

Forms & Reports

Part 1 of 2

IS240 – DBMS

Lecture #9 – 2010-03-22

M. E. Kabay, PhD, CISSP-ISSMP

Assoc. Prof. Information Assurance
School of Business & Management, Norwich University

<mailto:mkabay@norwich.edu>

V: 802.479.7937

1

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Topics

- Uses of Forms
- Human Factors Design
- Menus
- Queries
- Form Properties
- Multiple Forms
- Integrity
- Large Projects
- Objects
- International Attributes
- Direct Manipulation of Objects
- Creating a Graphical Approach

TEXTBOOK CHAPTER 6
Pages 270-296

2

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Uses of Forms

- Collect Data
- Display Query Results
- Display Analysis and Computations
- Switchboard for other Forms and Reports
- Direct Manipulation of Objects
 - Graphics
 - Drag and Drop

3

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Human Factors Design

- User Control
 - Match user tasks.
 - Application responds to user control & events.
 - User customization
- Consistency
 - Layout, Design & colors
 - Actions
- Clarity
 - Organization
 - Purpose
 - Terminology
- Aesthetics
 - Art to enhance, graphics
 - Sound
- Feedback
 - Methods
 - ✓ Visual
 - ✓ Text
 - ✓ Audio
 - Uses
 - ✓ Acceptance of input
 - ✓ Changes to data
 - ✓ Completion of tasks
 - ✓ Events / Activation
- Forgiveness
 - Anticipation and correction of errors
 - Confirmation on delete and updates
 - Backup and recovery

4

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

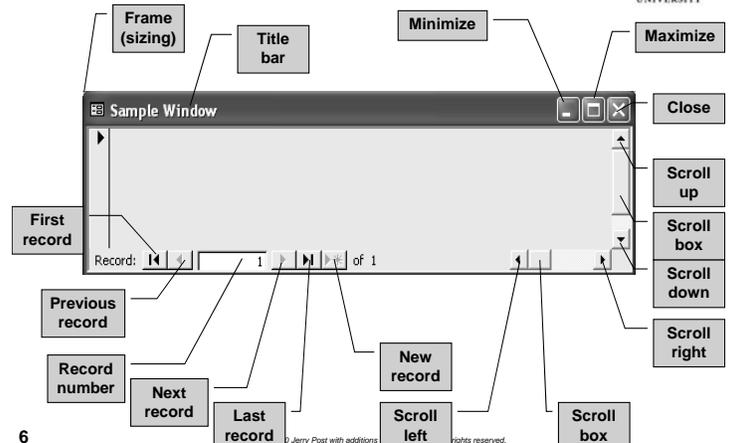
Windows Interface Standards

- *The Windows Interface: An Application Design Guide (Microsoft)*
- Navigation and Choices
 - Mouse, Icons
 - Keyboard, Short-cuts
 - Menus
- Selections from a list
 - Single
 - Contiguous Multiple
 - Disjoint Multiple
- Focus
 - Outline box
 - Cursor
- Manipulation
 - Activation
 - Drag and Drop
- Feedback
 - Progress indicators and status gauges
 - Flashing
 - Tool tips
 - Status bar
 - 3-D controls
 - Message boxes

5

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

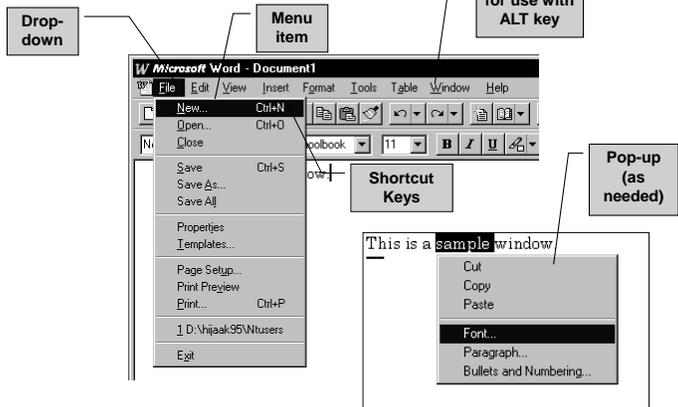
Windows Interface



6

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

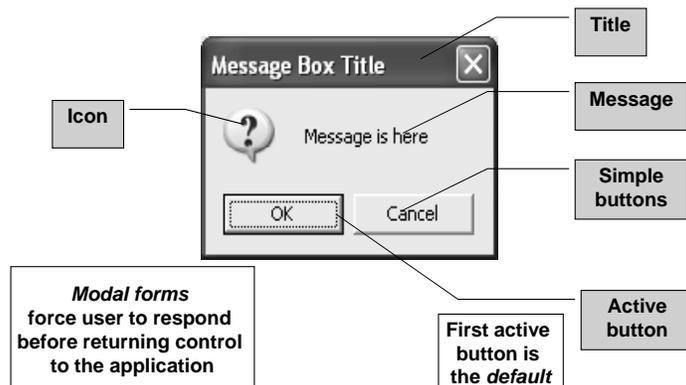
Windows Menus



7

Copyright © 2010, Jerry Post with additions by M. E. Kabay. All rights reserved.

Message Box (A Simple Form)



8

Copyright © 2010, Jerry Post with additions by M. E. Kabay. All rights reserved.

Interface / Accessibility

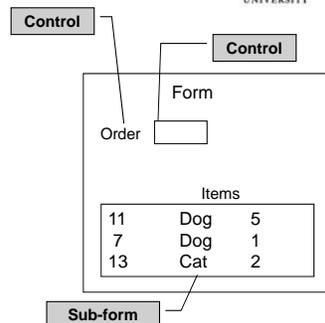
- Multiple Input Methods
 - ❑ Keyboard
 - ❑ Mouse
 - ❑ Voice
- Multiple Output
 - ❑ Visual
 - ❑ Sound
 - ❑ Color
- Some Suggestions:
 - ❑ Beware of Red/Green.
 - ❑ Avoid requiring rapid user responses.
 - ❑ Avoid rapid flashing on the screen.
 - ❑ Give users customization options.
 - ✓ Volume
 - ✓ Color
 - ✓ Typefaces & Fonts

9

Copyright © 2010, Jerry Post with additions by M. E. Kabay. All rights reserved.

Form Layout

- Types of Forms
 - ❑ Tabular
 - ❑ Single Row
 - ❑ Sub-forms (one-to-many)
 - ❑ Switchboard
- Controls
 - ❑ Focus is active control
 - ❑ Often changes appearance
- Form Properties
- Form Events
 - ❑ Open, close



10

Copyright © 2010, Jerry Post with additions by M. E. Kabay. All rights reserved.

Tabular Form

- Works best for single table.
- Designer can control data entry sequence.
- Often include buttons for sorting
 - ❑ Usually click column name
 - ❑ Highlight column name used for sort
 - ❑ Show triangle pointing up or down for ascending or descending sort

animalID	Name	Category	Breed	BIRTH	Gender	Registered	Color	ListPrice
2		Fish	Furzel	2004	Male		Black	\$12.00
4	Simon	Dog	Poodle	2004	Male		Red Brown	\$174.06
5		Fish	Shark	2004	Female		Grey	\$22.00
6	Rosie	Cat	Siamese	2004	Female	CFA	Grey	\$193.31
7	Eugene	Cat	Bombay	2004	Male	CFA	Black	\$279.54
8	Miranda	Dog	Notak Ter	2004	Female	AKC	Red	\$203.75
9		Fish	Furru	2004	Male		Black	\$7.00
10	Shani	Dog	Siberian Hus	2004	Female	AKC	Black/White	\$166.79
11	Susan	Dog	Chalation	2004	Female	AKC	Spotted	\$164.36
12	Lisha	Dog	Rottweiler	2004	Female	AKC	Brown	\$164.06
13		Fish	Faha	2004	Male		Red	\$12.00
14	Fina	Cat	Sphynx	2004	Female	CFA	Gold	\$143.94
15	Bonda	Dog	Cockie Span	2004	Female	AKC	Gold	\$264.85

11

Copyright © 2010, Jerry Post with additions by M. E. Kabay. All rights reserved.

Single Row (Columnar) Form

- Data for only one row.
- Designer can set optimal layout.
- Similar in appearance to paper forms.
- Can use color, graphics, and command buttons to make the form easier to use.
- Note the importance of the navigation buttons.
- Probably want a Find command.
- Useful to include subforms.

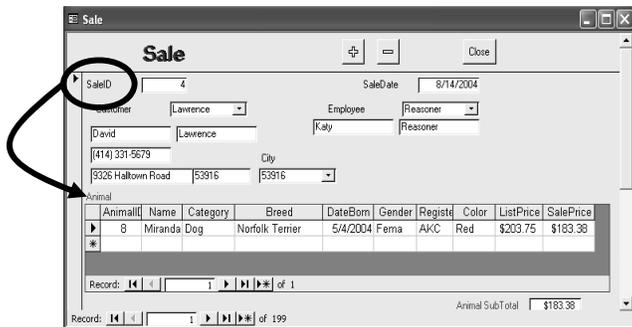
Navigation buttons

12

Copyright © 2010, Jerry Post with additions by M. E. Kabay. All rights reserved.

Sub-Forms

- Typically a one-to-many relationship.
- Subform contents are linked to the main form through a common column (not displayed on the subform.)
- Can have multiple subforms (Independent or Nested).

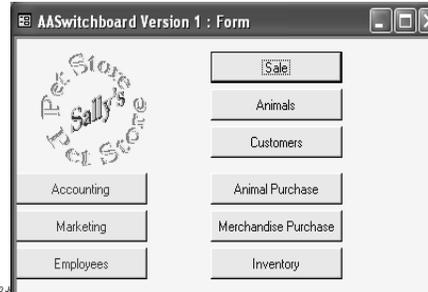


Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

13

Switchboard (Menu) Form

- Start with blank form
- Remove scrolling and navigation tools
- Graphics/Picture/Background
- Identify type of user and provide appropriate functions
- User can choose specific task
- Arrange functions by frequency of use
- Can branch to a second menu when needed for further options



Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

14

Menu Design

Main Menu

1. Setup Choices
2. Data Input
3. Print Reports
4. DOS Utilities
5. Backups

Customer Information

- Daily Sales Reports
- Friday Sales Meeting
- Monthly Customer Letters
- Exit

Hard to understand
(GeekSpeak)

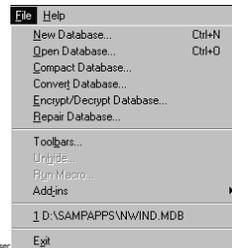
Organized by *user* tasks.

15

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Menus

- Consistency
 - ❑ With operating environment
 - ❑ Within project
- Pull-down
 - ❑ Name, Action
 - ❑ Shortcut keys
 - ❑ Access keys (&File, _File)
 - ❑ Breaks/groups (-)
 - ❑ Dimmed option
 - ❑ Check mark
- Submenus (>)
 - ❑ Logical groupings
 - ❑ Tradeoff: length v depth
- Form indicator (...)
- Pop-up
 - ❑ Miniature form
 - ❑ Tied to location/pointer
 - ❑ Right-mouse button
 - ❑ Attribute settings
 - ❑ Modal (keeps focus) or not



Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

16

Queries

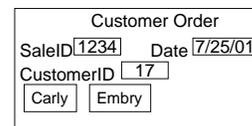
- Queries are used to automatically look up data.
 - ❑ e.g., Customer name
 - ❑ e.g., Product description
- Be very careful when using queries.
 - ❑ Each form should store data in only one table.
 - ❑ For multiple tables, use a subform or separate forms.
 - ❑ Usually Lock the look up data so it cannot be changed accidentally.

17

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Form Query Example

- Clerk enters a CustomerID.
 - ❑ Stored in the Order table.
- Query joins Sale and Customer.
 - ❑ Automatically matches the CustomerID.
 - ❑ Matching name is displayed on the form.
 - ❑ Do not include the join column (CustomerID) from the look up table (Customer).

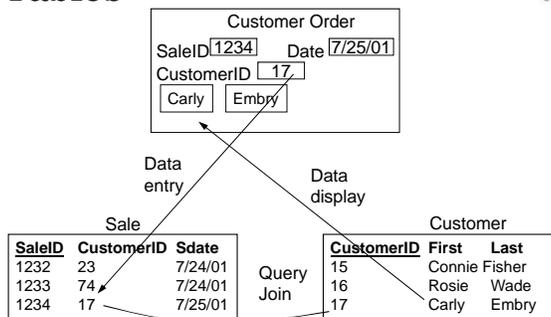


Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

18

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Form Query: Underlying Tables



19

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Form Properties (Some)

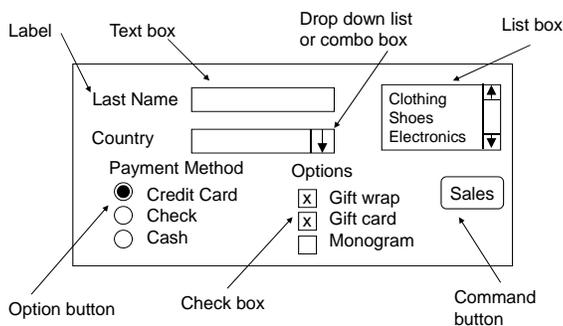


- Data
 - Base Table / Query
 - Filters
 - Sort
- Integrity
 - Edits
 - Additions, Deletions
 - Locks
- Other
 - Pop-up menus
 - Menu Bar
 - Help
- Format
 - Caption
 - Scroll Bars
 - Record Selectors
 - Navigation Buttons
 - Size and Centering
 - Background/Pictures
 - Colors
 - Tab Order

20

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Controls on Forms (Basic)



21

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Pictures



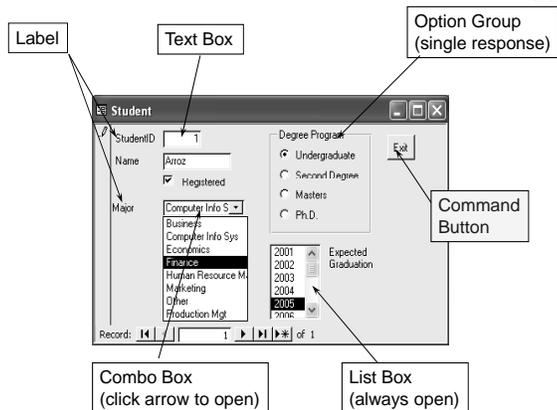
- Background pictures
 - ✦ Unbound, unchanging.
 - ✦ Stored with the form.
 - ✦ Keep edit screen readable.
 - ✦ Sizing (zoom, scale, clip).
- Pictures stored as data
 - ✦ Bound to a data column.
 - ✦ Define column as object.
 - ✦ Tie to scanner or graphics package through OLE.
 - ✦ Beware of data size
 - ✦ Resolution
 - ✦ Number of colors
 - ✦ User machine capabilities.



22

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Basic Controls



23

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Combo & List Boxes



- User selects from a list
- Combo box can enter new data, or restrict to list.
- Two basic uses:
 - Insert a value into a table
 - ✓ Choose from a list of preset options, e.g. gender.
 - ✓ Select from a different table, e.g., choose a customer.
 - Find the data record in this form that matches the choice.
- Be careful! Many systems do not distinguish between the two uses (enter data and search).
- Example when you want to use data entry:
 - On a sales form, use a combo box for customer.
 - It takes a value from the Customer table and inserts the ID into the Sale table.
- Example when you want to use a search:
 - On a Customer edit form, you *might* use a combo to search the Customer table.
 - Be sure the combo is not bound to the table!
 - Probably need to write code for search.

24

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Combo Box



- ControlSource sets the column to receive the choice (in the Sale table)
- RowSource generates the list of data to display.
 - ❑ Uses standard SQL.
 - ❑ Note 4 columns displayed.
 - ❑ First column is the one to store in the data table.

Name	CustomerID
ControlSource	CustomerID
Format	
DecimalPlaces	Auto
InputMask	
RowSource/Type	Table/Query
RowSource	SELECT ...
ColumnCount	4
ColumnHeads	No
ColumnWidths	...
BoundColumn	1

```
SELECT Customer.CustomerID,
Customer.LastName,
Customer.FirstName,
Customer.Phone FROM Customer
ORDER BY Customer.LastName;
```

Combo Box Sources

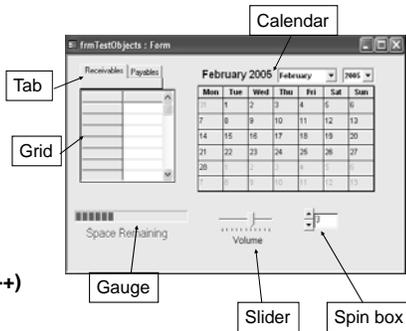


- Microsoft Access supports three methods:
 - ❑ Fixed list.
 - ❑ Query from a table.
 - ❑ Defined function.
- With some systems (e.g., Visual Basic), you write code to generate each list entry.
- You might use a fixed list for simple lists like "male", "female", "unknown".
- It is better to query from a table, even for simple lists.
 - ❑ Use a one column table.
 - ❑ Easier to add to a table than to change a combo box.
- Useful feature of list combo box.
 - ❑ The Row Source property is a text string.
 - ❑ This string can be generated by code.
 - ❑ List entries can be changed in response to user actions.
- Programmed function.
 - ❑ For straightforward cases, it is easier to use a fixed list and just change the text.
 - ❑ More complex cases, you can write a subroutine that generates the list choices following a specific format.

Controls on Forms (Complex)



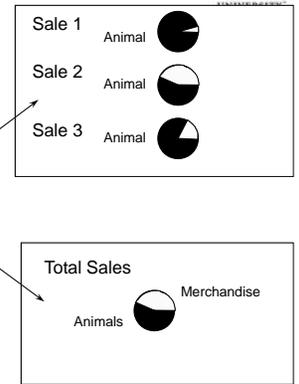
- Common
 - ❑ Tab
 - ❑ Grid
 - ❑ Calendar
 - ❑ Gauge
 - ❑ Slider
 - ❑ Spin Box
- Additional
 - ❑ Purchase
 - ❑ Create your own (C++)



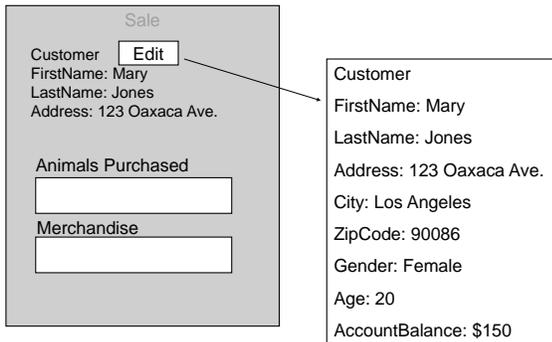
Charts



- Build a query that generates the data to be graphed.
 - ❑ Numeric data
 - ✓ Individual series
 - ✓ Aggregate data
 - ❑ Labels
 - ❑ Columns to link to form.
 - ❑ Summary chart--unlinked.
- Insert chart.
 - ❑ Set chart type.
 - ❑ Set up data and labels.
 - ❑ Set chart properties.
 - ❑ Verify size.



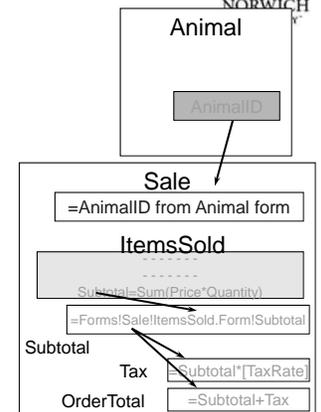
Multiple Forms



Multiple Forms



- Using data on other forms
 - ❑ The forms object collection
 - ❑ Forms![FormName]![Control]
- Subtotals and subforms
 - ❑ The form property
 - ❑ Forms![MainForm]![SubForm].Form![Control]
- Multi-page v Separate forms
 - ❑ Same recordset
 - ❑ Screen size
 - ❑ Side-by-side



Integrity

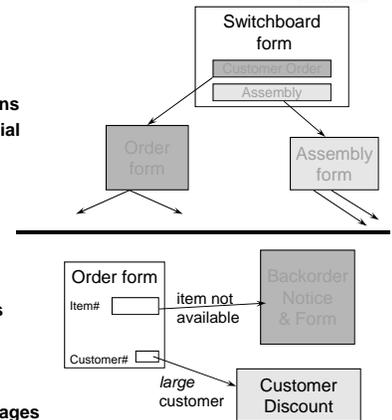
- Avoid relying on forms
 - ❑ Set integrity conditions in table definitions
 - ❑ Be sure to set referential integrity (relationships)
- Use forms to make it easy to enter quality data
 - ❑ Combo/list boxes
 - ❑ Menus
 - ❑ Pop-up forms
 - ❑ Ties to related forms
 - ❑ Data transfer across forms
 - ❑ Computations
 - ❑ Error checking & trapping
- Controls
 - ❑ Security rights
 - ❑ Data formats
 - ✓ Data entry
 - ✓ Round-off
 - ❑ Selectivity
 - ✓ Visible
 - ✓ Enabled & Locked
 - ✓ Example: no production change after item is sold.
- User assistance
 - ❑ Tool tips
 - ❑ Status bar
 - ❑ Menu
 - ❑ Help--context sensitive

31

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Large Projects

- Design Standards
 - ❑ Templates
 - ✓ Colors, layout
 - ✓ Titles
 - ✓ Actions, common buttons
 - ❑ Naming convention is crucial
 - ✓ Forms
 - ✓ Controls
 - ✓ Event procedures
 - ✓ Variables
- Team Coordination
 - ❑ Menu design
 - ✓ Within a form/standards
 - ✓ Across an application
 - ❑ Event / action diagrams
 - ✓ State diagram
 - ✓ Scenario diagram/messages



32

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

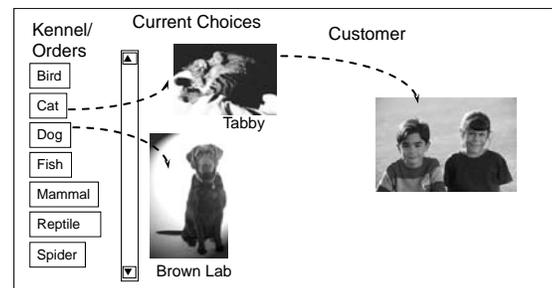
International Attributes

- Language
- Character sets and punctuation marks
- Sorting
- Data formats
 - ❑ Date
 - ❑ Time
 - ❑ Metric v English
 - ❑ Currency symbol and format
 - ❑ Separators (decimal, . . .)
 - ✓ Separators
 - ✓ International code prefix
 - ❑ Postal codes
 - ❑ National ID Numbers

33

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Direct Manipulation of Objects



- A graphical approach.
- Minimize data entry.
- Drag and drop objects (blue arrows).

34

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

Creating a Graphical Approach

- Get the hardware.
 - ❑ Images: Scanners
 - ❑ Sound: Microphone and Sound card
 - ❑ Video: Camera and capture card
 - ❑ Lots of disk space.
 - ❑ High speed processors.
- Add an object column to your table definition.
- Design the screens.
 - ❑ Be creative.
 - ❑ Get user input.
 - ❑ Make the user's job easier.
 - ❑ Avoid using graphics just for show.
 - ❑ Double-click
 - ❑ Drag-and-drop
- Programming!

35

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.

HOMEWORK & PLANNING

- Study Textbook Chapter 6 pp 270-296 using SQ3R
- For Sunday 23:55 4 Apr 2007 (2 weeks)
 - ❑ Complete LAB CHAPTER 6 Database work
 - ❑ Keep files for your own review
- Wednesday 7 April 2010:
 - ❑ Lecture on Forms & Reports (2)
- Friday 9 April 2010
 - ❑ Prepare for quiz we missed on 2 Apr 2010 due to Prof Kabay's horrible wretched equivalent to the bubonic plague:
 - ❑ Will cover
 - ✓ Advanced Queries (Lecture 8)
 - ✓ Forms & Reports (1) (Lecture 9)

36

Copyright © 2010 Jerry Post with additions by M. E. Kabay. All rights reserved.