#ASLI ENGINEERING

MySQL DATE, DATETIME, and TIMESTAMP

SWIPE

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Datetime and Timestamp

which one to use and when?

Restrictive

DATE : stores date but not time (1000-01-01 to 9999-12-31)

DATETIME : stores date and time (1000-01-01 00:00:00 to 9999-12-31 23:59:59)

TIMESTAMP : stores date and time (unix epoch as integer)

(1970-01-01 00:00:00 UTC to 2038-01-19 03:14:07 UTC)

↳ 0 to 2^{32} (seconds)

What if we want to store at microseconds level granularity?

↳ DATETIME and TIMESTAMP supports microseconds (additional)

↓

1000-01-01 00:00:00.000000 to
9999-12-31 23:59:59.999999

Fractional seconds take up 0 to 3 bytes depending on precision

0 precision → 0 bytes

1, 2 precision → 1 byte

Storage Requirements

DATE	3 bytes
DATETIME	5 bytes + fractional seconds
TIMESTAMP	4 bytes + fractional seconds

DATETIME

Convenience ↗

Use DATETIME when you want to store usecase specific time

eg: appointment, schedule_at (specific and static)

When you want to do calculations within MySQL

eg: DATE_ADD(purchased_at, 'INTERVAL 1 DAY')

DATETIME is stored as a compact 5 byte representation (MySQL)

but covering a longer range than timestamp

Human-readable and native language object support

↳ Queries and Console output

TIMESTAMP

Timestamps are stored as integers representing time in UTC

- * timezone conversion happens during return & accepting
- * on disk it is just UTC

return value changes with the connection timezone

Timestamps are light weight than Datetime

↳ on storage and index (1 byte better)

Use timestamps when you want to record system time

eg: created-at, transaction time, etc