Stored Procedures, Indexes, and Views!

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◆ Store Procedure?

- A stored procedure is a prepared SQL code that you can save, so the code can be reused over and over again.

- So if you have an SQL query that you write over and over again, save it as a stored procedure, and then just call it to execute it.

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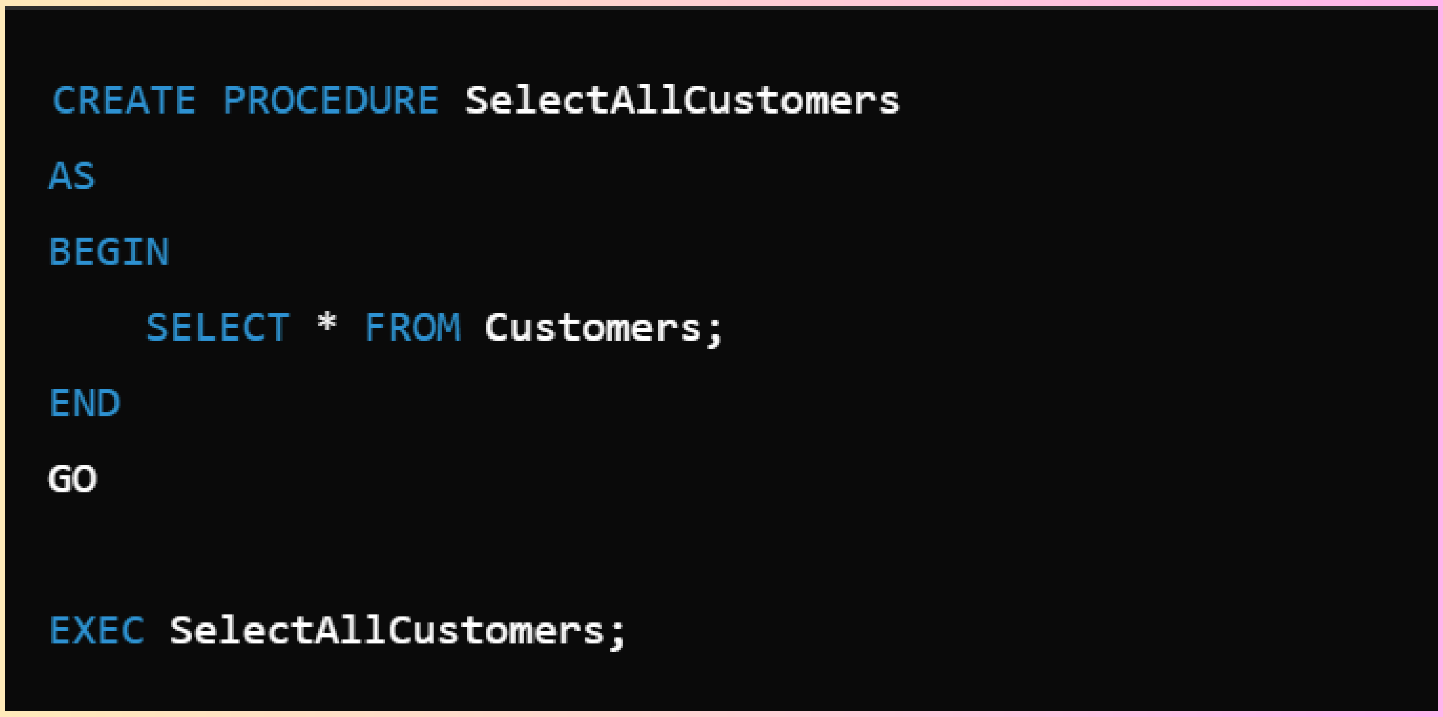
- You can also pass parameters to a stored procedure, so that the stored procedure can act based on the parameter value(s) that is passed.

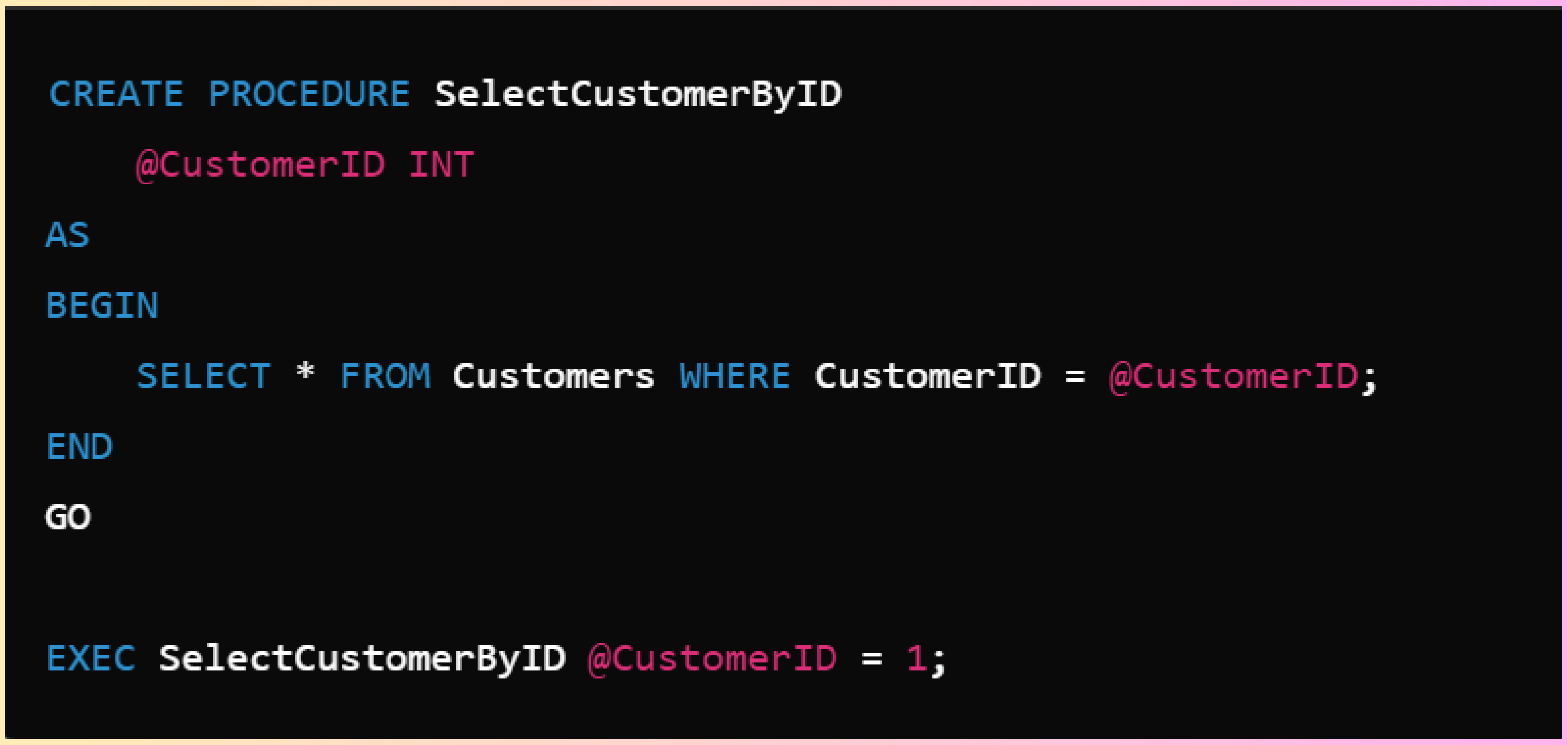
- **Table without parameter :**



```
CREATE PROCEDURE SelectAllCustomers
AS
BEGIN
    SELECT * FROM Customers;
END
GO

EXEC SelectAllCustomers;
```

- **Table with parameter :**



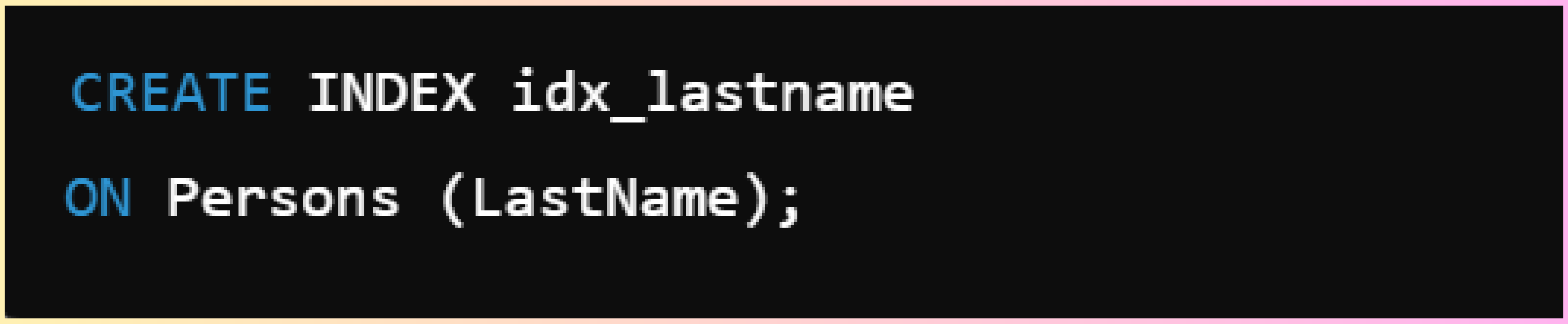
```
CREATE PROCEDURE SelectCustomerByID
    @CustomerID INT
AS
BEGIN
    SELECT * FROM Customers WHERE CustomerID = @CustomerID;
END
GO

EXEC SelectCustomerByID @CustomerID = 1;
```

Indexes :

- The create index statement is used to create indexes in tables.
- Indexes are used to retrieve data from the database more quickly than otherwise. The users cannot see the indexes, they are just used to speed up searches/queries.

◆ Example :

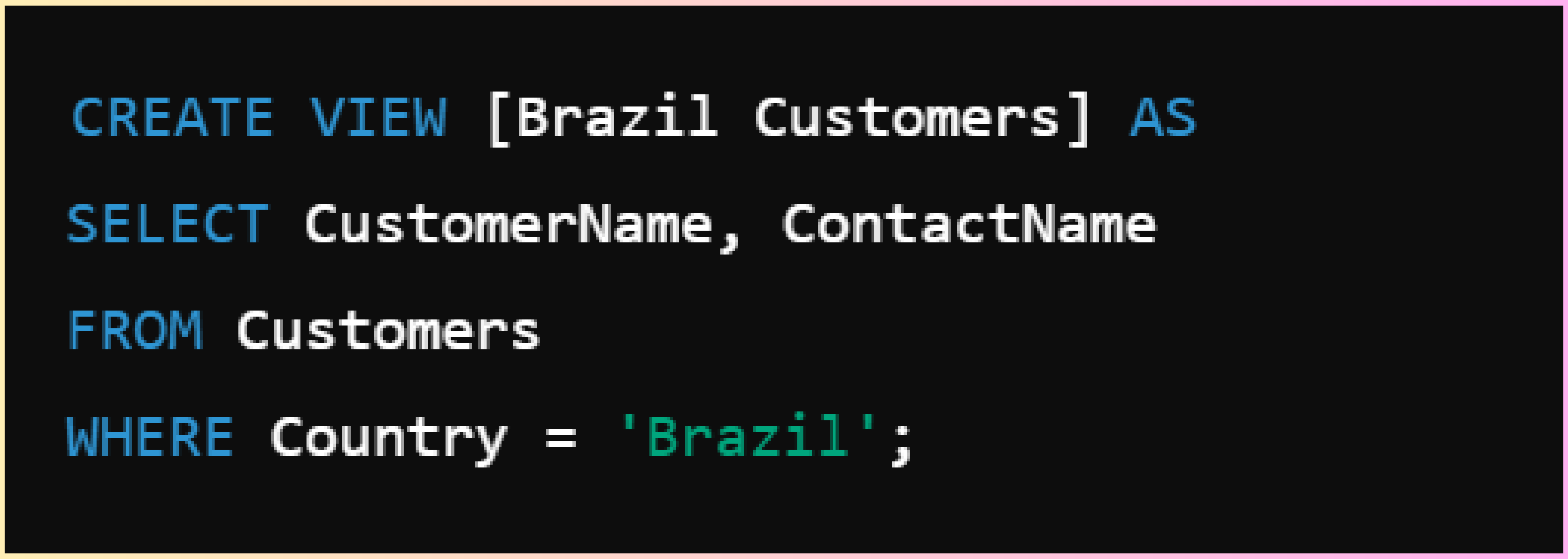


```sql
CREATE INDEX idx_lastname
ON Persons (LastName);
```

◆ Views :

- In SQL, a view is a virtual table based on the result-set of an SQL statement.
- A view contains rows and columns, just like a real table. The fields in a view are fields from one or more real tables in the database.
- You can add SQL statements and functions to a view and present the data as if the data were coming from one single table.

Example :



```sql
CREATE VIEW [Brazil Customers] AS
SELECT CustomerName, ContactName
FROM Customers
WHERE Country = 'Brazil';
```

Interview Questions

- Can you explain the benefits of using stored procedures in database applications?
- How do you pass parameters to a stored procedure, and why is parameterization important?
- What are some potential drawbacks or limitations of using stored procedures in database development?
- How would you handle errors within a stored procedure? Can you provide an example?

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- What is an index in the context of a database, and how does it improve query performance?
- Explain the differences between a clustered and a non-clustered index. When would you use each?
- What factors would you consider when deciding which columns to index in a table?
- How do indexes affect data modification operations (e.g., inserts, updates, deletes)?

- What is a view in SQL, and why would you use it in database design?
- How do views improve database performance and simplify query complexity?
- What are the differences between an indexed view and a regular view?
- What are some common use cases for using views in database applications?

Thank You

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