# A simple and clear representation of Decoding Database Dilemmas with icons of MySQL, Oracle, PostgreSQL, MongoDB, and other popular databases

# Decoding Database Dilemmas

# SDE Skills System Design Primer Handout

**Introduction**

* **Purpose**: Guide to choosing the right database for system design interviews, and on the job.
* **Scope**: Comparison of SQL vs. NoSQL databases and beyond.

**SQL Databases**

* **Relational Model**: Data is organized in tables with predefined schemas.
* **ACID Properties**: Ensures reliable transactions (Atomicity, Consistency, Isolation, Durability).
* **Use Cases**: Ideal for complex queries and data integrity.
* **Mental model of use-cases: where it succeeds**, **where does it fail**?

**NoSQL Databases**

* **Flexibility**: Schema-less design allows for varied data types.
* **Scalability**: Horizontal scaling to handle large volumes of data.
* **Use Cases**: Suitable for unstructured data and rapid development.
* **Types of NoSQL databases**.
* **Mental model of use-cases:** 
  + **Where do they succeed**, **where do they fail**?
  + **How to choose from among the myriad of choices available?**

**Choosing the Right Database**

* **Considerations**: Data structure, scalability, consistency, and complexity.
* **Checklist**:
  + [ ] Define data relationships.
  + [ ] Assess transaction requirements.
  + [ ] Evaluate query complexity.
  + [ ] Determine scalability needs.

**Notes**