Querying Relational Databases Part 1 Notes

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1 Why We Make Databases "Relational"

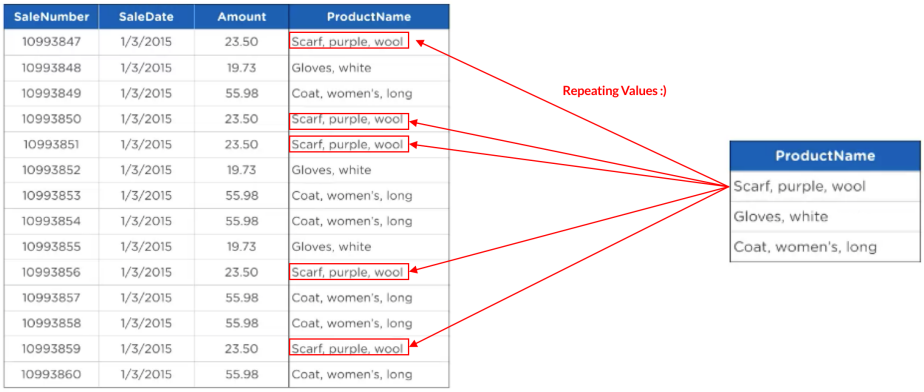
- Organizes data into related tables by their context and meaning
- Has benefits
  - Maximizes Storage
  - Better application functionality
  - Clenear, richer data for business reporting

2 Database Normalization

- **Normalization:** Is the process of eliminating redundant or repeating data in a database

3 How Normalization Helps Us

- Drastically reduces the amount of spaces required
  - Old days (And today too!!) $\rightarrow$ is crucial



- Reduces update time
  - Update affects millions

4 Quiz 1

1. Which of these is NOT a benefit of a relational database?

   A. Saves disk space as much as possible.
   B. Data conveniently stored in one table.
   C. Eliminates data modification anomalies and increases data integrity.

   Answer: B

2. What is Normalization?

   A. The process of writing queries against a relational database.
   B. The process of designing a relational database.
   C. The process of combining many tables into one.

   Answer: B

3. Which CRUD operation benefits most from a well normalized database design?

   A. INSERT
   B. UPDATE

C. DELETE

D. All of These

Answer: D

4. When were relational databases first conceptualized?

A. The 1990s

B. The 1970s

C. The 1950s

Answer: B

5. Where does the term "relational databases" come from?

A. A relational database is the best way for a computer system to "relate" to the outside world.

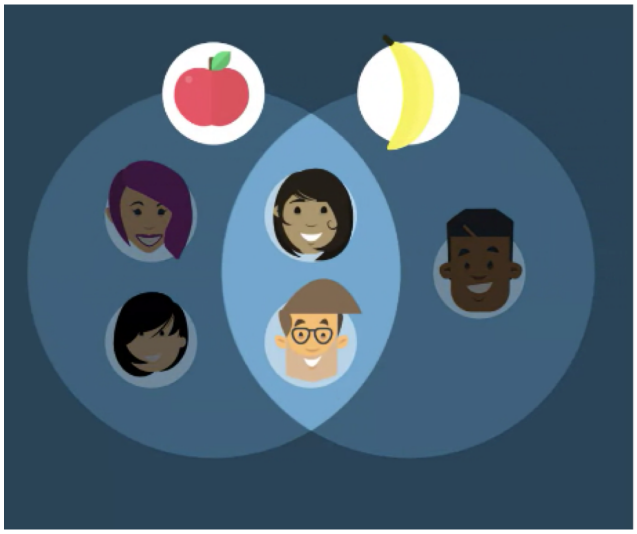
B. There is an implied inheritance between parent and child databases, thus the phrase "relational"

C. Tables in a relational database are linked – or "related" – via fields that they have in common.

Answer: C

5 Set Theory and Relational Databases

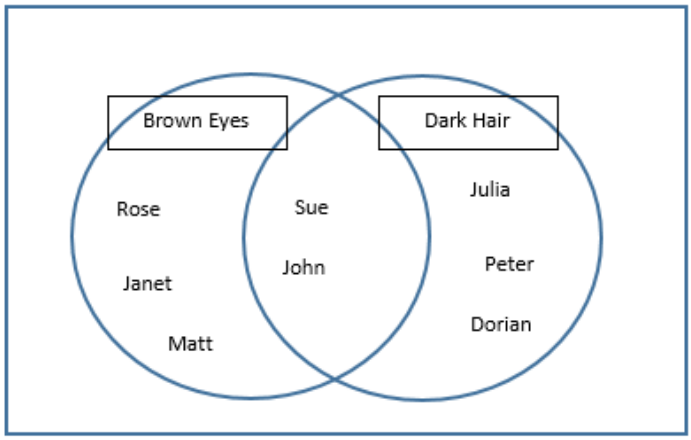
- Intersection
  - Is a set of items in common



- Union
  - Is all non-repeating values in two sets

- Except
  - Is a set of elements that are not in common

6 Quiz 2



1.

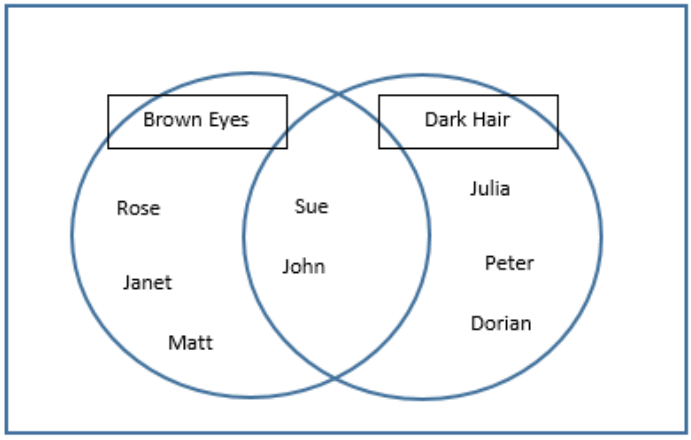
According to the diagram, which people have brown eyes but NOT dark hair?

A. Rose, Janet, Matt

B. Sue, John

C. Julia, Peter, Dorian

Answer: A



2.

According to the diagram, which people have both brown eyes and dark hair?

A. Sue, John
B. Julia, Peter, Dorian
C. Rose, Janet, Matt

Answer: A

3. What is a "Set"?

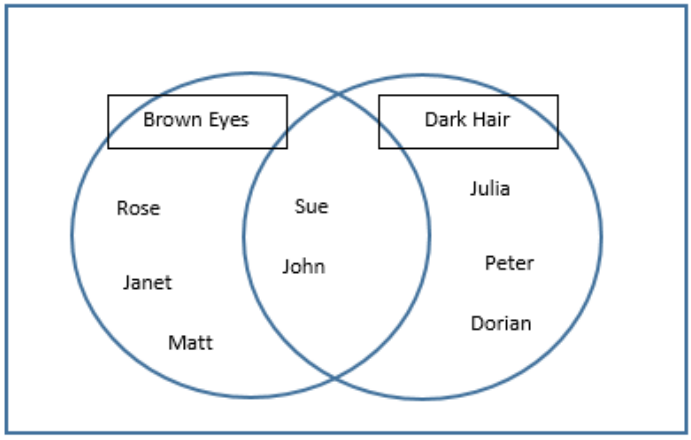
A. A place you store database variables.
B. A group of disks on which a relational database is stored.
C. A collection of things that have common properties.

Answer: C

4. What is the name of the type of diagram that represents a set?

A. Venn Diagram
B. Gantt Diagram
C. Flow Diagram

Answer: A



5.

According to the diagram, who has brown eyes OR dark hair but NOT both?

A. Rose, Janet, Matt, Julia, Peter, Dorian
B. Julia, Peter, Sue, John, Dorian
C. Rose, Sue, John, Janet, Matt

Answer: A