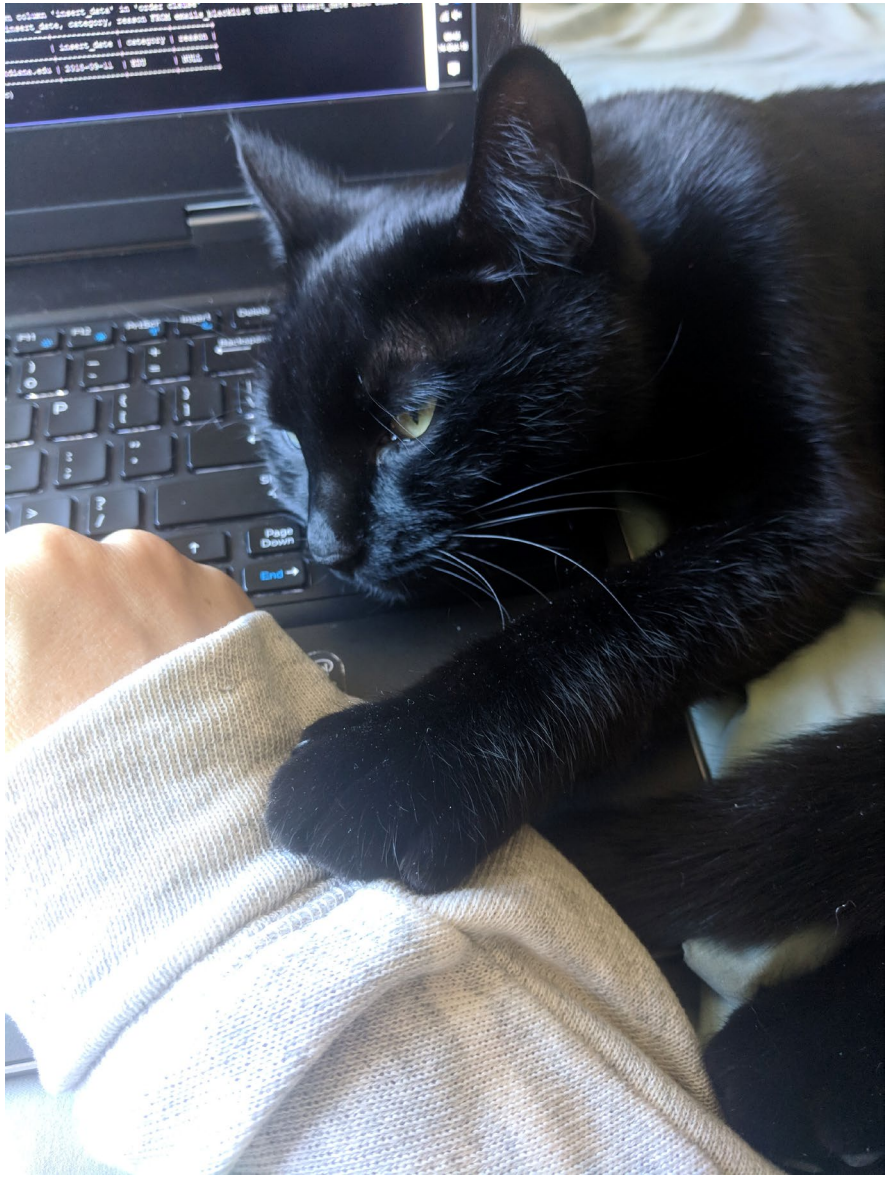


Databases Overview

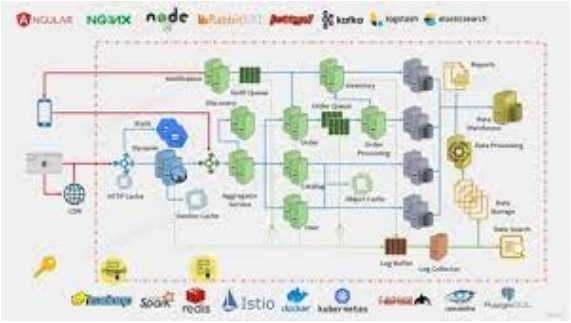
ERIN KEITH

Goals

1. Review Background

Examples

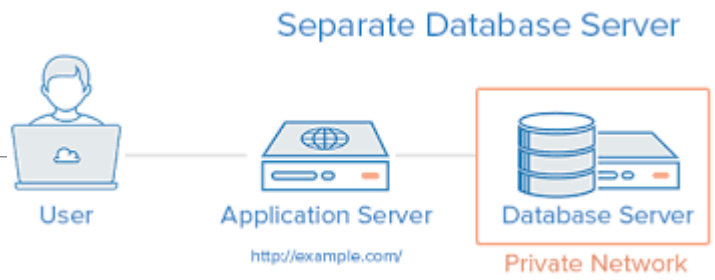
- web applications
- installed software
- larger scale applications



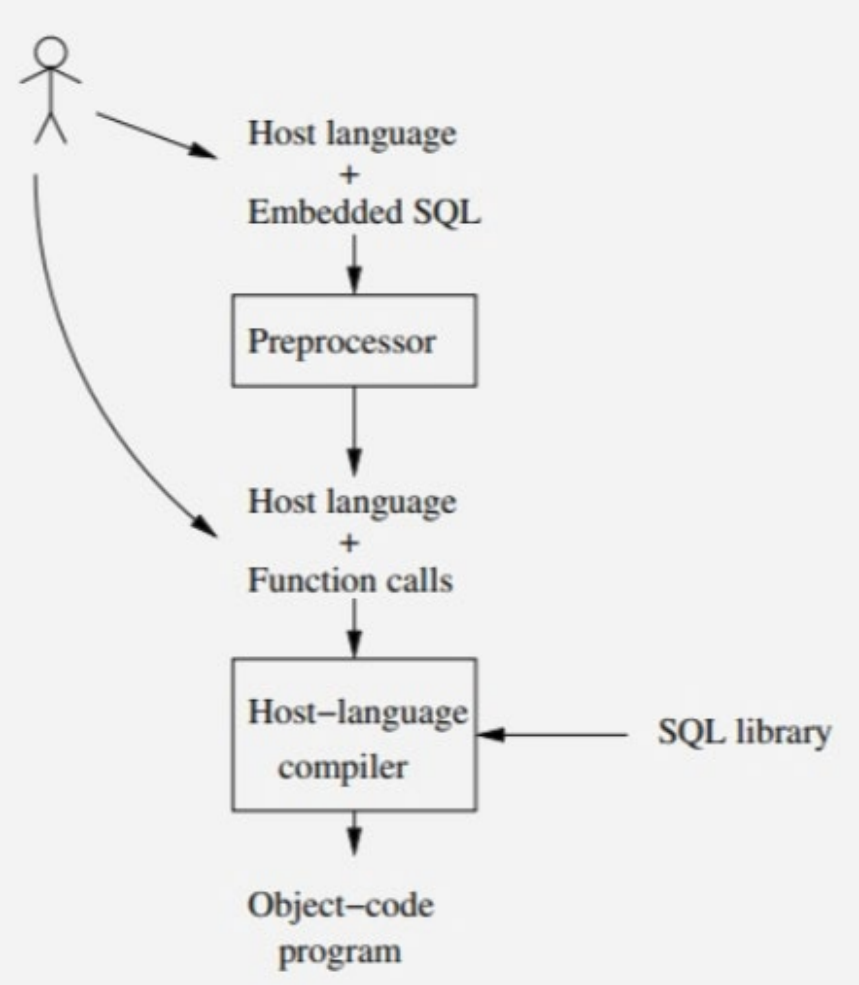
Server / Client

- databases generally run as a separate service
- it's generally referred to as the "server"
  - although it doesn't have to be on a separate machine
- can interact with it through an "interpreter"
  - the command line
  - a GUI
- write SQL queries or stored procedures to get data from the database
- **this implies you have to "connect" to it**

Connecting



- ODBC
  - Open DataBase Connectivity
  - a standard interface between a SQL database and an application that accesses the data in the database



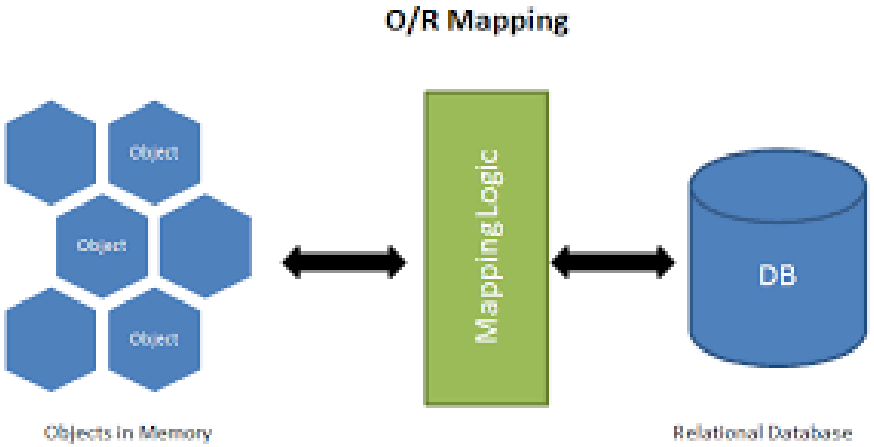
Connecting

Libraries

- Languages often have libraries which
  - manage the connection process
  - wrap SQL queries in function calls or objects

Object-Relational Mapping

ORMs are software (often within "frameworks") designed to translate between the data representations used by databases and those used in object-oriented programming.



Connecting from Systems

- Choose a "tech stack" (language, framework, IDE, etc.)
- Look for libraries that work with the DBMS
- Find documentation and examples to determine
  - How to establish a connection
  - How to submit queries
  - What's returned a the result of the queries
    - possible errors

You do it

- Choose a language
- Look for a library that works with the PostgreSQL
- Find documentation and examples to determine
  - How to establish a connection
  - How to submit queries
  - What's returned a the result of the queries
    - possible errors

Python Example

- Choose a language
  - Python
- Look for a library that works with the PostgreSQL
  - psycopg

Python Example

- Find documentation and examples to determine
  - How to establish a connection
    - https://www.psycopg.org/psycopg3/docs/basic/usage.html
  - How to submit queries
    - https://www.psycopg.org/psycopg3/docs/basic/params.html
  - What's returned a the result of the queries
    - https://www.psycopg.org/psycopg3/docs/basic/adapt.html
    - possible errors

https://www.psycopg.org/psycopg3/docs/basic/index.html

Next Class

Module:

Week 11: Connecting

Topic:

Stored Procedures

Execution