DBMS: Dynamic SQL

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Static VS Dynamic SQL

- Static SQL refers to those SQL statements which are fixed and can be hard coded into the application.
- Dynamic SQL refers to those SQL statements which are generated dynamically based on user's input and run in the application
- Dynamic Sqls helps to develop general and flexible applications

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- Dynamic SQL is the process that we follow for programming SQL queries in such a way that the queries are built dynamically with the application operations.
- With dynamic SQL we are free to create flexible SQL queries and the names of the variables or any other parameters are passed when the application runs.

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- It helps us to manage big industrial applications and manage the transactions without any added overhead.
- For Dynamic SQL, we use the exec or execute keyword.

```
# Start by declaring the Query variable and other required variables
DECLARE @SQL nvarchar(1000)
DECLARE @variable1 varchar(50)
DECLARE @variable2 varchar(50)

# Set the values of the declared variables if required
SET @variable1 = 'A'

# Define the query variable
SET @SQL = 'SELECT columnName1, columnName2, columnName3...
FROM tableName where columnName1 = @variable1

# Prepare the statement to be run on the database
PREPARE Query FROM @SQL;

# Execute the prepared Dynamic SQL statement
Execute Query;
```

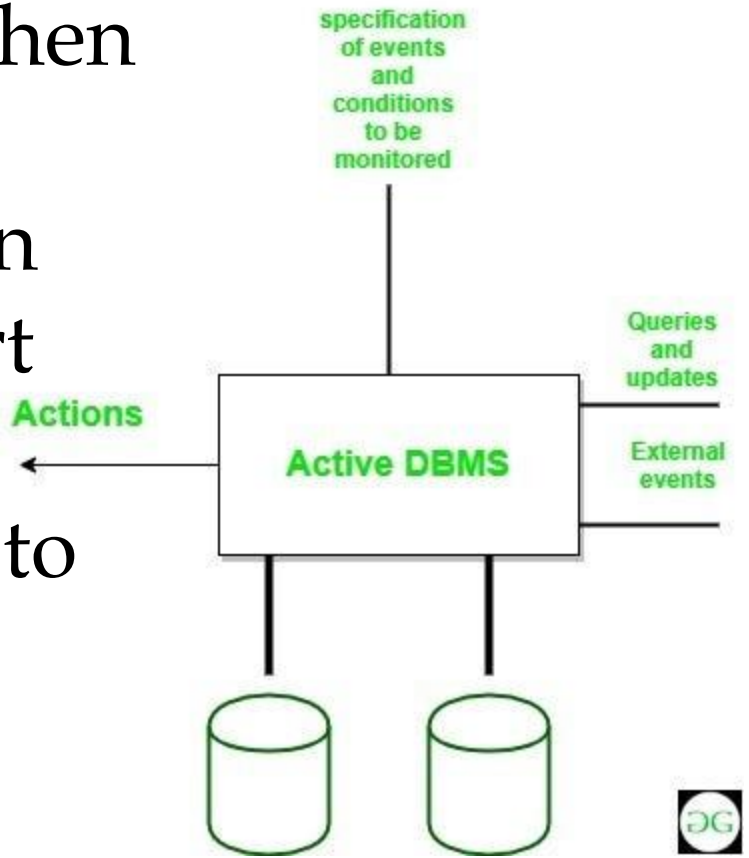
```
Use TestDatabase;  #Database
# Create Variables
Declare @Table varchar(100);
Declare @ColList varchar(100);
Declare @Query varchar(100);
# set the vales of the variables
Set @Table =‘empHr’;
Set @ColList=‘empID, empName, salary, joinYear’;
Set @Query=CONCAT(‘select’, @ColList, ‘from’, @Table)
EXEC(@Query)
```

Sr. No.	Key	Static SQL	Dynamic SQL
1	Database Access	In Static SQL, database access procedure is predetermined in the statement.	In Dynamic SQL, how a database will be accessed, can be determine only at run time.
2	Efficiency	Static SQL statements are more faster and efficient.	Dynamic SQL statements are less efficient.
3	Compilation	Static SQL statements are compiled at compile time.	Dynamic SQL statements are compiled at run time.
4	Application Plan	Application Plan parsing, validation, optimization and generation are compile time activities.	Application Plan parsing, validation, optimization and generation are run time activities.
5	Dynamic Statements	Statements like EXECUTE IMMEDIATE, EXECUTE, PREPARE are not used.	Statements like EXECUTE IMMEDIATE, EXECUTE, PREPARE are used
6	Flexibility	Static SQL is less flexible.	Dynamic SQL is highly flexible.

Active Database

- An active Database is a database consisting of a set of triggers.
- These databases are very difficult to be maintained because of the complexity that arises in understanding the effect of these triggers.
- In such a database, DBMS initially verifies whether the particular trigger specified in the statement that modifies the database) is activated or not, prior to executing the statement.

- If the trigger is active then DBMS executes the condition part and then executes the action part only if the specified condition is evaluated to true.



Advantages of Active database

- It Enhances traditional database functionalities with powerful rule processing capabilities.
- Enable a uniform and centralized description of the business rules relevant to the information system.
- Avoids redundancy of checking and repair operations.
- A suitable platform for building a large and efficient knowledge base and expert systems.