Activity 06-2: SQL Card Game

Big Idea

The "SQL Card Game" is an innovative and interactive lesson designed to introduce students to the basics of SQL (Structured Query Language) queries in an engaging manner. This educational activity transforms a standard deck of playing cards into a dynamic learning tool, where each card suit symbolizes a database table and individual card values represent records within these tables. Through this card game, students are challenged to apply SQL logic to solve query tasks, such as retrieving specific 'records' based on given criteria. This approach not only makes learning SQL queries enjoyable but also aids in solidifying foundational concepts in database management and data retrieval. The game serves as a practical and playful method to bridge theoretical database knowledge with practical SQL query skills.

Materials

- **Basic Supplies:**
  - A deck of playing cards.
  - Query task cards (prepared in advance with different SQL query scenarios similar to the ones attached below).
- **Supplementary Resources:** Optional - A handout with basic SQL query syntax for reference.

Vocabulary

SQL
Query
Table
Record
Database

Contextual Usage: Using SQL queries to retrieve, update, insert, or delete records in a database.

Background

The background knowledge for the SQL Card Game is centered around an introduction to databases and the fundamentals of data storage and retrieval. Students would have previously

learned about the purpose and structure of databases, including the concepts of tables, records, and how data is organized within a database. This foundational understanding sets the stage for the SQL Card Game, where playing cards are used as a metaphor for database records and suits as tables. The game builds on this knowledge by introducing practical applications of SQL queries, helping students bridge the gap between theoretical understanding of databases and the practical skill of formulating and executing SQL queries. This approach ensures that students are not only familiar with database terminology but are also able to see how these concepts are applied in real-world database operations.

Activity Directions

1. **Preparation:**
   - Shuffle the playing cards well.
   - Prepare the query task cards with various SQL query scenarios. Examples might include "Retrieve all 'records' with a value above 5" or "Select all 'records' that are Queens from any suit."

2. **Setup:**
   - Distribute an equal number of playing cards to each participant or team. These cards represent the database 'records'.
   - Explain that each suit (hearts, diamonds, clubs, spades) represents a different 'table' in a database.

3. **Playing the Game:**
   - Draw a query task card and read the SQL query scenario aloud.
   - Participants use their set of playing cards to fulfill the query task. For instance, if the task is to "Retrieve all 'records' with a value above 5," players would select the appropriate cards from their hand.
   - Encourage students to verbalize their thought process, explaining how they are using SQL logic to choose the cards.

4. **Discussion and Learning:**
   - After each round, discuss the solution and the SQL logic used. This reinforces their understanding of SQL queries.
   - Rotate the query task cards among participants to ensure exposure to different types of queries.

5. **Variations for Advanced Practice:**
   - Introduce more complex query tasks as students become more comfortable with basic queries.
   - Add conditions that mimic SQL functions, like 'Group By', 'Having', or 'Join' queries.

6. **Concluding the Activity:**

- Wrap up the session by discussing how the game relates to real-world database management.
- Encourage students to reflect on what they learned about SQL queries and how they might apply this knowledge in practical situations.

SQL Query Scenarios

Retrieve Specific Value	"Select all 'records' that are Queens from any suit."
Range Query	"Retrieve all 'records' with a value between 4 and 8 inclusive, from the suit of diamonds."
Sort Query	"Retrieve all 'records' from the suit of hearts and order them from lowest to highest value."
Count Query	"Count how many 'records' are Aces across all suits."
Distinct Query	"Select all distinct 'records' with a value of 10 from any suit."
Group By Query	"Group all 'records' by their suit and retrieve one 'record' from each group with the highest value."
Having Clause	"Retrieve the suit(s) that have more than three 'records' with values greater than 6."
Join Query	"Combine two suits (e.g., hearts and clubs) and retrieve all 'records' with matching values from both."
Like Query	Select all 'records' from any suit where the value starts with 'J' (Jack, Joker)."
Subquery	"Retrieve all 'records' from the suit of spades where the value is greater than the average value of all 'records' in the suit of hearts."