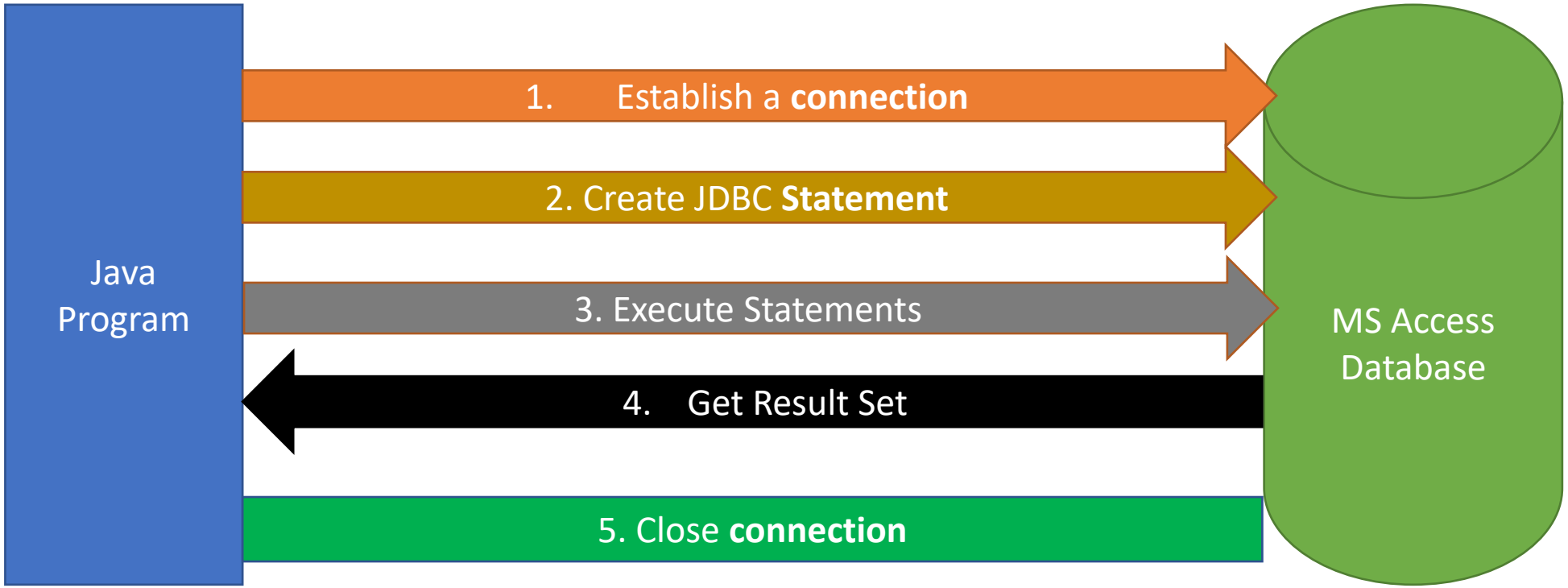
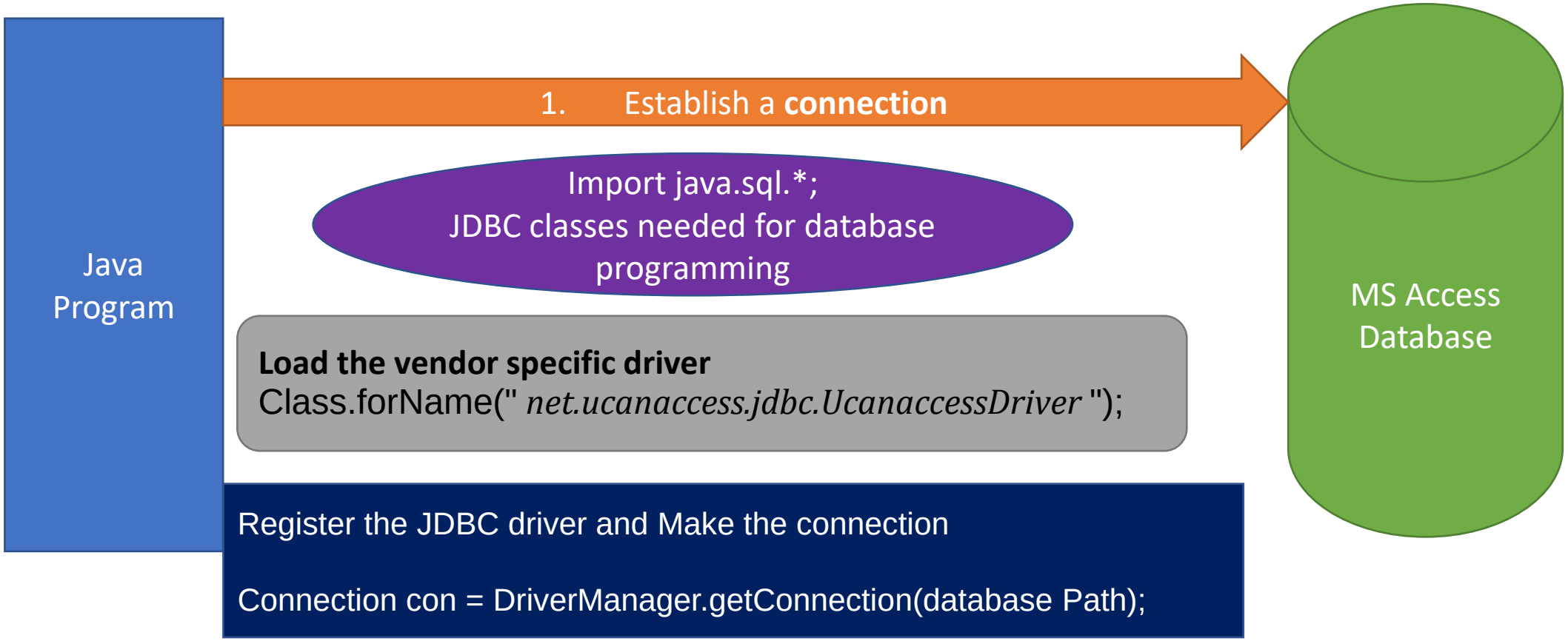
Jdbc for
Ms Access

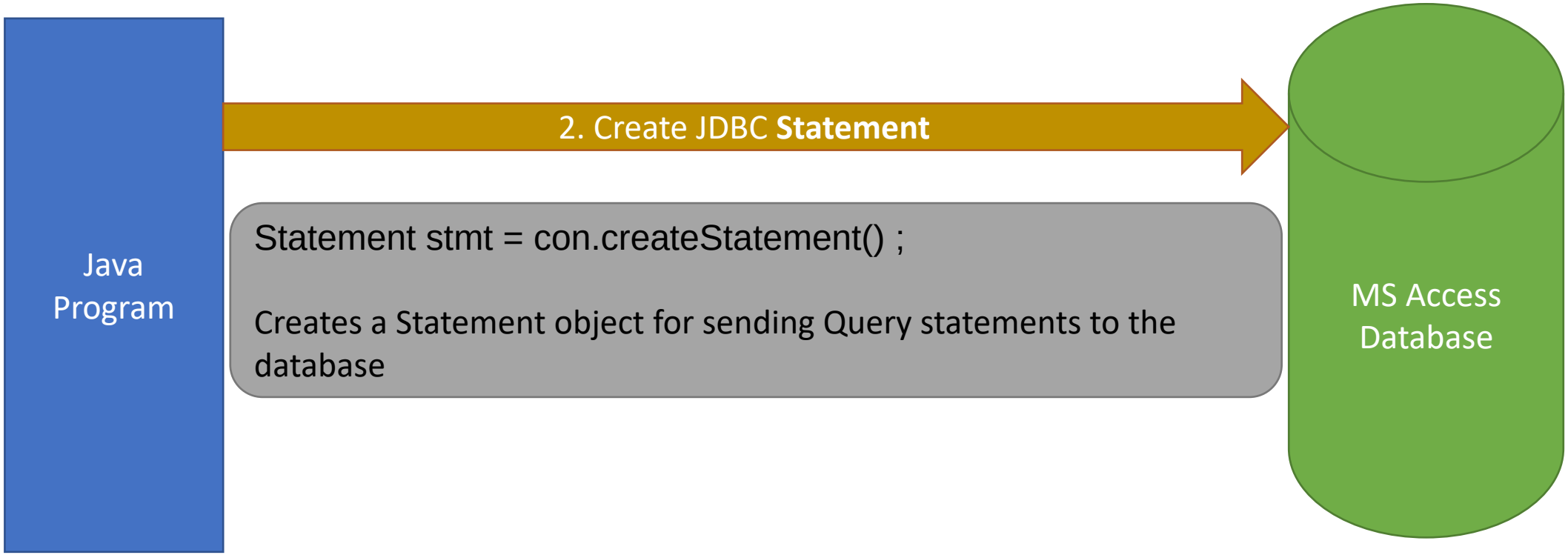
Java DataBase Connectivity

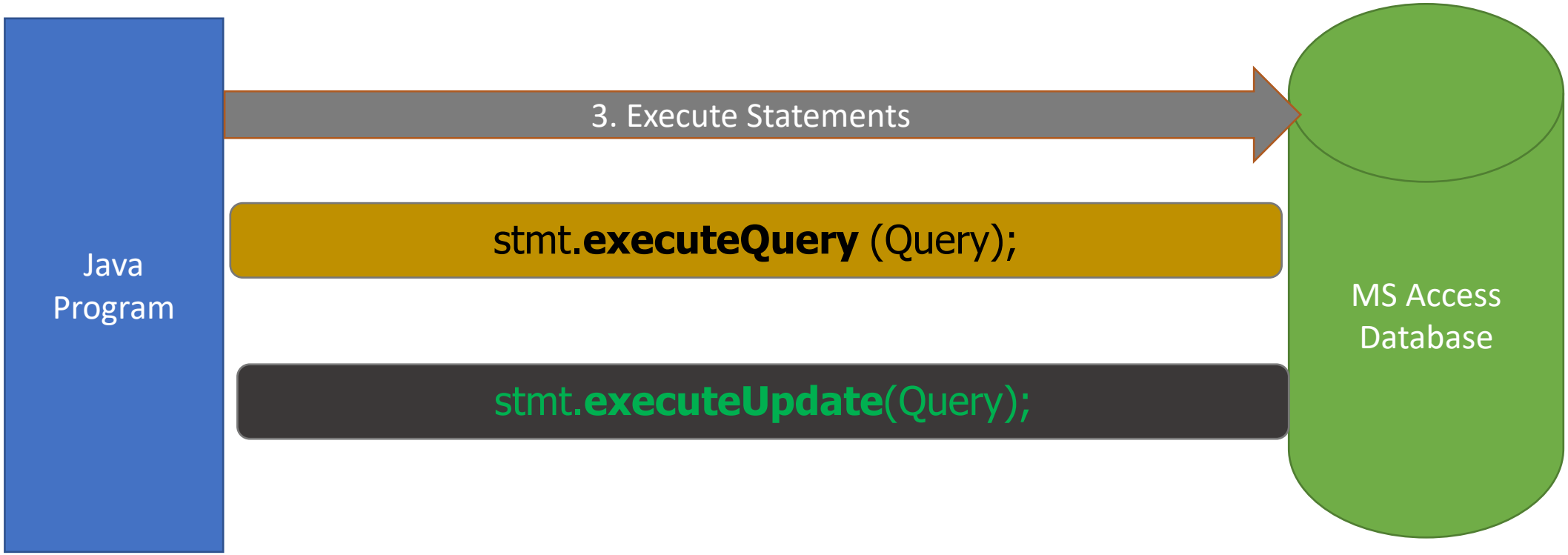
- JDBC is standard Java API to be used for database connectivity between **java program** and wide range of **relational databases**.

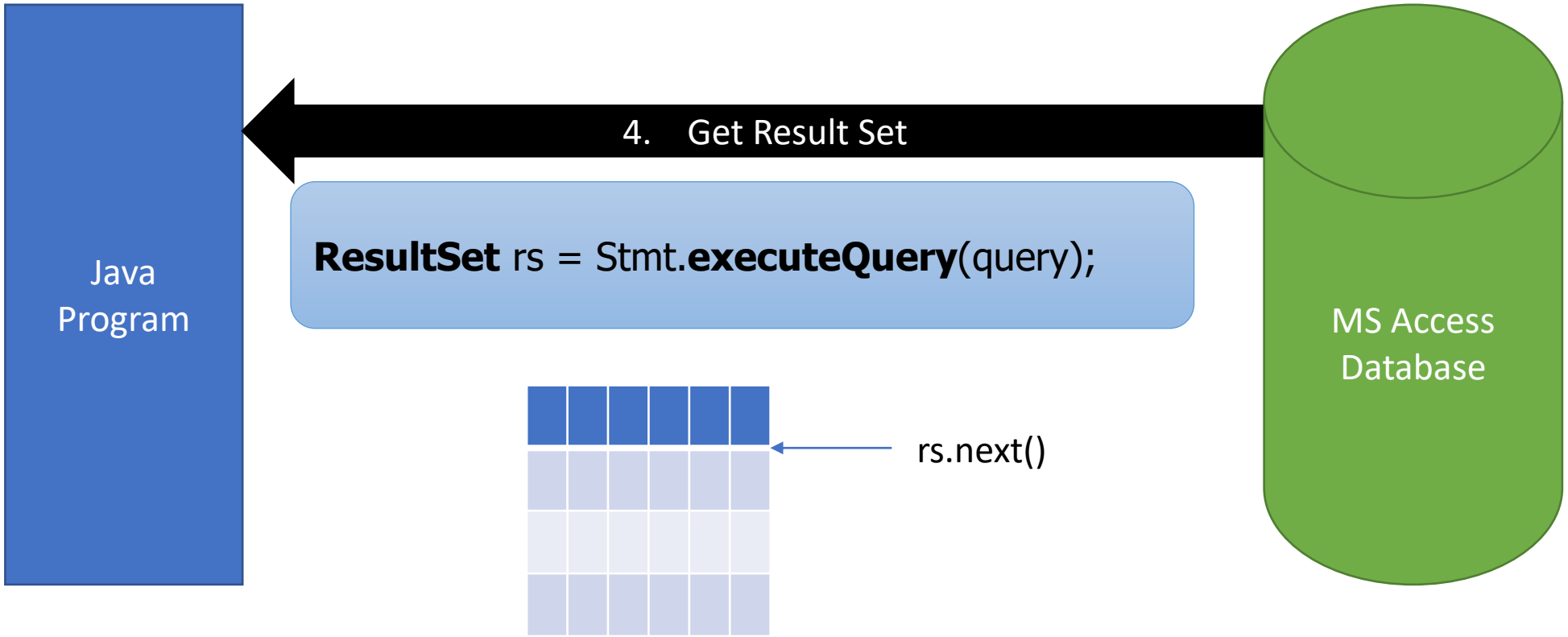
- **UCanAccess** is a pure Java **JDBC** driver that allows us to read from and write to Access databases. It uses two other packages, Jackcess and HSQLDB , to perform these tasks.

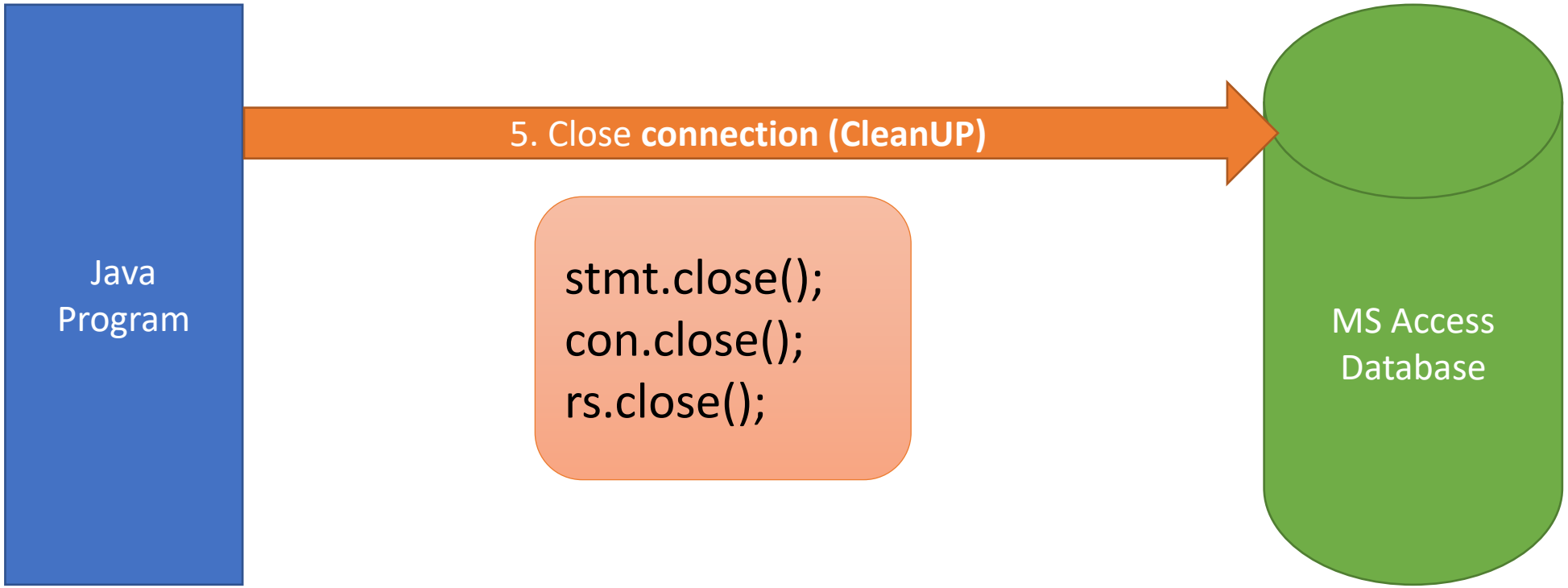

Java Program
1. Establish a **connection**
2. Create JDBC **Statement**
3. Execute Statements
4. Get Result Set
5. Close **connection**
MS Access Database


Java Program
1. Establish a **connection**
Import java.sql.*;
JDBC classes needed for database programming
Load the vendor specific driver
Class.forName(" *net.ucanaccess.jdbc.UcanaccessDriver* ");
Register the JDBC driver and Make the connection
Connection con = DriverManager.getConnection(database Path);
MS Access Database


Java
Program
2. Create JDBC **Statement**
Statement stmt = con.createStatement() ;
Creates a Statement object for sending Query statements to the database
MS Access
Database


Java
Program
3. Execute Statements
stmt.executeQuery (Query);
stmt.executeUpdate(Query);
MS Access
Database


Java
Program
4. Get Result Set
ResultSet rs = Stmt.executeQuery(query);
rs.next()
MS Access
Database


Java
Program
5. Close **connection (CleanUP)**
stmt.close();
con.close();
rs.close();
MS Access
Database

1. Establish a connection

- **import java.sql.*;**
- **Import the packages:** Requires that you include the packages containing the JDBC classes needed for database programming. Using *import java.sql.**

- **Load the vendor specific driver**
  - Class.forName(" *net.ucanaccess.jdbc.UcanaccessDriver* ");
    - Dynamically loads a driver class, for Access database

- **Register the JDBC driver:** Requires that you initialize a driver so you can open a communications channel with the database.

- **Make the connection**
  - Connection con = DriverManager.*getConnection(database Path);*
    - Establishes connection to database by obtaining a *Connection* object
- **Open a connection:** Create a Connection object, which represents a physical connection with a database server.

2. Create JDBC statement(s)

- Statement stmt = con.createStatement() ;
- Creates a Statement object for sending Query statements to the database

Executing SQL Statements

To Retrieve Data

stmt.**executeQuery** (Query);

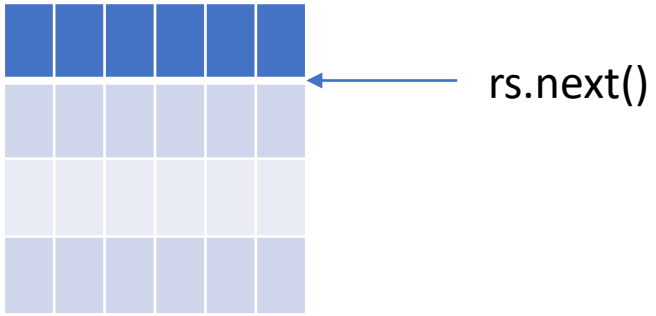
Execute a query: Requires using an object of type Statement for building and submitting a Query statement.

To insert, update, delete

stmt.**executeUpdate**(Query);

Get ResultSet

ResultSet rs = Stmt.**executeQuery**(query);



Close Connection

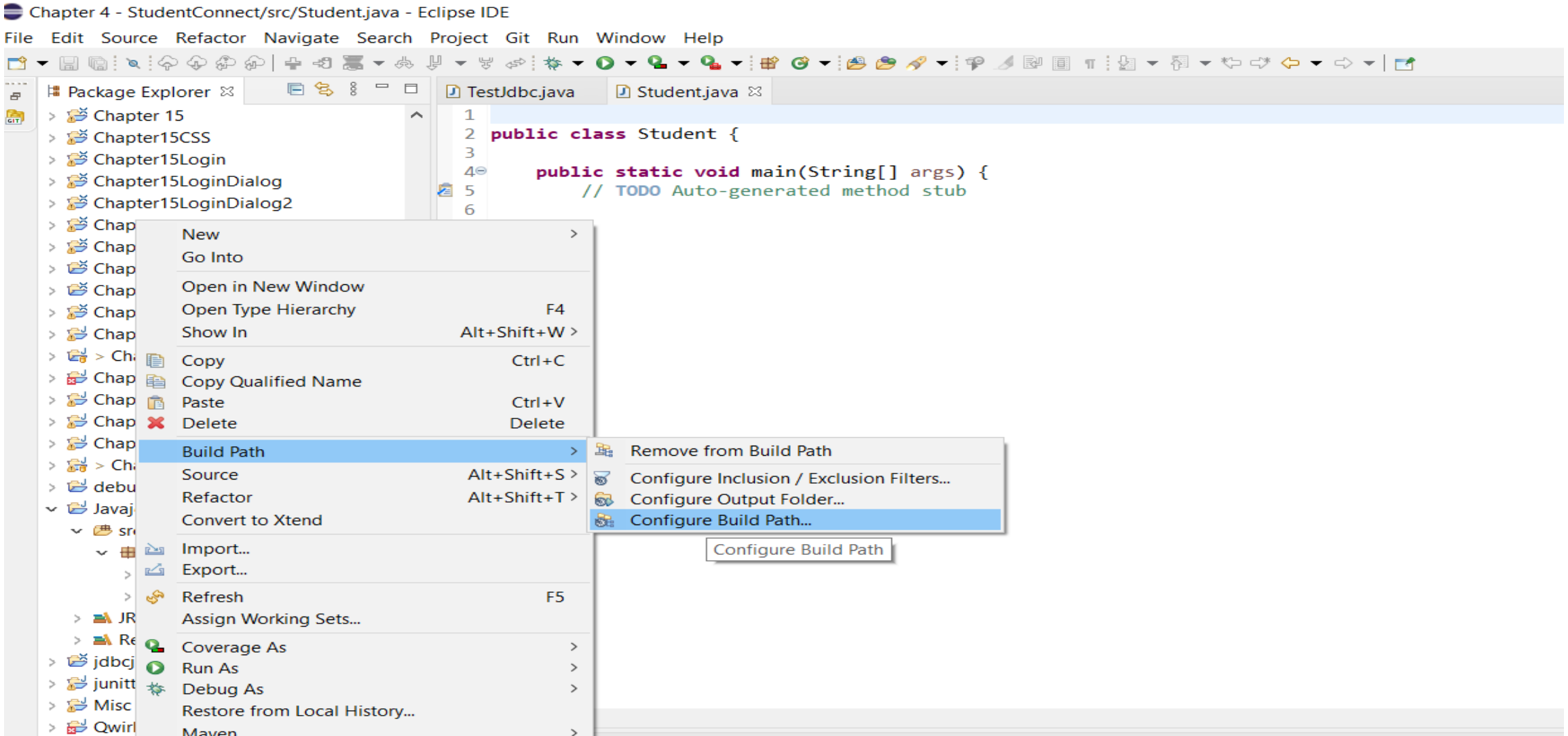
- stmt.close();
- con.close();
- rs.close();

- **Clean up the environment:** Requires explicitly closing all database resources versus relying on the JVM's garbage collection

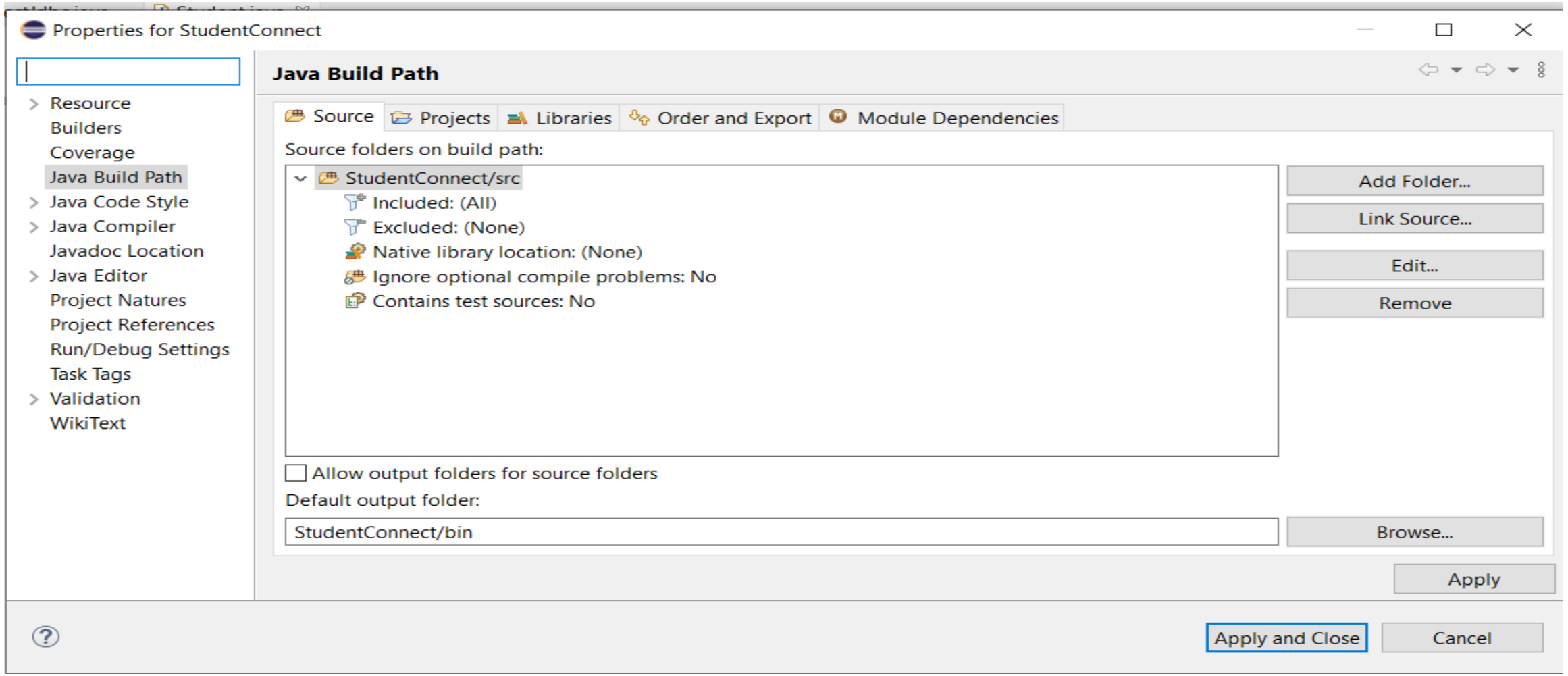
Add JDBC jar files to your project

- Open Eclipse and create a Java Project (e.g., JDBCConnection)
- Create a Class Student with the main method.
- Download the following .jar files from Blackboard to a folder in your PC (e.g., C:\CSIS2175):
- *ucanaccess-4.0.4.jar*
- *jackcess-3.0.1.jar*
- *hsqldb-2.5.0.jar*
- *commons-logging-1.2.jar*
- *commons-lang3-3.9.jar*

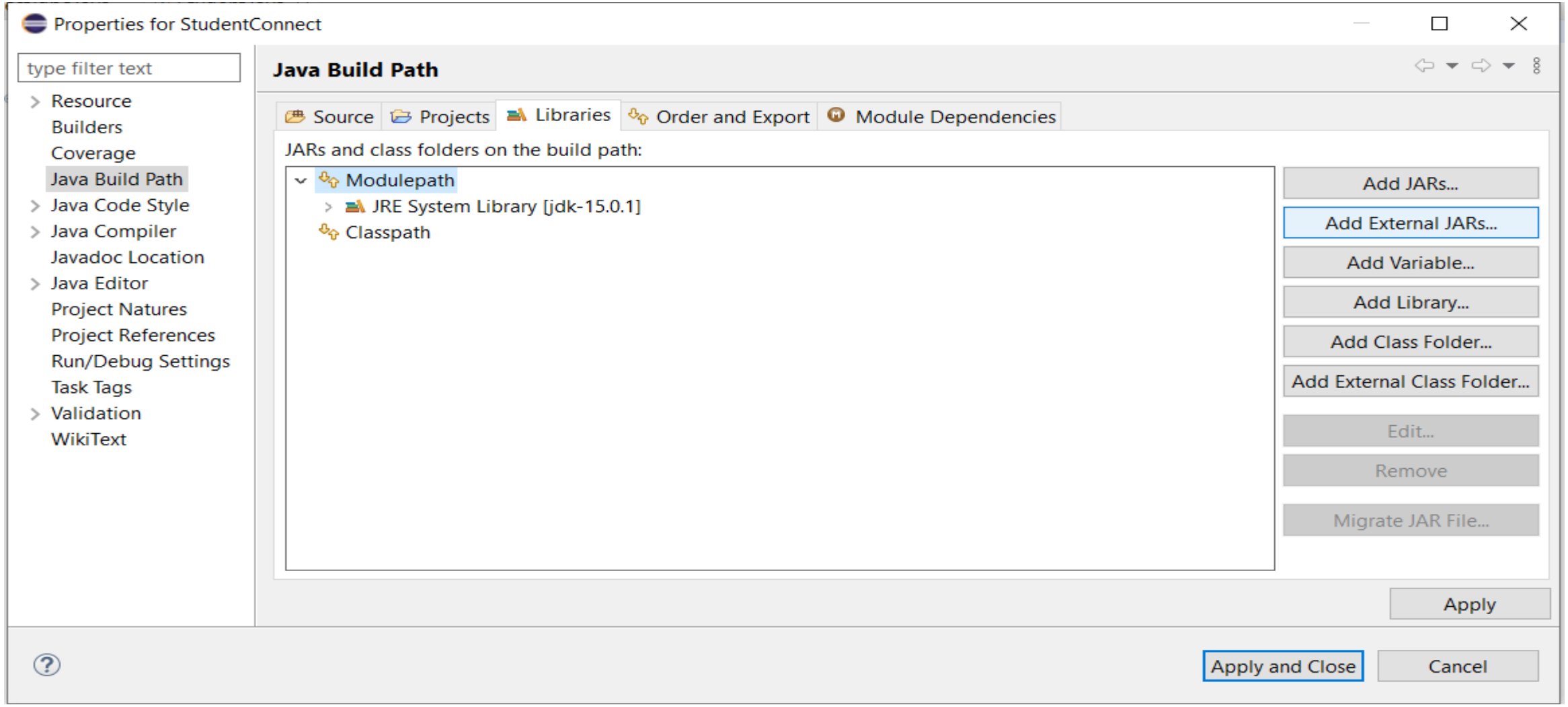
Right click your project and click ‘Build Path’ and then ‘Configure Build Path’



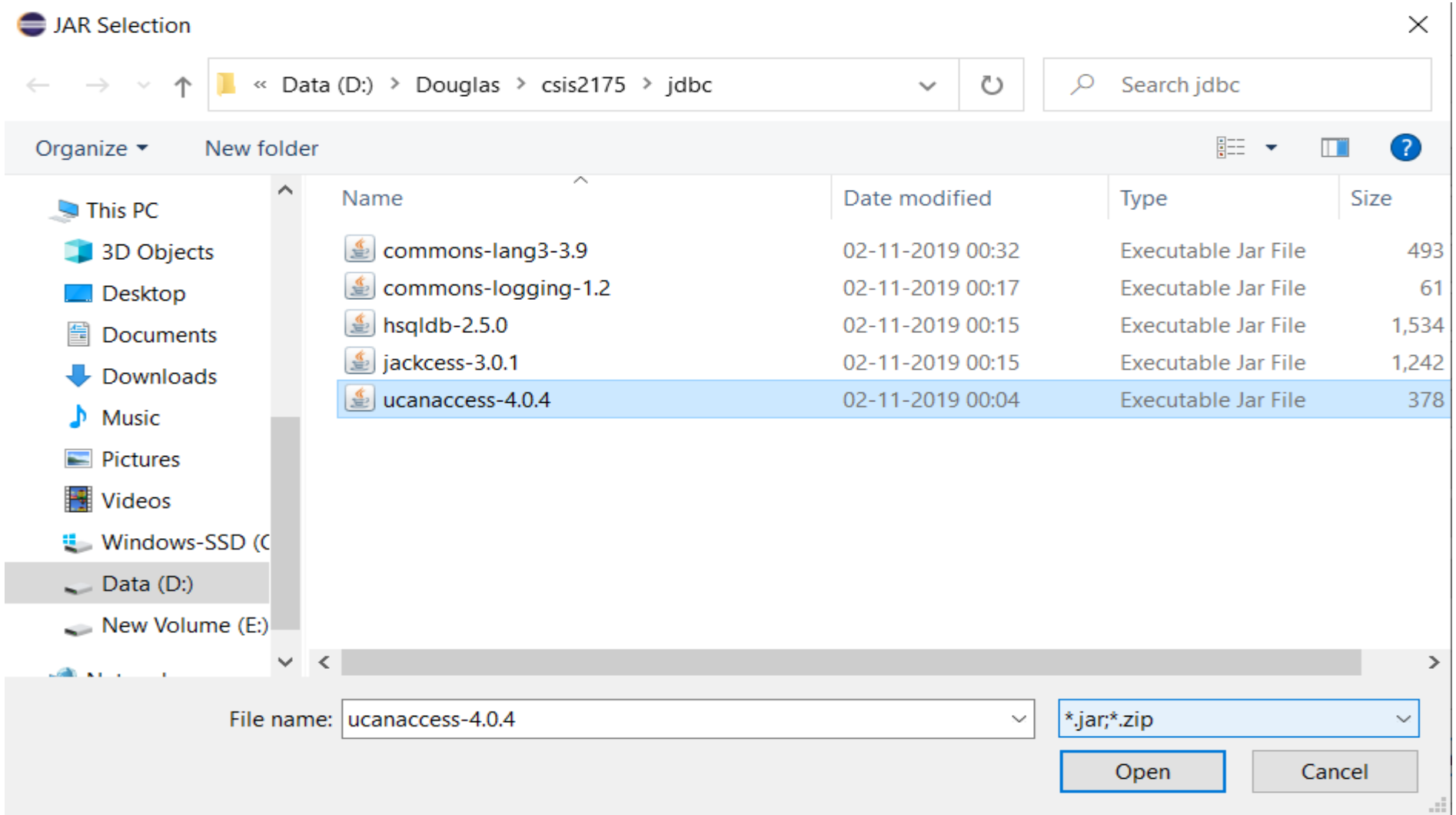
Window appears



Click ‘Libraries’ tab and press ‘Add External JAR’s’ button



Select downloaded ‘.jar’ files



Connect to Citrix if you don’t have MS-Access

- https://collegedouglas.sharepoint.com/sites/dcconnect/tools_resources/technologyresources/Assetsceit/Citrix_Home_Instructions.pdf#search=citrix

Access

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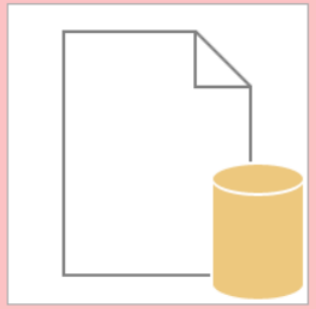

Blank desktop database

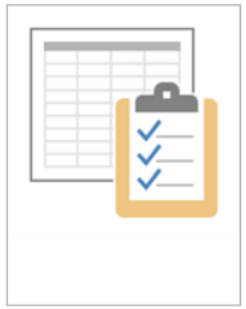

Custom web app


Asset tracking


Contacts


Students


Event management


Task management


Nutrition tracking

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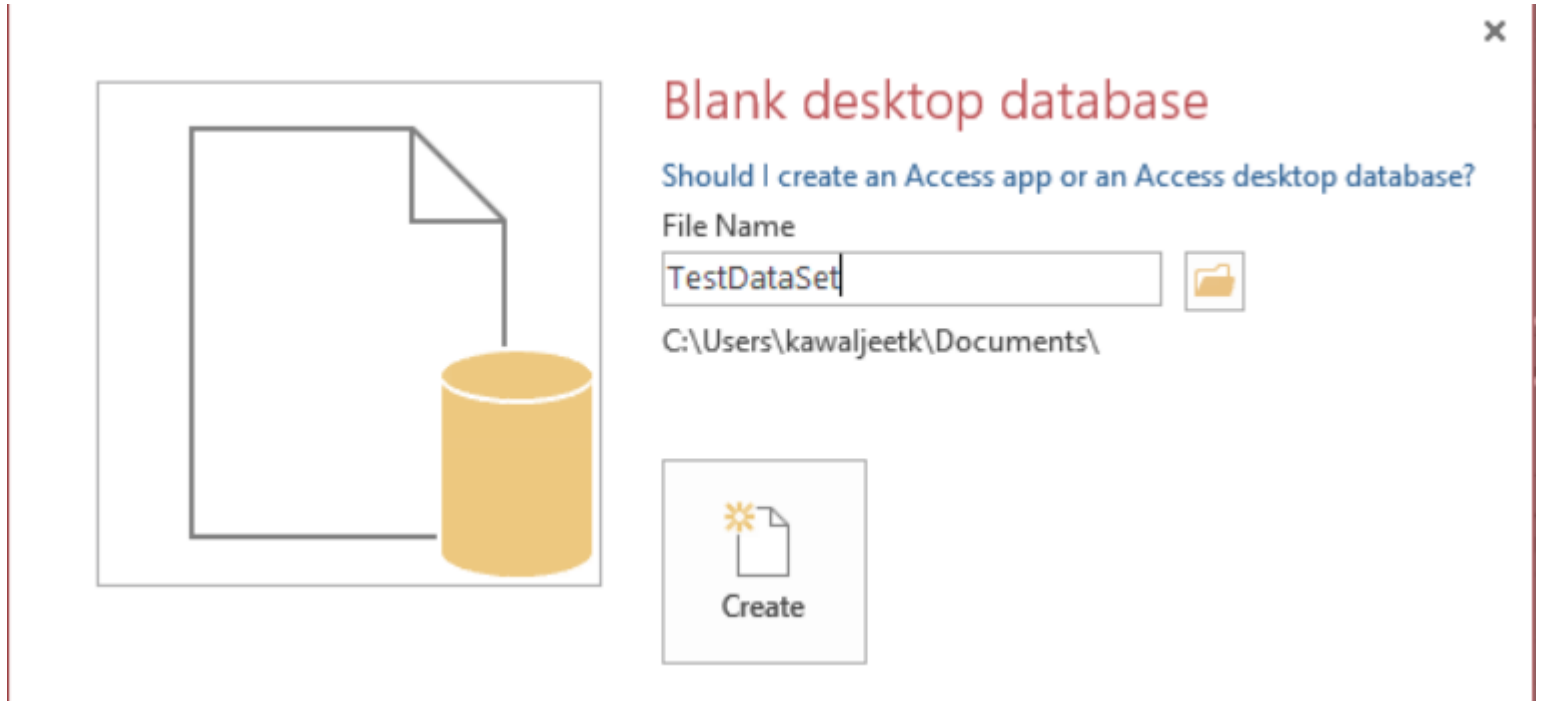
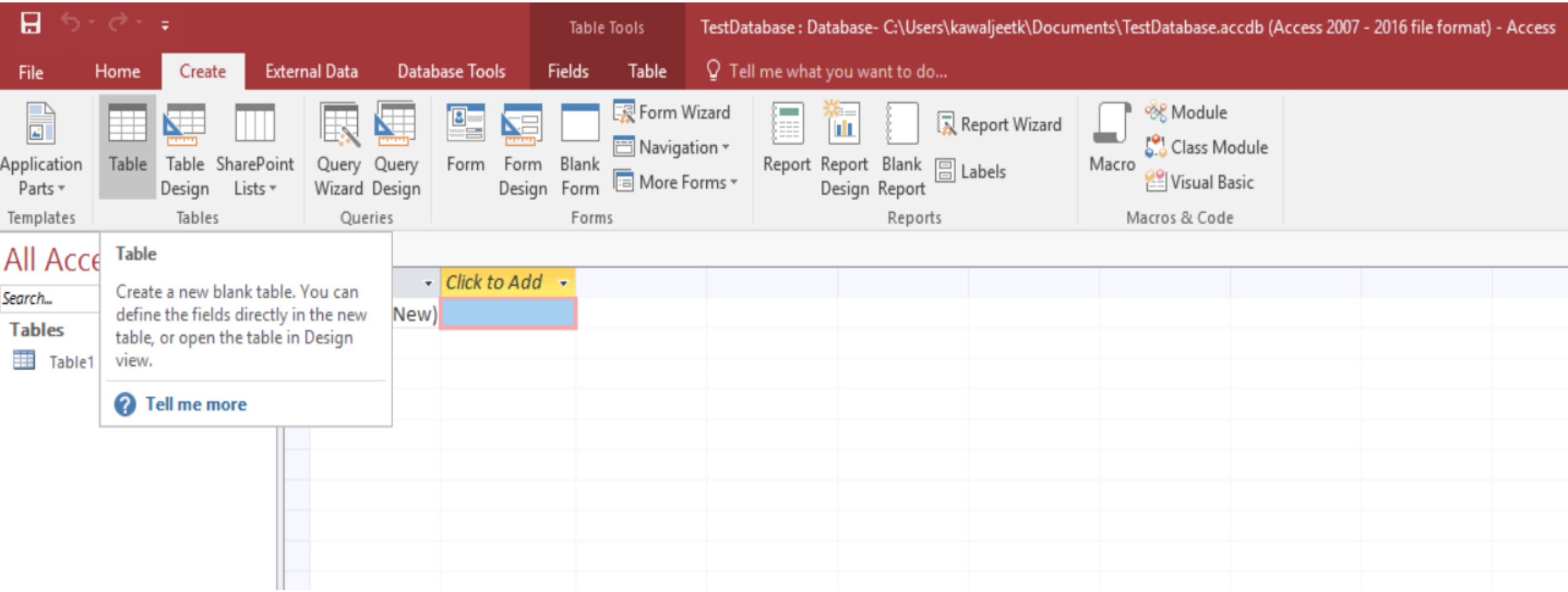
21:25
01-02-2021

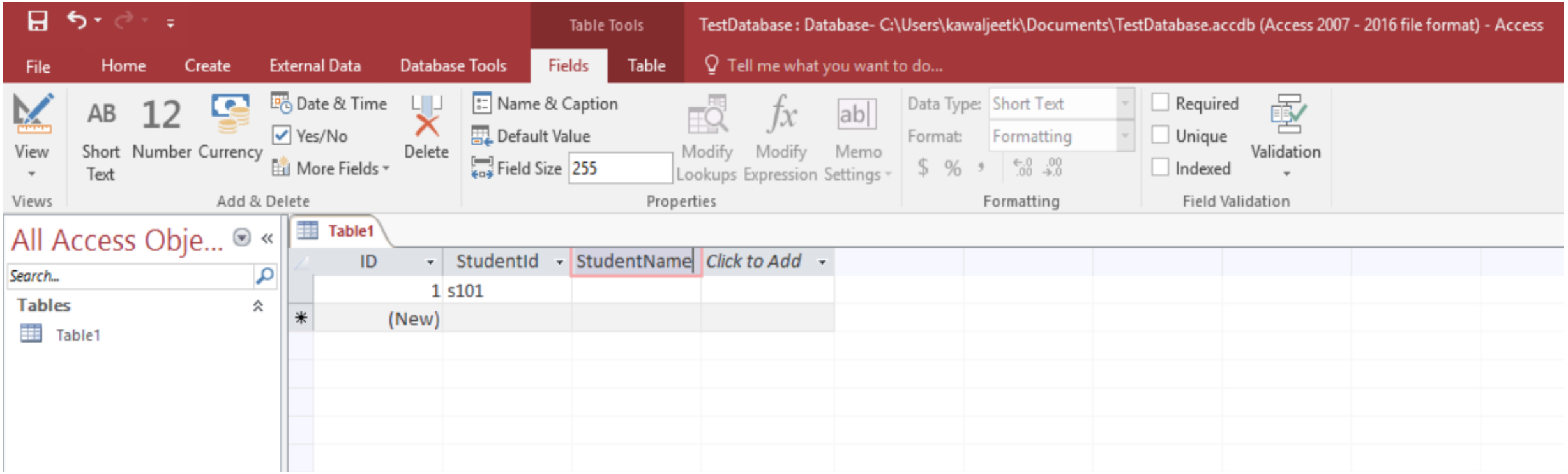
Write down name for the database



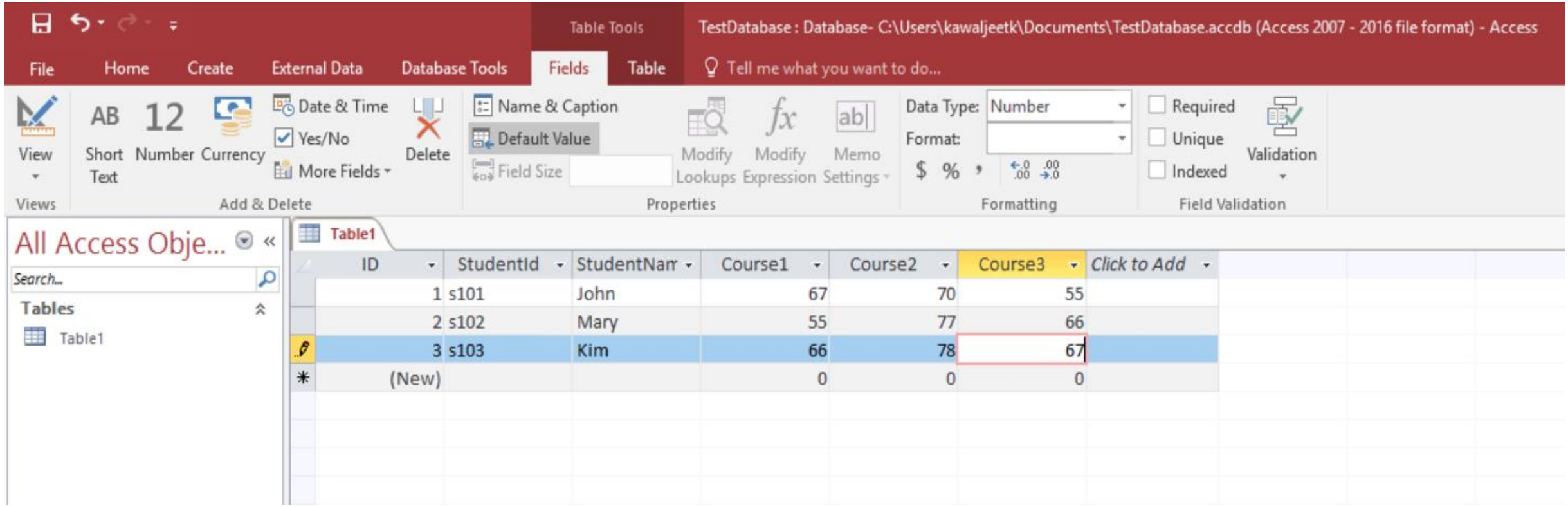
Click on Table to create one for you



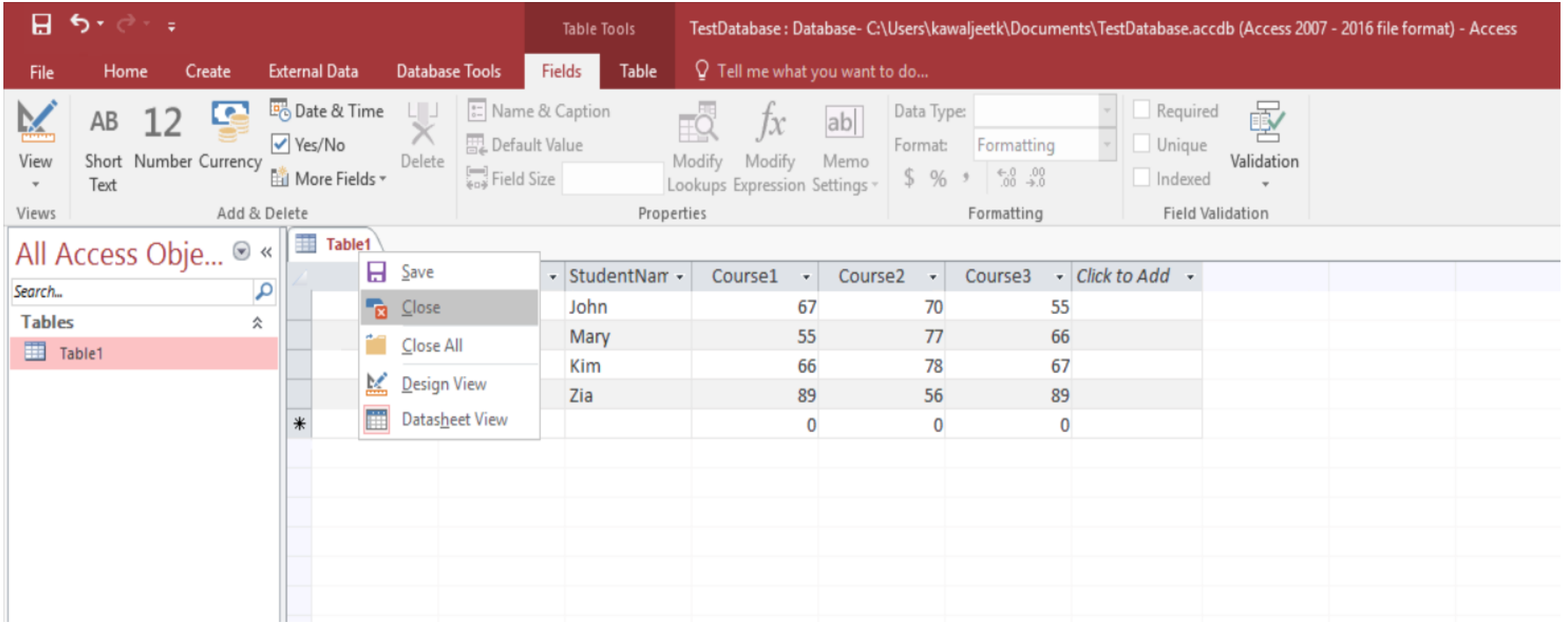
Add Column names as required



Add content rows in your table



Save the table with a specified name
Here, I saved it with ‘Student’ name



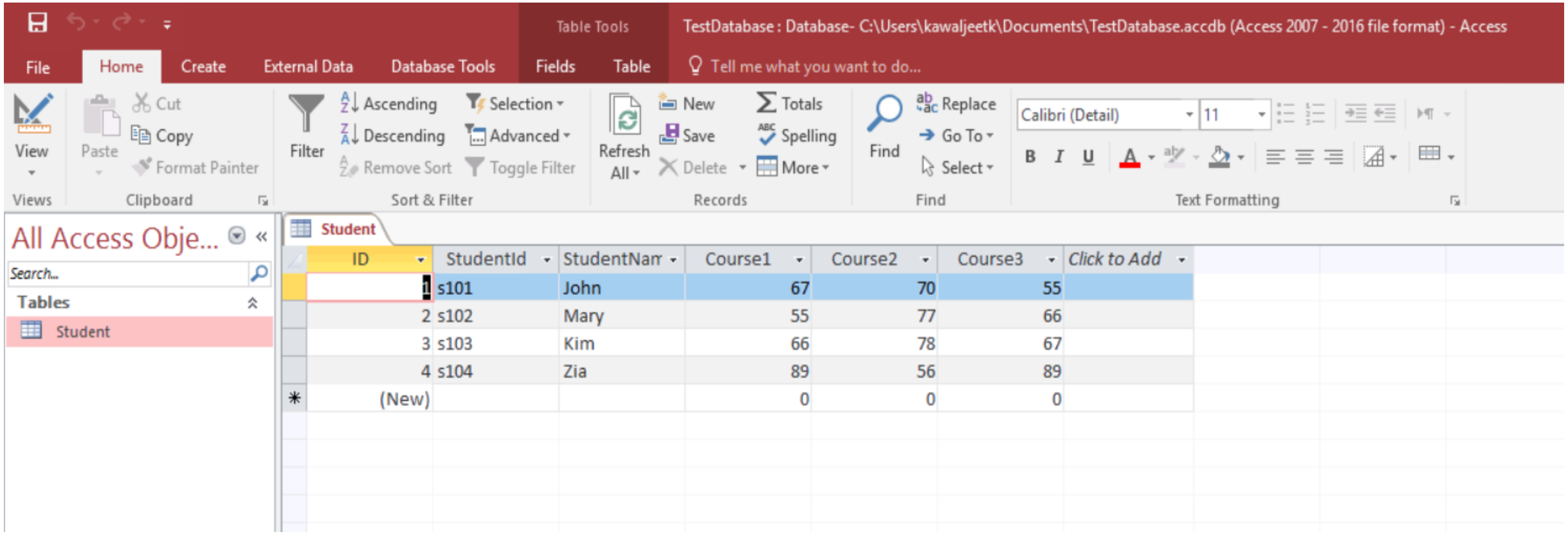


Table Tools
TestDatabase : Database- C:\Users\kawaljeetk\Documents\TestDatabase.accdb (Access 2007 - 2016 file format) - Access
File
Home
Create
External Data
Database Tools
Fields
Table
Tell me what you want to do...
View
Paste
Cut
Copy
Format Painter
Views
Clipboard
Filter
Ascending
Descending
Remove Sort
Selection
Advanced
Toggle Filter
Sort & Filter
Refresh All
New
Save
Delete
Totals
Spelling
More
Records
Find
Replace
Go To
Select
Find
Calibri (Detail)
11
Text Formatting
All Access Obje...
Search...
Tables
Student
Student
ID
StudentId
StudentNam
Course1
Course2
Course3
Click to Add
1 s101 John 67 70 55
2 s102 Mary 55 77 66
3 s103 Kim 66 78 67
4 s104 Zia 89 56 89
(New) 0 0 0

- Create a class student with code as follows

```
//Retrieve records from a database
Connection connection = null;
Statement statement = null;
ResultSet resultSet = null;
try {
// Step 1: Loading or registering ucanaccess JDBC driver class
Class.forName("net.ucanaccess.jdbc.UcanaccessDriver");
String database = "D:\\Douglas\\csis2175\\jdbc\\TestDatabase.mdb";
String databasePath = "jdbc:ucanaccess://" + database;
 // Step 2.A: Create and get connection using DriverManager class
connection = DriverManager.getConnection(databasePath);
// Step 2.B: Creating JDBC Statement
  statement = connection.createStatement();
// Step 2.C: Executing SQL & retrieve data into ResultSet
  resultSet = statement.executeQuery("SELECT * FROM STUDENT");
```

```
 while (resultSet.next()) {
   String id = resultSet.getString(2);
   String name = resultSet.getString(3);
   double avg;
   int sum=0;
   for(int i=4;i<=6;i++)
                sum+=resultSet.getInt(i);
   avg=(double)sum/3;
   System.out.println("Student #" + id + " Name "+name+" Average Marks "+avg);
}
}catch (ClassNotFoundException e) {
System.out.println("Problem in loading or registering MS Access JDBC driver");
e.printStackTrace();
}
 catch (SQLException e) { e.printStackTrace();}
finally {  // Step 3: Closing database connection
  try {
   if (connection != null) {    // Cleanup resources, once after processing
   resultSet.close();
   statement.close();
     connection.close(); // Close connection    }
  } catch(SQLException sqlex) {
   sqlex.printStackTrace();  }}}
```