

PHYSICS PRACTICAL SHEETS

Date:

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Object of the Experiment (Block Letter)

Set:

1. Describe the architecture of active database.

A trigger is a procedure which is automatically invoked by DBMS in response to changes to the database and is specified by DBA. A database with a set of associated triggers is generally active database. Triggers are executed when a specified occurs during insert/delete/update. Triggers are action that fire automatically based on conditions. Triggers follow an Event-condition-action (ECA) model.

Features:

- i) It possesses all the concepts of a conventional database
- ii) supports all functions of traditional database
- iii) supports definition and management of ECA rules
- iv) includes event driven architecture
- v) must able to execute condition and to execute actions.

Specification of events & conditions
to be monitored

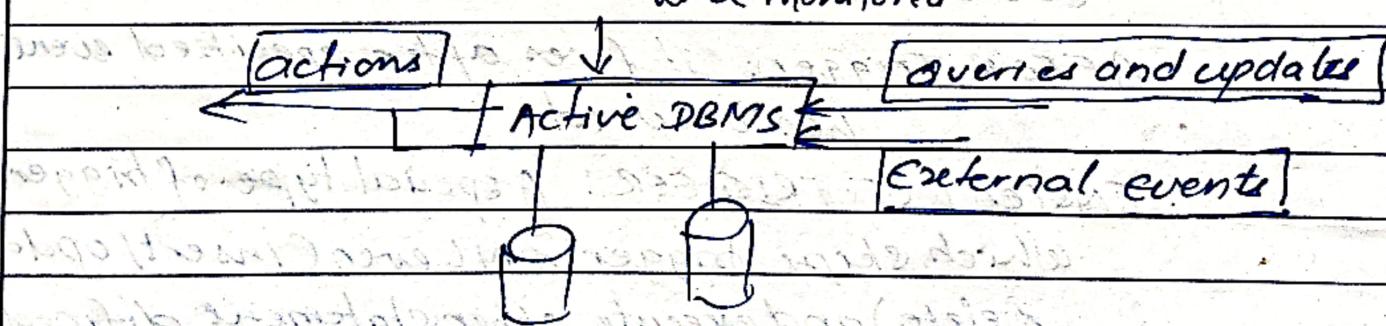


fig: Active database architecture

• Event: An event is a change to the database which activates the trigger. It is database modification eg. insert, delete and update.

- Condition: A query that is run when trigger is activated is called as a condition. It is any true/false expression. If no condition is specified then condition is always true.
- Actions: A procedure which is executed when the trigger is activated and its condition is true. It is sequence of SQL statements that will be automatically executed.

Q. Discuss different types of triggers.

Triggers can be classified based on following parameters:

1. Classification based on level

Statement level Trigger: It fires once for one time for the specified event statement.

Row level Trigger: It fires for each record that got affected in the specified event.

2. Classification based on timing

BEFORE Trigger: It fires before specified event has occurred

AFTER Trigger: It fires after specified event has occurred.

INSTEAD OF TRIGGER: A special type of trigger which skips trigger ONC even (insert/update/Delete) and execute other statements defined in trigger instead.

3. Classification on the event:

1. DML Trigger: fires when DML event is specified

2. DDL Trigger: fires when DDL event is specified (Create/alter/drop)

3. Database trigger: fires when database event is specified (Logon/Logoff/Startup/shutdown)

3. Differentiate Row level and statement triggers.

Row level	statement level
i) Row level executes once for each and every row in transaction	i) statement level triggers execute only once for each single transactions.
ii) specially used for data auditing purpose	ii) used for enforcing all additional security on transactions performed on table.
iii) "For each Row" clause is present in CREATE Trigger command	iv) "For each Row" clause is omitted in CREATE TRIGGER command
iv) eg: If 1500 rows are to be inserted into table, Row level trigger would execute 1500 times.	iv) eg: if 1500 rows are to be inserted into a table, Statement level trigger would execute only one time
v) It is not default.	v) Is default when creating triggers

4. Describe temporal database with its types.

A temporal database stores data relating to time instances. It offers temporal data types and stores information relating to past, present and future. A temporal database is a database with built-in support for handling time sensitive data. Any data that is time dependent is called temporal data and these are stored in temporal database. Temporal database is a database with built-in support for handling data involving time.

There are following three types of time available in temporal database:

- i) valid Time
- ii) Transaction Time
- iii) Bitemporal Time

Valid Time:-

Valid time is a time period during which a fact is true in the real world. Given a particular event or fact that is associated with a particular time point or time period in the database, an association may be interpreted to mean different things. The most natural interpretation is that the associated time is the time that the event occurred, or a period during which the fact was considered to be true in real world. A temporal database with this interpretation is called a valid-time database.

Transaction Time:-

It is the time period during which a fact stored in the database was known. However, a different interpretation can be used, where the associated time refers to the time when the information was actually stored in database. That is it is the value of system time clock when the information is valid in the system. In this case, the associated time is called transaction time and temporal database using this interpretation is called a transaction time database. Unlike valid time here we can rollback database.

Bitemporal Time:- It combines both valid and transaction time. It stores data with respect of both valid time and

transaction time. In some applications, only one of the dimension is needed and in other cases both time dimensions are required, in which case the temporal database is called a bitemporal database.

5. Discuss Spatial database with its advantages.

A spatial database is a database that is enhanced to store and access spatial data or data that defines a geometric space. These databases are often associated with geographic locations and features or constructed features like cities. Data in spatial databases are stored as coordinates, points, lines-polygons and topology. Some spatial databases handle data which are complex like three dimensional objects, topological coverage and linear network. Spatial databases can also maintain changes to a set of spatial data and track which users are making edits for approval and auditing.

Advantages:

- i) can handle complex data like 3 dimensional objects
- ii) fast retrieval of data like spatial, locations.
- iii) with timely updates in datasets, the organization can easily perform analysis and analytics
- iv) data is corrected and updated regularly.
- v) Errors in data is minimum
- vi) simple SQL expression to perform spatial operations.

6. Describe multimedia database concepts with its applications.

Multimedia database is the collection of interrelated multimedia data that includes text, graphics, images, animations, video, audio etc. and have vast amounts of multi-source multimedia data. The framework that manages different types of multimedia data which can be stored, delivered and utilized in different types (ways) is known as multimedia database.

Multimedia database provides features that allow users to store and query different types of multimedia information, which includes:

- i) images
- ii) video clips
- iii) audio clips

Applications:

i) Documents and record management

Industries which keeps a lot of documentation & records like Insurance claim Industry

ii) Knowledge Dissemination:

It is extremely efficient tool for knowledge dissemination and providing several resources eg electronic books.

iii) Education and training:

Used to create resources useful for education and training eg. digital libraries.

- iv) Real time monitoring and control eg: manufacture control
- v) Marketing vi) Advertisement vii) entertainment

7. Discuss Deductive database with its importance.

A deductive database is a database system that can make deductions (i.e. conclude additional facts) based on rules and facts stored in the database. Datalog is the language typically used to specify facts, rules and queries in deductive database. A deductive database can be defined as an advanced database augmented with an inference system. Database + inference = Deductive database. By evaluating rules against fact, new facts can be derived, which in turn can be used to answer queries.

Importance:-

- i) It offers elegant and powerful ways of managing complex data in a declarative way.
- ii) It contains not only facts but also general rules.
- iii) model used for deductive database is related to the logic programming
- iv) using rules new facts can be derived, which are used to answer queries
- v) It can be used in enterprise modeling, QW & Cuse, Hypothesis testing etc.

8. Differentiate Information retrieval and data retrieval.

Information retrieval	data retrieval
<ul style="list-style-type: none">i) The s/w that deals with the organization, storage, retrieval and evaluations of information from document repositories particularly textual information is called information retrieval.ii) Retrieves information about a particular subject from various databases.iii) Smaller errors are likely to go unnoticed.iv) Not always well structured and is semantically ambiguous.v) Results obtained are approximate matches.vi) Results are ordered by relevance.vii) Probabilistic model.	<ul style="list-style-type: none">i) Data retrieval deals with obtaining data from DBMS such as ODBMS. It is a process of identifying and retrieving the data from database, based on the query provided by user or application.ii) Determine the keywords in the user query and retrieves the data.iii) A single error object means total failure.iv) Has well-defined structure & semantics.v) Results obtained are exact matches.vi) Results are unordered by relevance.vii) Deterministic model.

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g. Differentiate between spatial and multimedia databases.

Spatial database

- i) collection of spatial data
- ii) spatial data represents a geographical space
- iii) It is always in point, line and polygons and uses to locate the location in geographical space
- iv) Data are in longitude and latitude

v) eg: point shows the location of hospital

Multimedia

- ii) collection of multimedia data
- iii) multimedia data represents graphics, image, audio etc.
- iii) A multimedia database contains multimedia information and uses to locate multimedia source
- iv) data in media keywords media format.
- v) eg: video clips of michael jackson.

To differentiate structure and unstructured data.

Structured Data

- i) Quantitative analysis
- ii) Schema-on-site creation
- iii) Easy using SQL-based methods
- iv) Predefined using alphanumeric characters
- v) May require more storage to accommodate defined data structures
- vi) eg: RDBMS etc.

Unstructured data

- ii) Qualitative analysis
- ii) Schema-on-read creation
- iii) May need special tools
- iv) Typically non character oriented digital representation
 - v) Some forms requires less storage others have large file formats
 - vi) Requires more storage
 - vi) eg: NoSQL database, data lakes etc.

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