

DATABASE MANAGEMENT SYSTEMS

Lecture 11 Additional Notes

Triggers

Advantages and Disadvantages of Triggers¹

Advantages

Advantages of triggers include:

Elimination of redundant code

Instead of placing a copy of the functionality of the trigger in every client application that requires it, the trigger is stored only once in the database.

Simplifying modifications

Changing a trigger requires changing it in one place only; all the applications automatically use the updated trigger. Thus, they are only coded once, tested once, and then centrally enforced for all the applications accessing the database. The triggers are usually controlled, or at least audited, by a skilled DBA. The result is that the triggers can be implemented efficiently.

Increased security

Storing the triggers in the database gives them all the benefits of security provided automatically by the DBMS.

Improved integrity

Triggers can be extremely useful for implementing some types of integrity constraints, as we have demonstrated earlier. Storing such triggers in the database means that integrity constraints can be enforced consistently by the DBMS across all applications.

Improved processing power

Triggers add processing power to the DBMS and to the database as a whole.

Good fit with the client-server architecture.

The central activation and processing of triggers fits the client-server architecture well. A single request from a client can result in the automatic performing of a whole sequence of checks and subsequent operations by the database server. In this way, performance is potentially improved as data and operations are not transferred across the network between the client and the server.

Disadvantages

Triggers also have disadvantages, which include:

¹ Source: [© Pearson - Database Systems: A Practical Approach to Design, Implementation, and Management - <http://app.kortext.com/read/80118/?page=286-287>]

Performance overhead

The management and execution of triggers have a performance overhead that have to be balanced against the advantages cited previously.

Cascading effects

The action of one trigger can cause another trigger to be fired, and so on, in a cascading manner. Not only can this cause a significant change to the database, but it can also be hard to foresee this effect when designing the trigger.

Cannot be scheduled

Triggers cannot be scheduled; they occur when the event that they are based on happens.

Less portable

Although now covered by the SQL standard, most DBMSs implement their own dialect for triggers, which affects portability.

Review Questions

- What is a database trigger?
- How may a trigger be used as a security mechanism?
- Discuss the advantages and disadvantage of triggers.
- What is the difference between Logon, DDL and DML Triggers?
- What are the components of a DML Trigger?
- Discuss the differences between BEFORE, AFTER and INSTEAD OF Triggers, using examples to illustrate your answers.