

# **Software Engineering Lab**

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## **Building .NET Applications on the Oracle Database with Microsoft Visual Studio**

### **Lab 4 – Disconnected Layer**

# QUIZ

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- The Quiz will be during the week starting from 9-April-2022
- **Four ODP.Net** Labs will be included in the quiz.
- You must attend in your section time or you will lose marks. (**No Excuses**)
- It will be a **written** quiz so bring your **pen and an empty paper**.
- Grade: 5 marks
- Duration: 20 minutes

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Good Luck 😊

# Agenda

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- Disconnected Mode
  - OracleDataAdapter
  - DataSets
  - OracleCommandBuilder

# Disconnected Mode

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- This mode allows you to load data from server, disconnect from the server and work on the loaded data then update the server later.
- It is the **OracleDataAdapter** that manages connections with the data source and gives us ***disconnected*** behavior.

# Disconnected Mode

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- **A DataSet** is an in-memory data store that can hold a collection of tables each represented by DataTable object.
- **An OracleDataAdapter** uses Dataset to **fill** each **DataTable** in a DataSet with data from the Oracle database. The Dataset contains the copy of the data we requested
- **An OracleDataAdapter updates** changes in the DataSet to the Oracle database.

# Disconnected Mode

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- The **OracleDataAdapter** performs the following tasks when *filling* a **DataSet** with data:
  - Open connection
  - Retrieve data into DataSet
  - Close connection

# Using Disconnected Mode

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1. Create Dataset object
2. Create OracleDataAdapter object
  1. Command string
  2. Connection string
3. Add command parameters (if any)
4. Call dataAdapter.Fill(dataset).
5. Display from dataset on DataGridView

# Manage Members or Actors information using Oracle Data Adapter

☐ Members Information

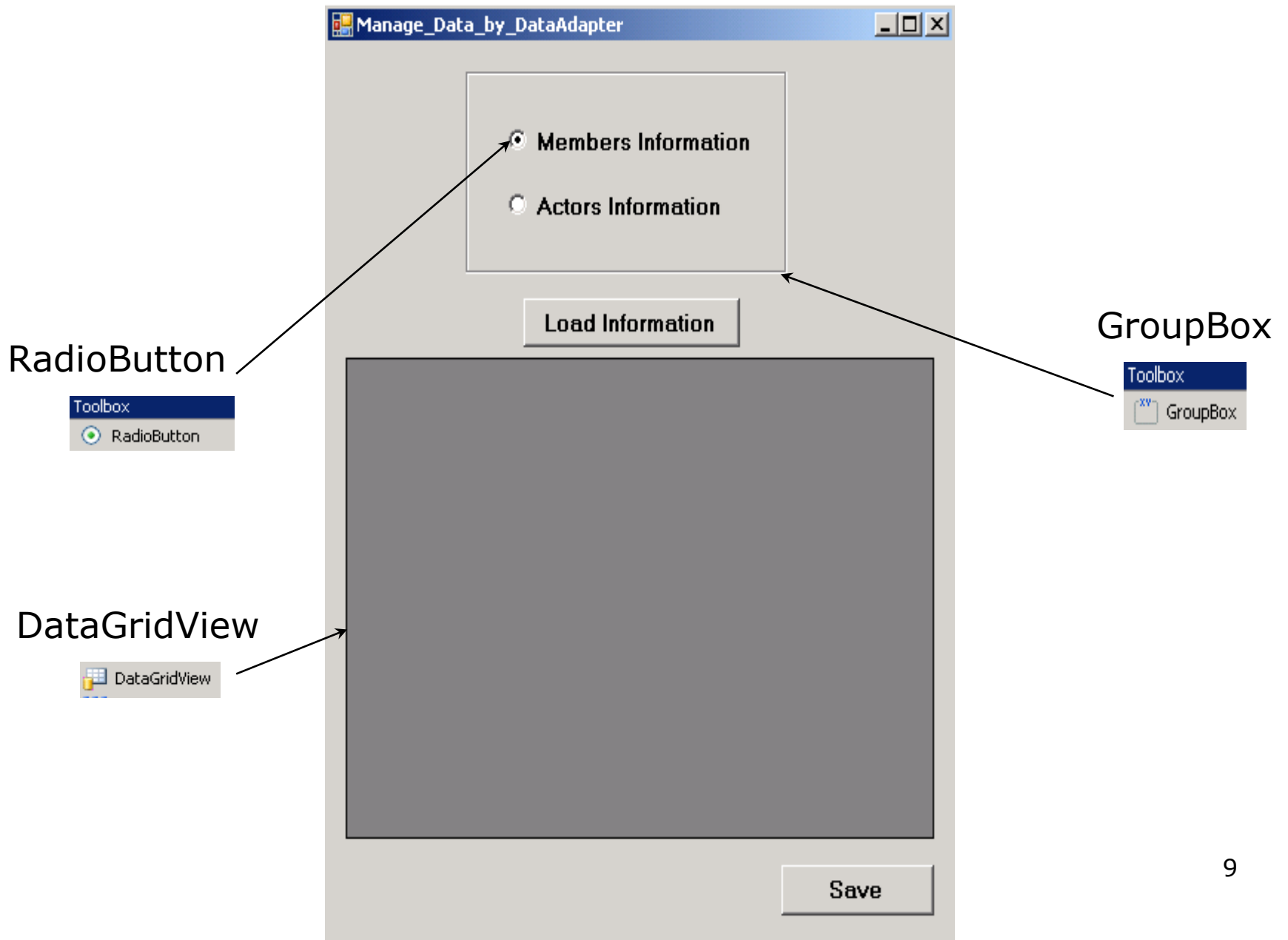
☒ Actors Information

Load Information

|   | ACTORID | ACTORNAME           | GENDER |
|---|---------|---------------------|--------|
| ▶ | 1       | Kristen Stewart     | F      |
|   | 2       | Robert Pattinson    | M      |
|   | 3       | Taylor Lautner      | M      |
|   | 4       | Rupert Grint        | M      |
|   | 5       | Daniel Radcliffe    | M      |
|   | 6       | Ralph Fiennes       | M      |
|   | 7       | Hank Azaria         | M      |
|   | 8       | Neil Patrick Harris | M      |
|   | 9       | Jayma Mays          | F      |
|   | 10      | Sofia Vergara       | F      |
|   | 11      | John Cleese         | M      |
|   | 12      | Jim Cummings        | M      |

Save





```
using System.Windows.Forms;  
using Oracle.DataAccess.Client;  
using Oracle.DataAccess.Types;
```

```
namespace DisconnectedMode_Startup  
{  
    public partial class Manage_Data_DataAdapter : Form  
    {  
        OracleDataAdapter adapter;  
        OracleCommandBuilder builder;  
        DataSet ds;
```

In *Load\_Information\_Button*, indicates whether the radio button is selected

```
private void loadInformation_Click(object sender, EventArgs e)
{
    string constr = "Data Source=orcl; User Id=scott;Password=tiger;";

    string cmdstr = "";

    if (rdo_members.Checked)
        cmdstr = "select * from members";

    else if (rdo_actors.Checked)
        cmdstr = "select * from actors";
}
```

- *Create a Data Adapter Object:*

```
adapter=new OracleDataAdapter(cmdstr, constr);
```

- *Create a DataSet Object:*

```
DataSet ds = new DataSet();
```

- *Filling the Dataset with the data*

`adapter.Fill(ds);`

- *Populate data grid control with this data table*

`dataGridView1.DataSource = ds.Tables[0];`

```
private void loadInformation_Click(object sender, EventArgs e)
{
    string constr = "Data Source=orcl; User Id=scott;Password=tiger;";

    string cmdstr = "";

    if (rdo_members.Checked)
        cmdstr = "select * from members";
    else if (rdo_actors.Checked)
        cmdstr = "select * from actors";

    adapter = new OracleDataAdapter(cmdstr, constr);
    ds = new DataSet();
    adapter.Fill(ds);
    dataGridView1.DataSource = ds.Tables[0];
}
```

# How To Save changes (Insert, Update & Delete)?

Delete or Update

Insert

The screenshot shows a Windows application window titled "Manage\_Data\_by\_DataAdapter". It contains two radio buttons: "Members Information" (selected) and "Actors Information". Below them is a "Load Information" button. A table displays member data with columns: MEMBERID, MEMNAME, JOINDATE, and DOB. The first row is selected. Below the table is a large grey area for editing. Annotations with arrows point to the first row (labeled "Delete or Update") and the asterisk row (labeled "Insert"). A "Save" button is at the bottom right.

|   | MEMBERID | MEMNAME | JOINDATE | DOB       |
|---|----------|---------|----------|-----------|
| ▶ | 1        | Robert  | 1/1/2012 | 5/1/1988  |
|   | 2        | Ann     | 3/1/2012 | 4/28/1988 |
|   | 3        | Smith   | 4/1/2012 | 6/15/1987 |
|   | 4        | David   |          |           |
| * |          |         |          |           |

In **btn Save** Event Handler:

- Create **OracleCommandBuilder** object to provide automatic SQL generation for the **OracleDataAdapter** when updates are made to the database.
- Create the builder for the adapter to automatically generate the Command when needed.

```
OracleCommandBuilder builder =  
    new OracleCommandBuilder(adapter);
```



In **btn Save** Event Handler:

- The OracleCommandBuilder will create the UpdateCommand for the adapter to update the required table

`adapter.Update(ds.Tables[0]);`

```
private void save_Click(object sender, EventArgs e)
{
    builder = new OracleCommandBuilder(adapter);
    adapter.Update(ds.Tables[0]);
}
```

# Practice

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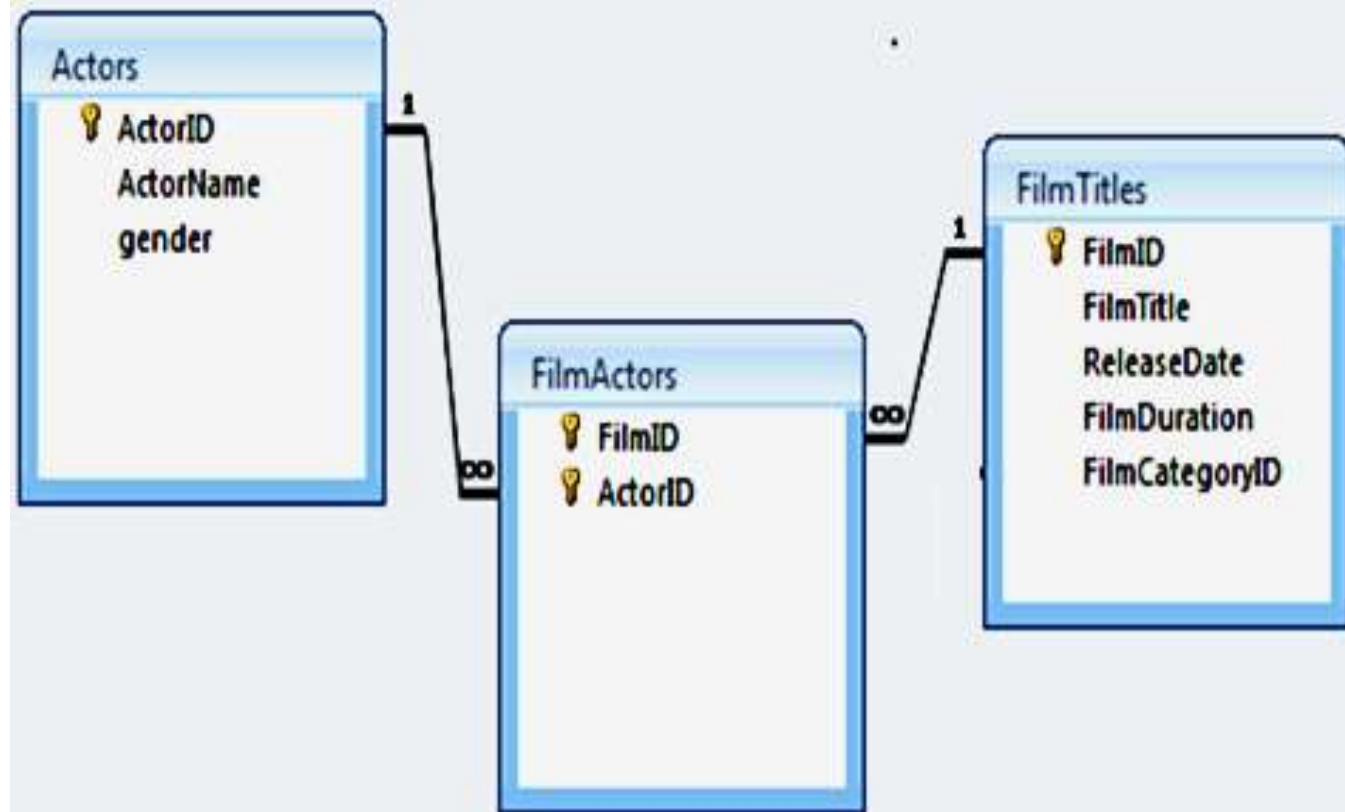
- Search Films based on the actor name.



The screenshot shows a Windows application window titled "SearchForm". Inside the window, there is a label "Actor Name" followed by a text input field containing "Tom Hanks". Below this is a "Search" button. Under the button is a table with two columns: "FILMTITLE" and "RELEASEDATE". The table has three rows: a header row, a data row for "Toy Story 3" released on "6/18/2010", and a row with an asterisk in the first column and empty cells in the others. The table is set against a grey background.

|   | FILMTITLE   | RELEASEDATE |
|---|-------------|-------------|
| ▶ | Toy Story 3 | 6/18/2010   |
| * |             |             |

# Practice



Select FilmTitle,ReleaseDate

From FilmTitles f ,filmactors fa , actors ac

where f.FilmID = fa.FilmID

and ac.actorID = fa.actorid

and actorname = 'Tom Hanks'

# Practice (cont.)

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```
using Oracle.DataAccess.Client;  
using Oracle.DataAccess.Types;
```

```
namespace DisconnectedMode_Startup  
{  
    public partial class SearchFilms : Form  
    {  
        public SearchFilms()  
        {  
            InitializeComponent();  
        }  
  
        private void search_Click(object sender, EventArgs e)  
        {  
            string constr = "User Id=scott;Password=tiger;Data Source=orcl";  
            string cmdstr;
```

# Practice (cont.)

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- Pass actor name parameter to the adapter

```
// Search using 'Tom Hanks' or 'Will Smith'
private void search_Click(object sender, EventArgs e)
{
    string constr = "User Id=scott;Password=tiger;Data Source=orc";
    string cmdstr= @"select FilmTitle, ReleaseDate
                    from FilmTitles f , filmactors fa, actors ac
                    where f.FilmID = fa.FilmID
                    and ac.actorID = fa.actorid and actorname = :n ";

    OracleDataAdapter adapter = new OracleDataAdapter(cmdstr, constr);
    adapter.SelectCommand.Parameters.Add("n", txt_ActorName.Text);
    DataSet ds = new DataSet();
    adapter.Fill(ds);
    dgv_Films.DataSource = ds.Tables[0];
}
```

**Thank You**