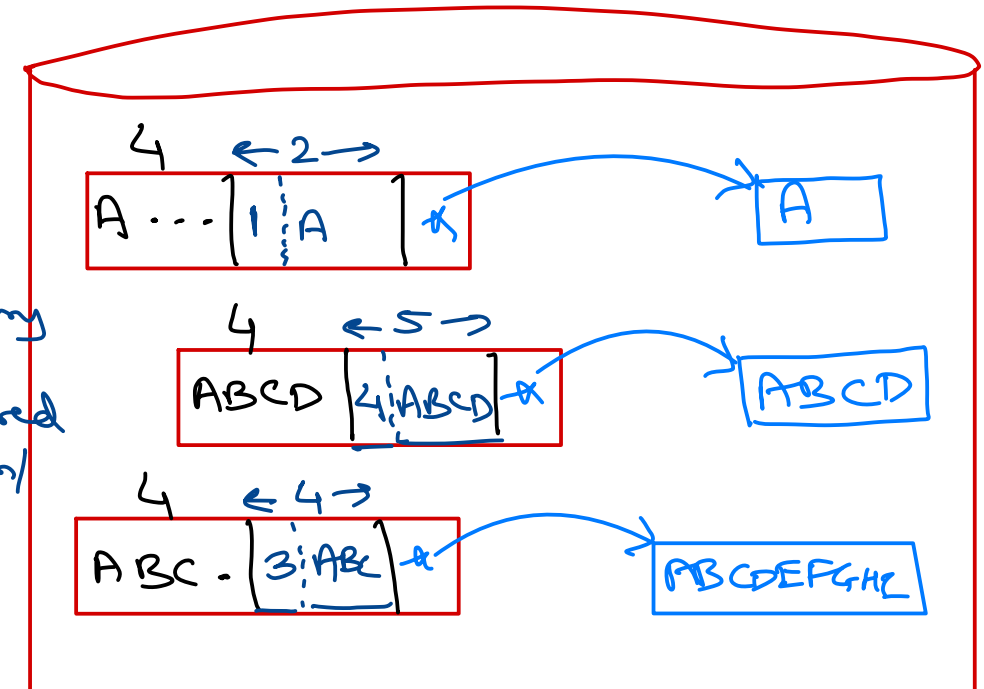
• VARCHAR

- ✓ Variable inline storage.
- ✓ Stores length and characters.
- ✓ Slower access than CHAR.

• TEXT

- ✓ Variable external storage. → to record.
- ✓ Very slow access.
- ✓ Not ideal for indexing. → we will learn in indexes lecture.

✓ char encoding
Each char → how many bytes
 → how stored in mem/disk?



Numerical data is not enclosed in '____'.

- ✓ CREATE TABLE temp(c1 CHAR(4), c2 VARCHAR(4), c3 TEXT(4));
- ✓ DESC temp;
- ✓ INSERT INTO temp VALUES('abcd', 'abcd', 'abcdef');



SQL scripts

- SQL script is multiple SQL queries written into a .sql file.
- SQL scripts are mainly used while database backup and restore operations.
- SQL scripts can be executed from terminal as:
 - ✓ terminal> mysql -u user -ppassword db < /path/to/sqlfile
- SQL scripts can be executed from command line as:
 - mysql> SOURCE /path/to/sqlfile
- Note that SOURCE is MySQL CLI client command.
- It reads commands one by one from the script and execute them on server.

↓
each query





Thank you!

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