APPLICATION DEVELOPMENT WITH VIEWS

ISE305 – DATABASE DESIGN & PRACTICE
SOME SLIDE MATERIAL FROM WATSON

Reading & Reference

• Form design
  • http://www.youtube.com/watch?v=Rj0ZBLlbsRc
What is a View?

- Derived table (virtual table)
- Behaves like a base table, but no physical table exists
- Stored query
View Advantages

- Reduce impact of database changes
- Simplify database usage
- Prevents users from accessing data they are not permitted to see
- Customizes the appearance of the DB

Might be a performance penalty on complex views

Three Schema Architecture
View Definition Example

Create a view - offerings taught by faculty in the MS department.

```
CREATE VIEW MS_View AS
    SELECT OfferNo, Course.CourseNo, CrsUnits, OffTerm, OffYear, Offering.FacSSN,
           FacFirstName, FacLastName, OffTime, OffDays
    FROM Faculty, Course, Offering
    WHERE FacDept = 'MS'
    AND Faculty.FacSSN = Offering.FacSSN
    AND Offering.CourseNo = Course.CourseNo;
```

We will use the CREATE VIEW SQL statement once we begin to use MySQL.

View Materialization

- Query\(_d\) → SQL Engine → Result
- Query\(_v\) → SQL Engine → View

Query\(_d\) → Query that defines a view
Query\(_v\) → Query that references a view
View Modification

Query_V: query that references a view

Query_B: modification of Query_V such that references to the view are replaced by references to base tables.

Single Table Updatable Views

- A view can be read-only or updatable
- Support modification statements
- Additional rules for single table updatable views
Hierarchical Forms

- Formatted window for data entry and display
- Contains
  - Main form
  - Sub-form
- Provides attractive interface for a 1-M relationship

The term "hierarchal form" or "sub-form" is used to describe a hierarchy (tree) with 1-M relationships.

Create a Form

- Select table and the Create Form
Forms

- Forms are made up of controls, (e.g., text boxes, buttons, etc.), grouped in a way that makes them easy to use
- The controls in the form are usually bound, or linked, to the tables or queries in your database
- Other uses
  - you can create a form that asks for input
  - generate a custom report based on that input

Types of Forms

- Detail – single data source (table or query)
- Split form – Single source detail form and data sheet (changes only one record at a time)
- Subforms (parent-child forms) – for 1-m relationships
- Multiple item forms - like a data sheet, but more control
- Navigation form – uses tabs and/or side menus
Form Design

• Access provides tools to easily design forms using the following steps:
  • Select a data source
  • Select a form type
• Once you have created an initial form, you can rearrange or delete controls

Example – Detail Form

• In the SBU_Awards DB, clicking Awards table and Form design obtains
Split Form

- In the SBU_Awards DB, clicking Awards table and Split Form obtains

Subform

- You can create a subform easily if the parent table has only one 1-m relationship
Subform Example

- Selecting OrganizationNames table and clicking Create Form obtains

Create Subform Manually

- To manually create a subform (when the parent table is the 1 side of more than one 1-m relationship)
  - Create a detail form for the table on the 1 side
  - Create a datasheet form for the table on the many side
  - Save the forms
  - Drag the datasheet form to the detail form
  - Click the build button in the Link Master Fields property of the child form
  - Link the two tables
Change Layout of Form

You can:
- Change the layout of your form
- Add form elements
- Delete form elements

Form components are arranged in a grid using the Layout view of the form.

Most changes involve drag and drop actions on your form layout.

Details in video on page 6 of reference.

Sizing Your Form

Design your forms to fit on your users' screens.

Example – a 1024×768 screen
- A form to fit this size should be about 9.75 inches wide.
- The sum of the heights of the sections should be about 5.6 inches to allow space for the Ribbon, status bar, and Windows taskbar.
Add Navigation

- You can add controls to navigate through records in your DB
- In Form Design Tools, click on Button
- A pop-up box enables you to select the type of navigation associated with the button (e.g., go to next record)

Analysis of Data Requirements

- Identify the 1-M relationship
- Identify the linking fields
- Determine other tables in the main form and the subform
- Determine updatable tables
- Write queries for the main form and subform

Think about the forms you will need in your project DB
Are We on Track?

• For the Employees DB, create:
  • A single table form (columnar) for the Employees table (use the wizard and select the ID, first name, and salary fields)
  • In the Form View, change the name and salary of one of the employees
  • Using Form Layout tools, change the appearance of the form
  • Using Form Design View, change the appearance (e.g., titles, width of fields, etc.)
  • In Design View add a navigation button (for the next record)

In case you do not have your tables, download Excel files from:
www.cs.stonybrook.edu/~ise305/Employees.xlsx and
www.cs.stonybrook.edu/~ise305/Departments.xlsx

Choose your own appearance. The above is only an example.

Are We on Track?

• For the Employees, create a Department form that has an Employee sub-form
  • Use the Form Wizard
  • Create an interesting design (not example design)
  • Include a previous button