Performing Basic CRUD Operations Using JDBC

Introduction

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Overview

- Executing Static SQL Statements
- Understanding ResultSet
  - Scrollable ResultSet
  - Updatable ResultSet
- Understanding Prepared Statements
  - Retrieve(Select)
  - Insert (Create)
  - Update
  - Remove(Delete)

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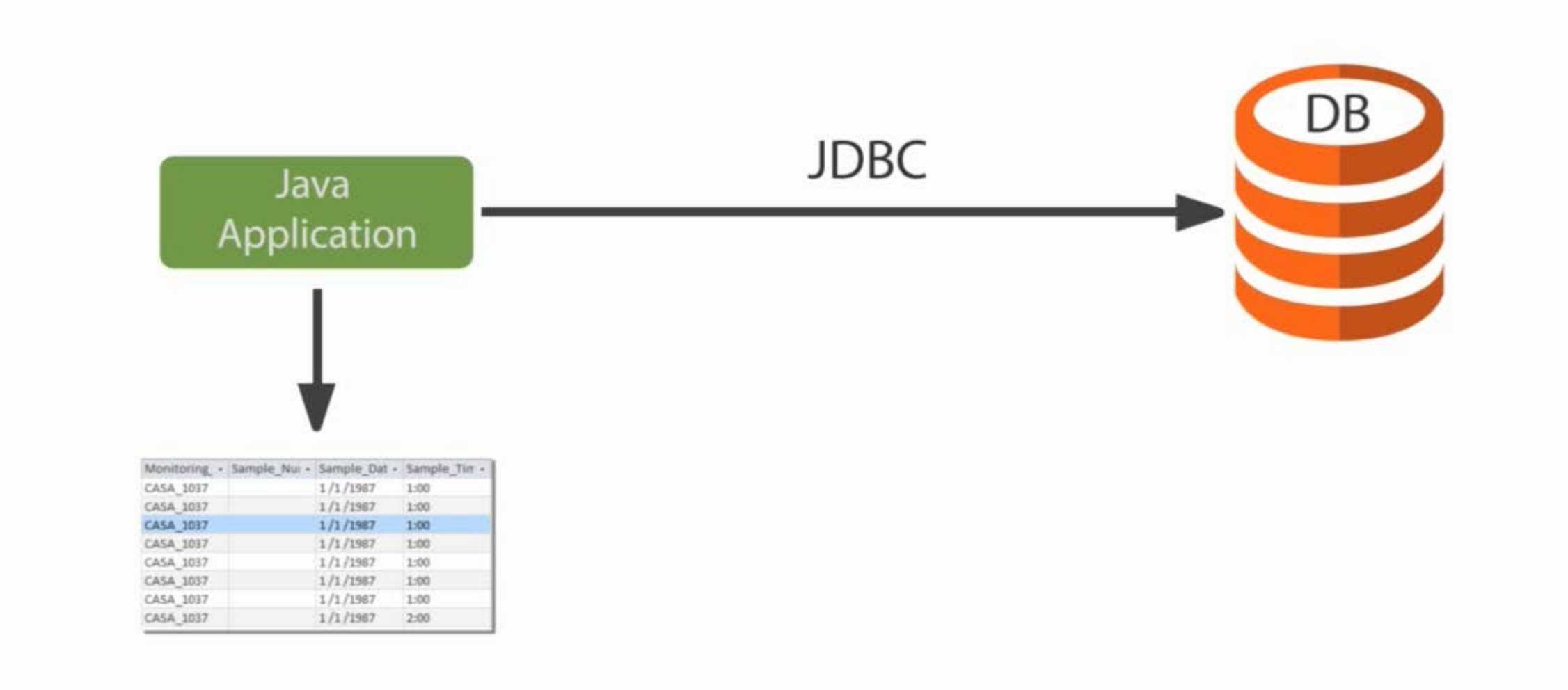
Executing Static SQL Statements



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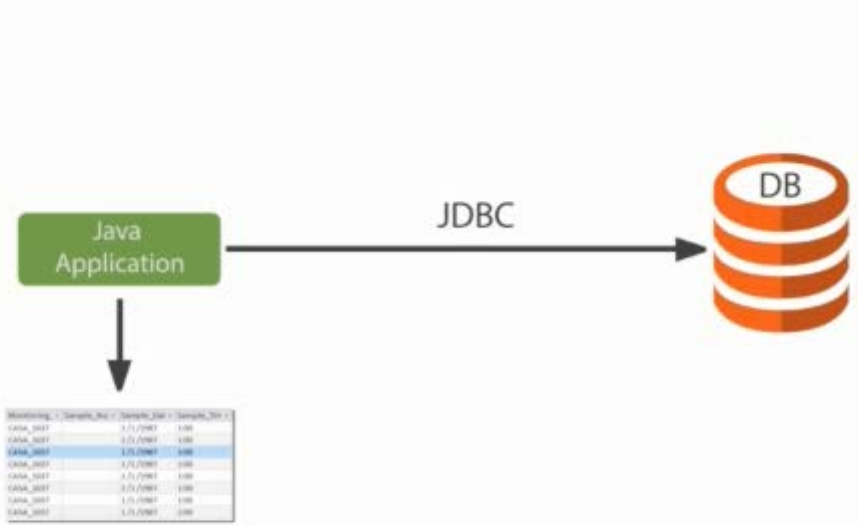
Executing Static SQL Statements



Statements

ResultSet

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Statement Interface

Used for executing a static SQL Statement

Methods:

- ResultSet executeQuery(String SQL)
- int executeUpdate (String SQL)
- boolean execute(String SQL)

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Steps for Development Process

- Establish Connection to a Database
- Create Statement Object
- Execute SQL Query
- Process the ResultSet

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Demo

Executing Static SQL Statements

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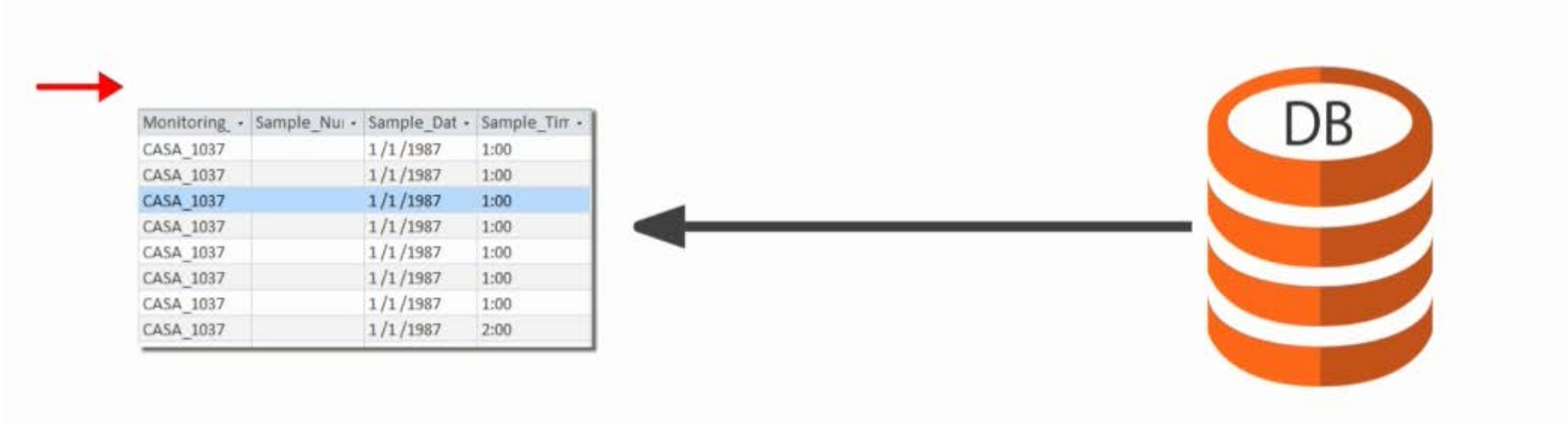
Iterating Through ResultSets

Java.Sql.ResultSet interface represents the Result Set of a database query



When the ResultSet is first returned, the starting cursor position is before the first row of data

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Iterating Through ResultSets

Methods of the ResultSet can be divided into 3 categories

i. Navigational Methods

ii. Get Methods

iii. Update Methods

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Iterating Through ResultSets

Common methods of ResultSet interface

beforeFirst()
afterLast()
first()
last()
previous()
next()
getRow()

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Iterating Through ResultSets

ResultSet interface get methods

- get method for each data type

- Each get method has two versions
    i. One that takes in a column name
    ii. One that takes in a column index

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Iterating through ResultSets

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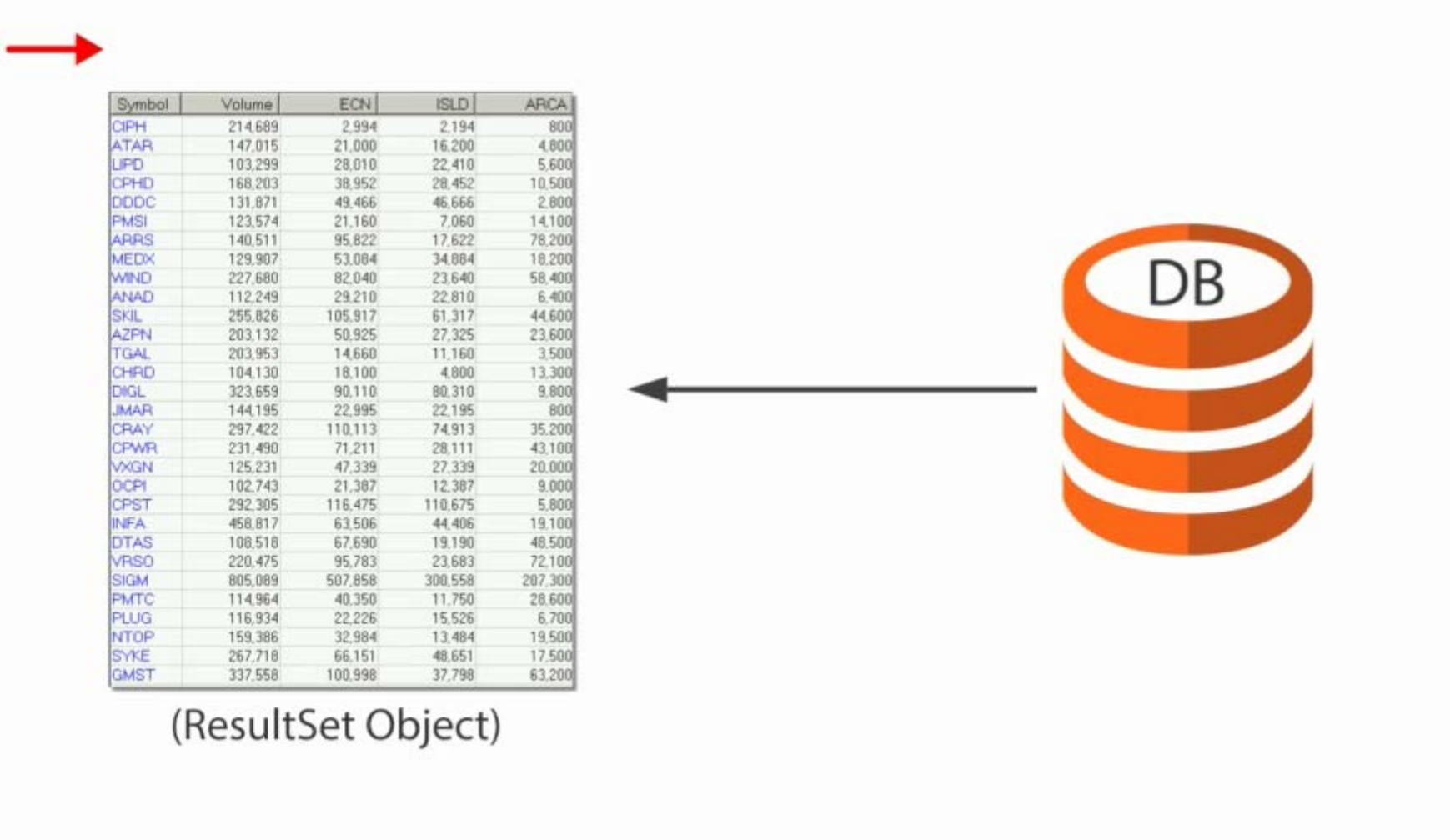
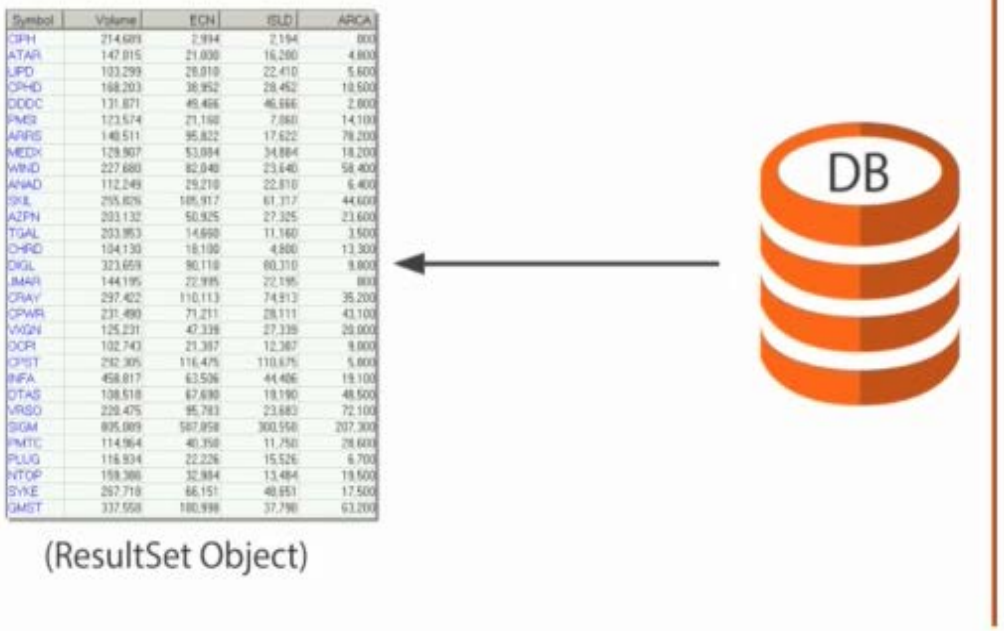
Understanding Scrollable ResultSets



Understanding Scrollable ResultSets



ResultSet Types

- Type_Forward_Only
- Type_Scroll_Insensitive
- Type_Scroll_Sensitive

ResultSet Concurrency Types

- Concur_Read_Only
- Concur_Updatable

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Working with Scrollable ResultSets

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Understanding Updatable ResultSets

Methods of the ResultSet can be divided into 3 categories

i)Navigational Methods

ii)Get Methods

iii)Update Methods

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Understanding Updatable ResultSets

Updatable ResultSet allows modification to data in a table through the ResultSet

- Each Update method has two versions

  i)One that takes in a column name
  ii)One that takes in a column index

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Understanding Updatable ResultSets

To Update a String Column of the current row

- public void updateString (int columnIndex,String s)
- public void updateString (String columnName,String s)

All update methods throws SQLException

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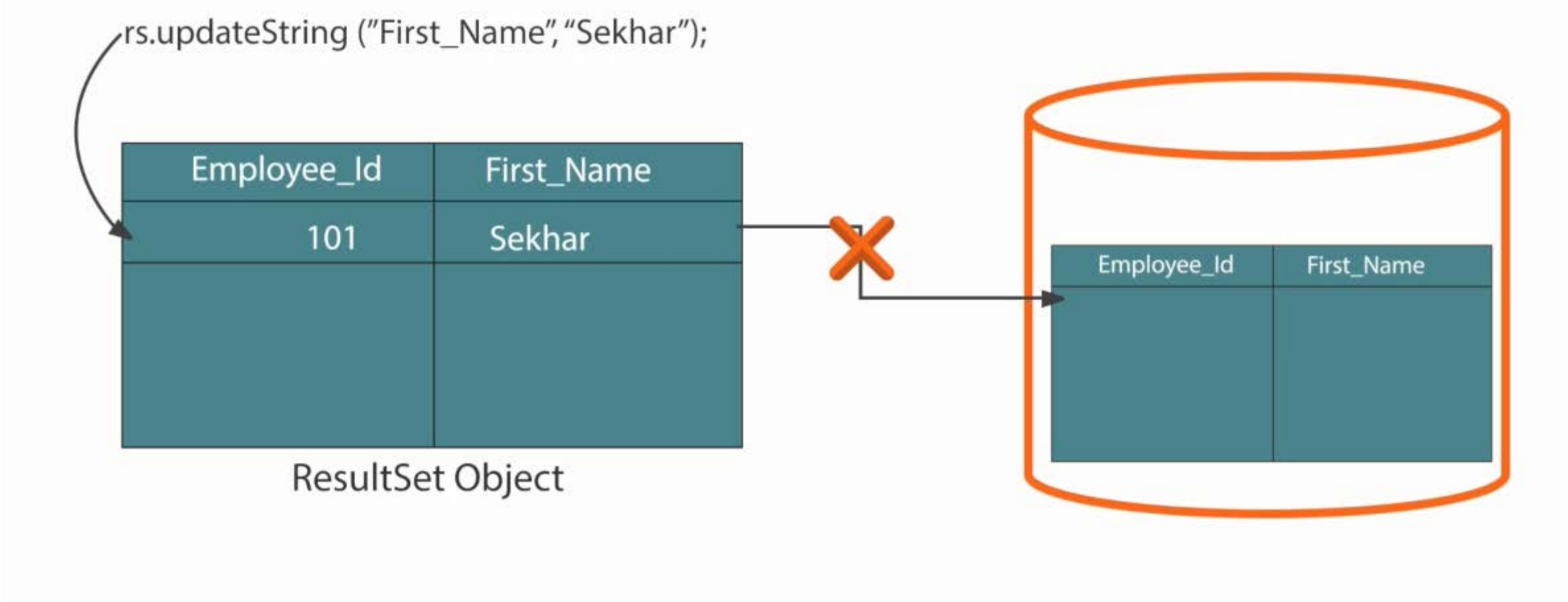
Understanding Updatable ResultSets



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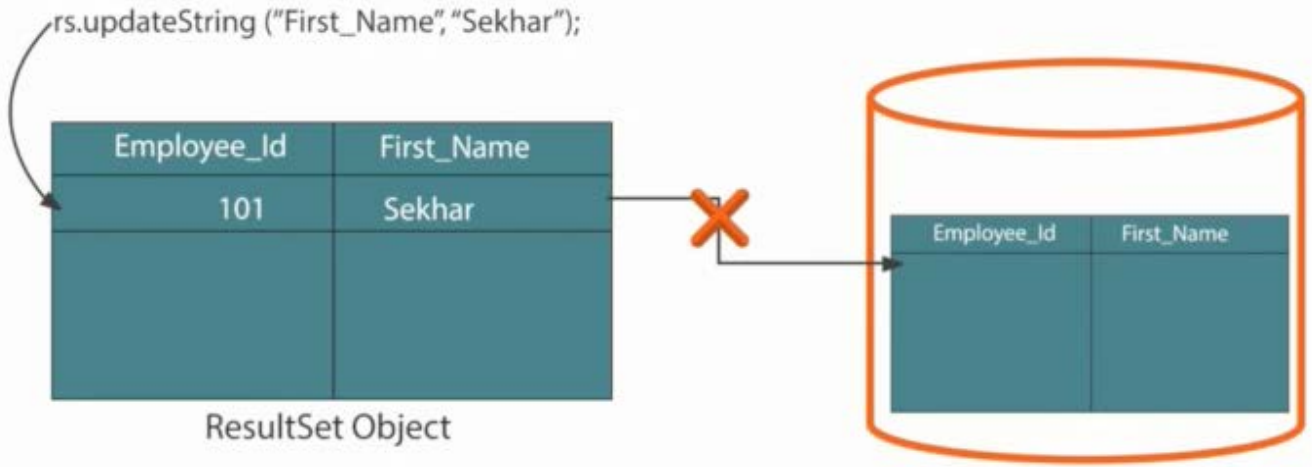
Understanding Updatable ResultSets



- updateRow()
- deleteRow()
- refreshRow()
- cancelRowUpdates()
- insertRow()

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Managing Data Using Updatable ResultSets

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Understanding the PreparedStatement

- What is PreparedStatement
- How to create a PreparedStatement
- Setting Parameter Values
- Executing a PreparedStatement
- Reusing a PreparedStatement

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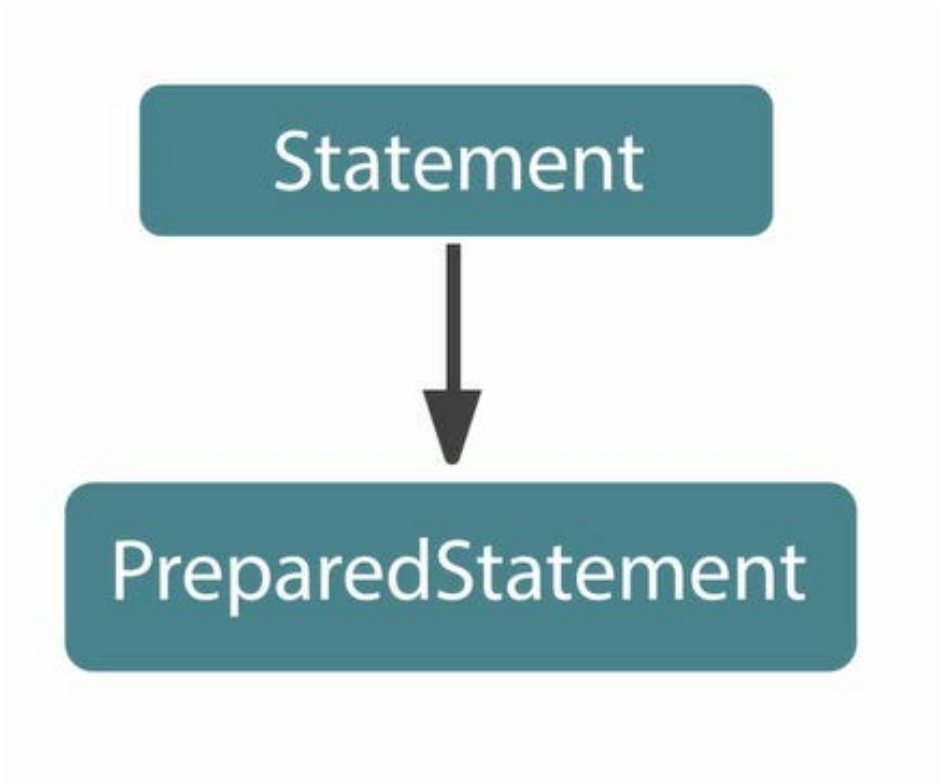
Understanding the PreparedStatement



Benefits

- Improve Performance of an Application
- Easy to Set SQL parameter Value
- Prevents SQL Dependency Injection Attacks

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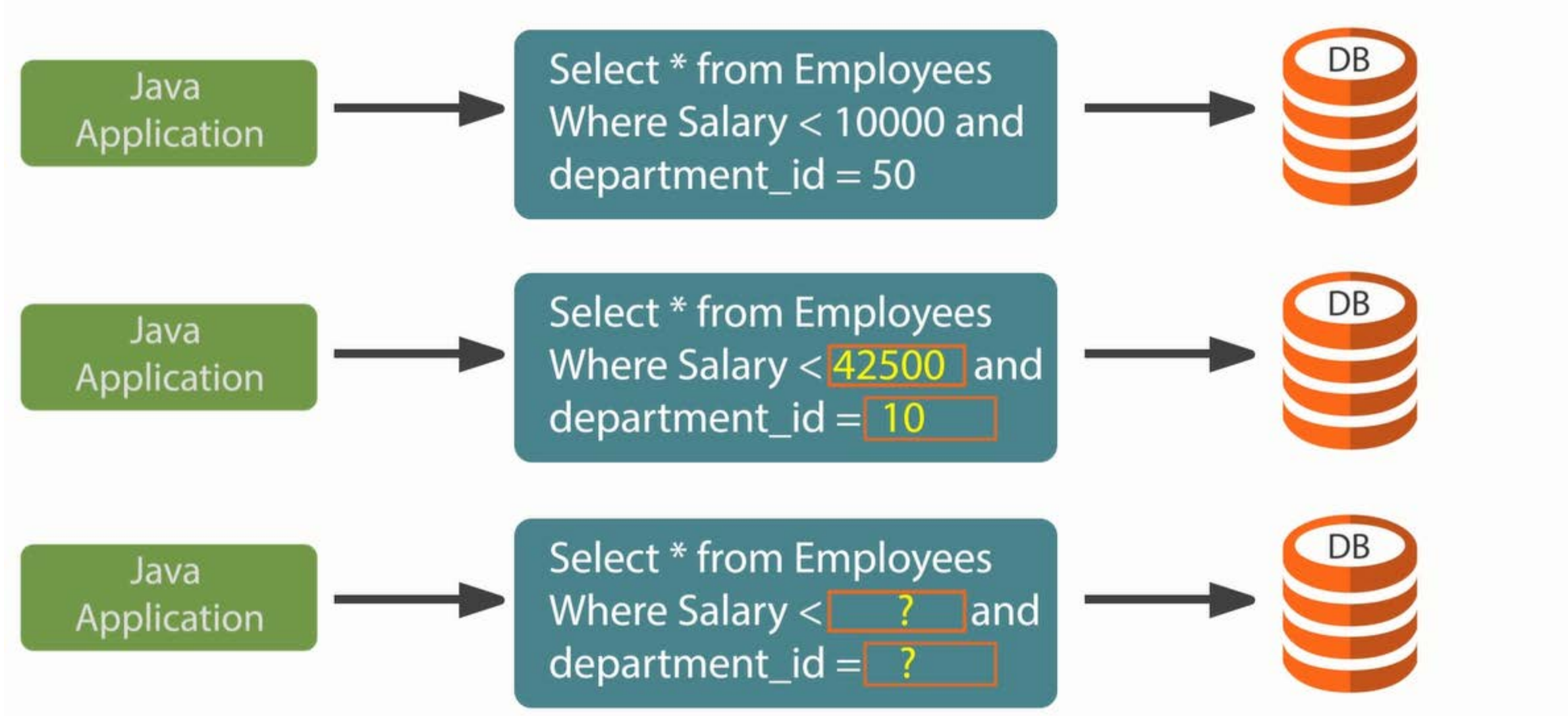
Understanding the PreparedStatement



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Understanding the PreparedStatement

```
PreparedStatement pstmt = myConn.createStatement( "select *
from employees where salary < ? and department_id= ?" );
```

To Bind :set Xxx() Method

For Example:setInt(P1,P2)

setString (P1,P2)

setDouble(P1,P2)

P1: Position(1 Based)
P2: Value

To Set:

```
pstmt.setDouble(1, 10000 );
pstmt.setInt(2, 50 );
```

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To Do

Step 1: Establish a Connection with the Database

Step 2: Prepare the Statement using Parameter Placeholder(?)

Step 3: Set the values for Parameters

Step 4: Executes the Statement

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Retrieving Data Using PreparedStatement

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Inserting the Record

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Run SQL Command Line

```
SQL> conn hr/hr;
Connected.
SQL> desc NewEmployees
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 EMPLOYEE_ID                               NOT NULL NUMBER(6)
 EMPLOYEE_NAME                             NOT NULL VARCHAR2(25)
 EMAIL                                     NOT NULL VARCHAR2(25)
 HIRE_DATE                                 NOT NULL DATE
 SALARY                                             NUMBER(8,2)

SQL> _
```

Insert into TableName values (value1, value2 , ...)

Insert into NewEmployees values (786,'sekhar',
'sekharonline4u@gmail.com','2016-01-14',1000)

PreparedStatement pstmt = conn.prepareStatement
(insert into NewEmployees values (?,?,?,?,?))

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Updating the Record

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Demo: Updating the Record

NewEmployees

EMPLOYEE_ID
EMPLOYEE_NAME
EMAIL
HIRE_DATE
SALARY

Update NewEmployees

Set Salary = New Salary

where Employee_id= id

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Demo: Updating the Record

NewEmployees

EMPLOYEE_ID
EMPLOYEE_NAME
EMAIL
HIRE_DATE
SALARY

Update NewEmployees

Set Salary = ?

where Employee_id= ?

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Demo

Removing the Record

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Demo: Removing the Record

NewEmployees

EMPLOYEE_ID
EMPLOYEE_NAME
EMAIL
HIRE_DATE
SALARY

Delete from NewEmployees

where Employee_Id= Id

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Demo: Removing the Record

NewEmployees

EMPLOYEE_ID
EMPLOYEE_NAME
EMAIL
HIRE_DATE
SALARY

Delete from NewEmployees

where Employee_Id=?

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Summary

- Statement
- ResultSet
- Scrollable ResultSet
- PreparedStatement
- CRUD Operations Using PreparedStatement

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