#1

what are database

→ store

① client ⟷ application ⟷ database

not a good idea to store application in the server hosting database because business logic is tightly coupled with DB.

challenge migrate from Oracle DB to MYSQL will be heavy effort.

② why DB

long time persistence (ideally), durable/

→ in memory erases when system crashes on restarts.

why not use in-memory db when it is faster (cache)

→ because of expense.

#2

how db storage work (magnetic disk, sdd)

- B+ tree
- pages
- hashing
- pointers

read

- hash
- B+ tree $\pm$ > index

Query optimizer handled by DB
(treat as black box)

#3

NoSql

- key : value
  document oriented db

are db consistent ?

it depends

- usually consistent
- available to incoming request

DBMS

- decides how and where data is kept
- config when storing data
- help with read replicas and coordination

data stored in right way

(usually software)

#4

graph db

- store in nodes and edges
- graph query optimized

time-series db

- store record that are part of time-series
- aggregate and compress time-stamped data.

e.g. <u>2024-... ...</u>
can be stored as '1'

Object oriented

- complex data objects
- application layer is light and does not need much translation.

#5

what db

- data
- expertise
- trade-off

postgres — high consistence, low avail

cassandra — low consistence, high avail

neo-4j — graph, bad counter for likes

- application (consider growth aspect)