UNIVERSITY of INFORMATION TECHNOLOGY Faculty of Information Systems

Chapter 5

User Interface Design

Dr. Cao Thi Nhan

CONTENT

- 1. Introduction
- 2. Principles of User-centered design
- 3. Designing the User interface
- 4. Output design
- 5. Input design

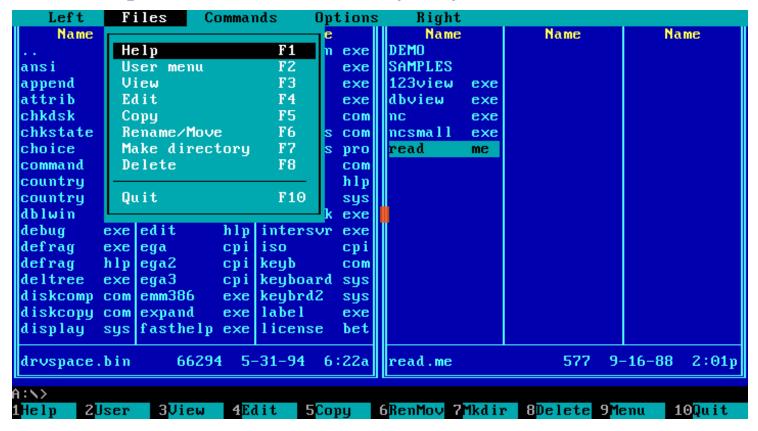
- 1. User Interface
- 2. Evolution of the User Interface
- 3. Human-Computer Interaction

- User interface (UI)
 - ✓ UI decribes how users interact with a computer system that affect two-way communications.
 - ✓ UI is what you see, hear, touch, or talk to when you use a computer (IBM)
- The importance of User Interface
 - ✓ System is easy to learn and use
 - ✓ Customer tends to judge all systems by User Interfaces

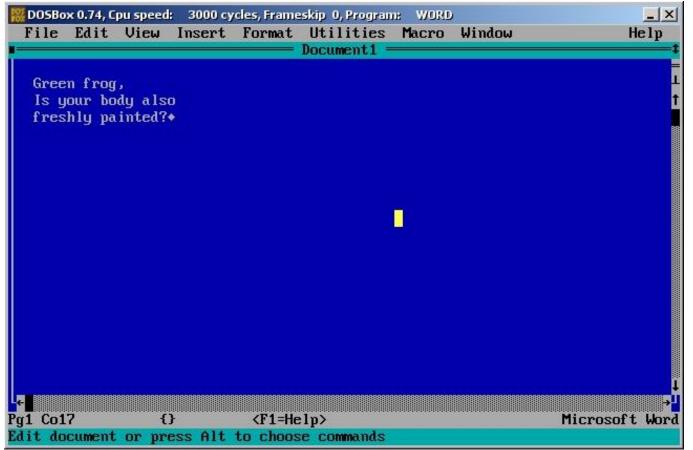
- Human-Computer Interaction
 - ✓ Command line
 - ✓ Graphic user Interface (GUI)

```
Enter today's date (m-d-y): 08-04-81
The IBM Personal Computer DOS
Version 1.00 (C)Copyright IBM Corp 1981
A>dir *.com
IBMBIO
          COM
                     1920
                           07-23-81
IBMDOS
          COM
                     6400 08-13-81
          COM
COMMAND
                     3231
                          08-04-81
FORMAT
          COM
                     2560 08-04-81
CHKDSK
          COM
                     1395 08-04-81
SYS
          COM
                      896 08-04-81
DISKCOPY
          COM
                     1216 08-04-81
DISKCOMP
          COM
                     1124
                          08-04-81
COMP
          COM
                     1620 08-04-81
DATE
          COM
                      252 08-04-81
TIME
          COM
                      250
                           08-04-81
MODE
          COM
                      860 08-04-81
EDL IN
          COM
                     2392
                          08-04-81
DEBUG
          COM
                     6049 08-04-81
                    10880 08-04-81
BASIC
          COM
BASICA
          COM
                    16256
                           08-04-81
A>_
```

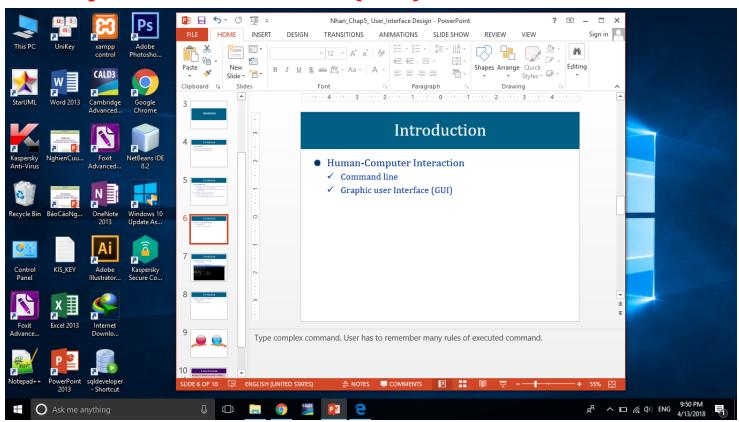
- Human-Computer Interaction
 - ✓ Command line
 - ✓ Graphic user Interface (GUI)



- Human-Computer Interaction
 - ✓ Command line
 - ✓ Graphic user Interface (GUI)



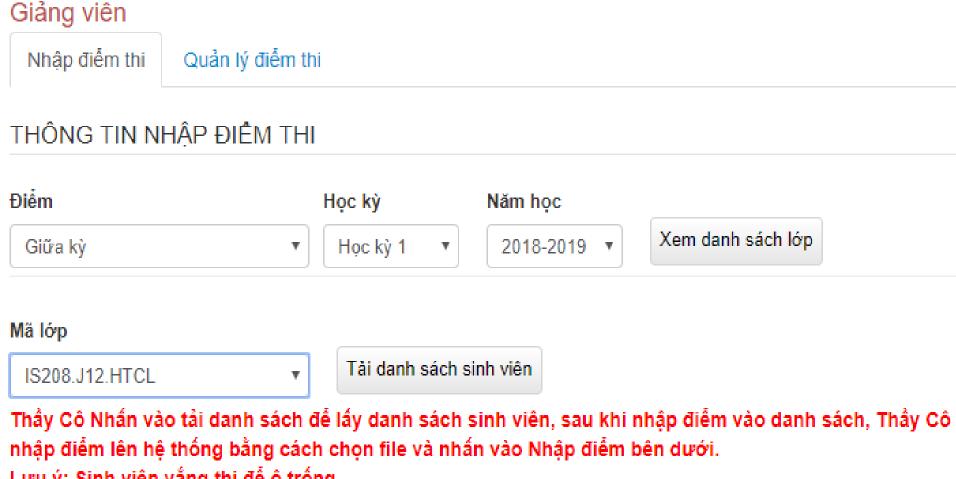
- Human-Computer Interaction
 - ✓ Command line
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- Human-Computer Interaction
 - ✓ Command line
 - ✓ Graphic user Interface (GUI)

Search Reservation

Reservation Number:	*	Family Name:	*	Middle and Given Name:	*
Departure	*				
Search Reservation					



Lưu ý: Sinh viên vắng thi để ô trống.

Nếu gặp trở ngại, vui lòng liên hệ P.DTDH hoặc VP.CTDB để được hỗ trợ.

File điểm sinh viên

Choose File No file chosen Nhập điểm

- Human-Computer Interaction
 - ✓ Command line
 - ✓ Graphic user Interface (GUI)



- Human-Computer Interaction
 - ✓ Command line
 - ✓ Graphic user Interface (GUI)



- Human-Computer Interaction
 - ✓ Command line
 - ✓ Graphic user Interface (GUI)



- Minority Report, 2002
 - science fiction movie
 - Ideas
 - Real products

- 1. Understand the Business
- 2. Maximize Graphical Effectiveness
- 3. Think like a User
- 4. Use Models and Prototypes
- 5. Focus on Usability
- 6. Invite Feedback
- 7. Document Everything

1. Understand the Business

- ✓ To design interfaces that helps users to perform their jobs.
- ✓ Interface designer must understand the business functions and how the system supports individual, departmental and enterprices goals.

2. Maximize Graphical Effectiveness

- ✓ Graphical User Interfaces are easy to learn and use.
- ✓ Well-designed interface helps users learn new system quickly.
- ✓ User can display and work with some windows on a single screen and transfer data between programs.

3. Think like a User

- ✓ Should understand user experiences, knowledge, and skill levels. If they are wide range of things → interface should be flexible enough to accommodate both novices and experienced users.
- ✓ Designer must think like a user and see the system through user's eyes.

4. Use Models and Prototypes

- ✓ It is essential to construct models and prototypes for user approval.
- ✓ Users must test all aspects of the interface design and provide feedback to the designers.

5. Focus on Usability

- ✓ User interface should include all tasks, commands, and communications between users and information system.
- ✓ Present the most common choice as a default, and allow user to select other options.

6. Invite Feedback

✓ Based on user's feedback, improvement the system.

7. Document Everything

✓ All screen designs should be documented for later use by programmers.

Basic guidelines

- 1. Design a transparent interface.
- 2. Create an interface that is easy to learn and use.
- 3. Enhance user productivity.
- 4. Make it easy for users to obtain help or correct errors.
- 5. Minimize input data problems.
- 6. Provide feedback to users.
- 7. Create an attractive layout and design.
- 8. Use familiar terms and images.
- 9. Add control features

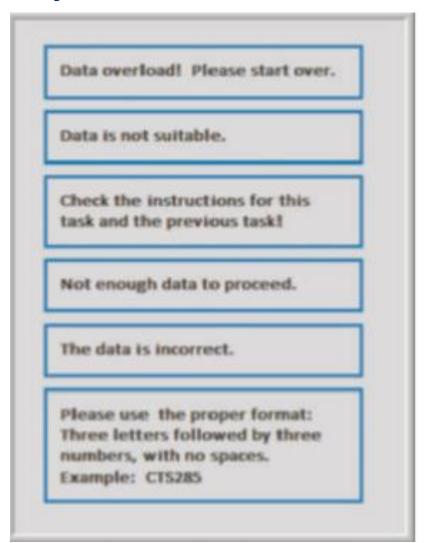
1. Design a transparent interface

- ✓ Facilitate the system design objectives, rather than calling attention to the interface.
- ✓ Create a design that is easy to learn and remember.
- ✓ Design the interface to improve user efficiency and productivity.
- ✓ Write commands, actions, and system responses that are consistent and predictable.
- ✓ Minimize data entry problems.
- ✓ Allow users to correct errors easily.
- ✓ Create a logical and attractive layout.

- 2. Create an interface that is easy to learn and use
 - ✓ Clearly label all controls, buttons, and icons
 - ✓ Select images that user can understand easily.
 - ✓ Provice on-screen instructions that are logical, concise, and clear.
 - ✓ Show all commands in a list of menu items, but dim any commands that are not currently available.
 - ✓ Make it easy to navigate or return to any level in the menu structure

2. Create an interface that is easy to learn and use



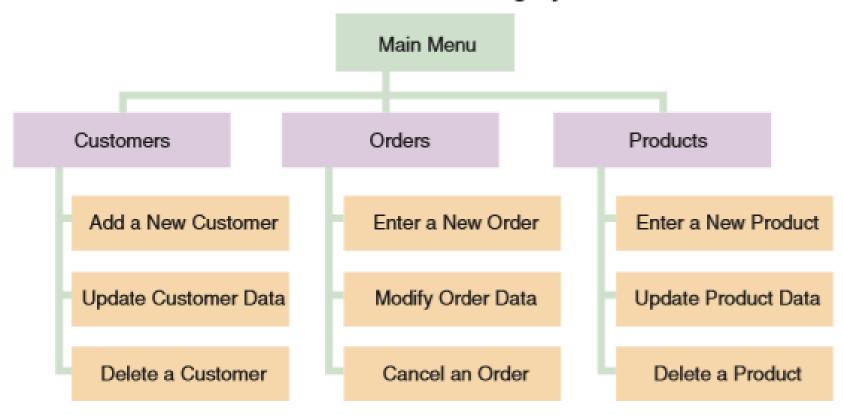


3. Enhance user productivity

- ✓ Organize tasks, commands, and functions in groups that resemble actual business operations.
- ✓ Depending on user, create alphabetical menu lists or place the selections used frequently at the top of the menu list.
- ✓ Use shortcut keys, use default values (in case almost of values in a field are the same)
- ✓ Use a duplicate value function that enables users to insert the value from the same field in the previous record
- ✓ Provide a fast-find feature that displays a list of possible values as soon as users enter the first few letters.
- ✓ Use a natural language feature that allows users to type commands or requests in normal English phrases

3. Enhance user productivity

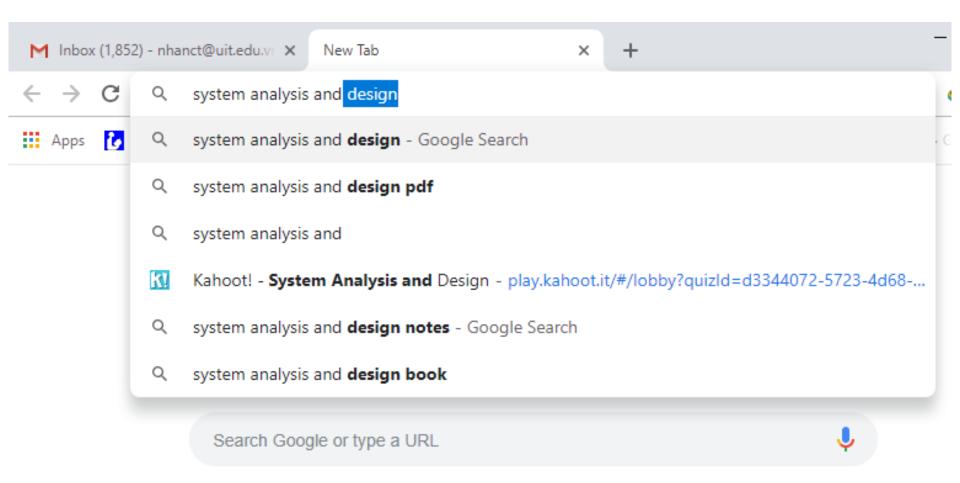
Customer Order Tracking System



3. Enhance user productivity

Order	Date	Saleperson	Amount
1010	9/24/2009	Wells	\$805.16
1011	9/24/2009	Davis	\$277.55
1012	9/25/2009	Carlson	\$504.83
1013	9/28/2009	Wells	\$563.49
1014	9/28/2009	Craig	\$849.08
1015	9/28/2009	Farmer	\$278.44
1016	9/29/2009	Wells	\$704.32
1016	9/29/2009 (Wells	

3. Enhance user productivity

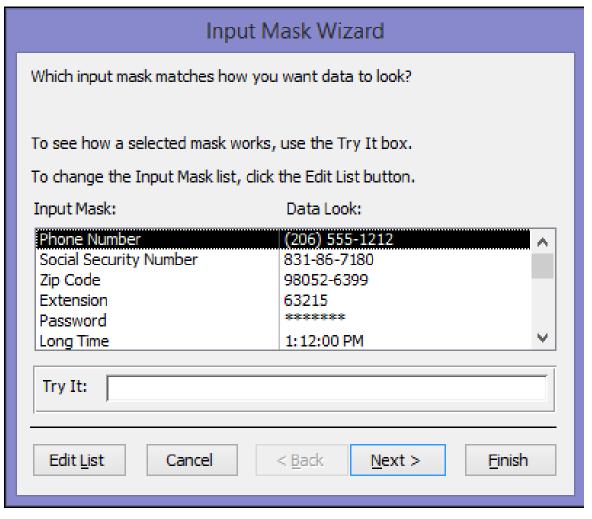


3. Enhance user productivity

https://www.speechtexter.com/

- 4. Make it easy for users to obtain help or correct errors
 - ✓ Ensure that help is always available.
 - ✓ When a user-entered command contains an error, highlight the erroneous part and allow the user to make the correction without retyping the entire command.
- 5. Minimize input data problems
 - ✓ Use input masks and data validation rules
 - ✓ Display event-driven messages and reminders.
 - When exiting the system, ask user if they want to save the current data.
 - Confirm in case that the user deletes data.

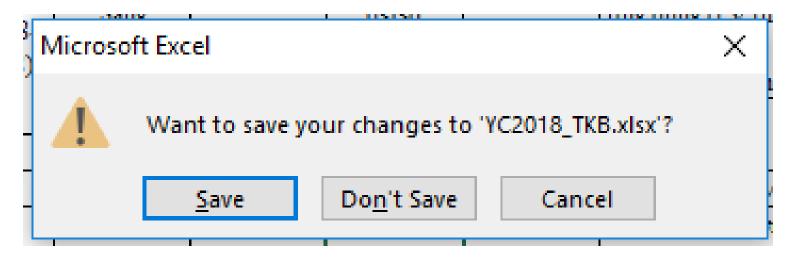
5. Minimize input data problems

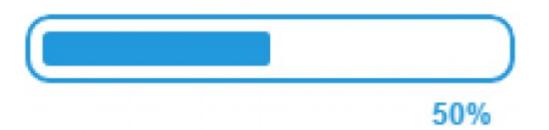


6. Provide feedback to users

- ✓ Display consistent messages at a logical place on the screen.
- ✓ Display messages on the screen for users to read them. In some cases, the screen should display messages until the user takes an action.
- ✓ Display whether the task or operation was successful or not. Ex: use messages such as Update completed, All transactions have been posted, or ID Number not found.
- ✓ Use messages that are specific, understandable, and professional.

6. Provide feedback to users





7. Create an attractive layout and design

- ✓ Use appropriate colors to highlight different areas of the screen.
- ✓ Use special effects sparingly.
- ✓ Group related objects and information.
- ✓ Display titles, messages, and instructions in a consistent manner and in the same general locations on all screens.
- ✓ Use consistent terminology. Ex: term Add, Delete, Cancel show the same action, same sound for same event...

8. Use familiar terms and images

- ✓ Use familiar commands/icon if possible (Cut, Copy, and Paste)
- ✓ Provide a Windows look and feel in your interface design if users are familiar with Windows-based applications
- ✓ Avoid complex terms and technical terms; instead, select terms that come from everyday business processes.

9. Add control features

✓ Use menu bars, toolbars, dialog boxes, text boxes, radio buttons, list boxes, scroll bars, drop-down list boxes, option buttons, check boxes, command buttons, calendar controls...

1. Do you have pets?

- Yes
- O No

2. Which pets do you have?

- **✓** Dog
- Cat
- Lizard
- □ Bird

9. Add control features

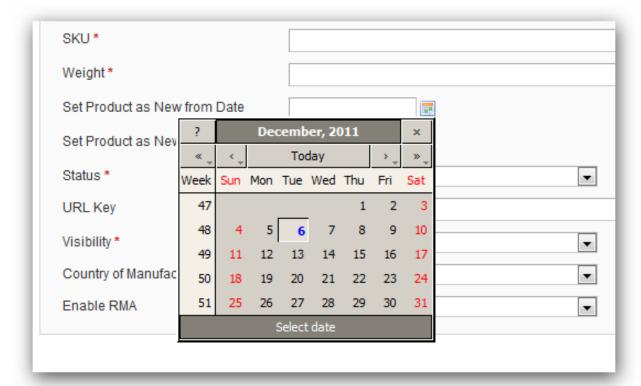
✓ Use menu bars, toolbars, dialog boxes, text boxes, radio buttons, list boxes, scroll bars, drop-down list boxes, option buttons, check boxes, command buttons, calendar controls...

Date 🗐 Region 🔻	Product 🔻	Qty 🔻	Cost 💌	Amt 🔻
1-Aug East	Paper	20	12.95	\$ 259.00
2-Aug West			_	\$ -
	Staples Binders		_	\$ -
	Erasers		_	\$ -
	Envelopes Paper dips		_	\$ -
	raper clips			
		_		

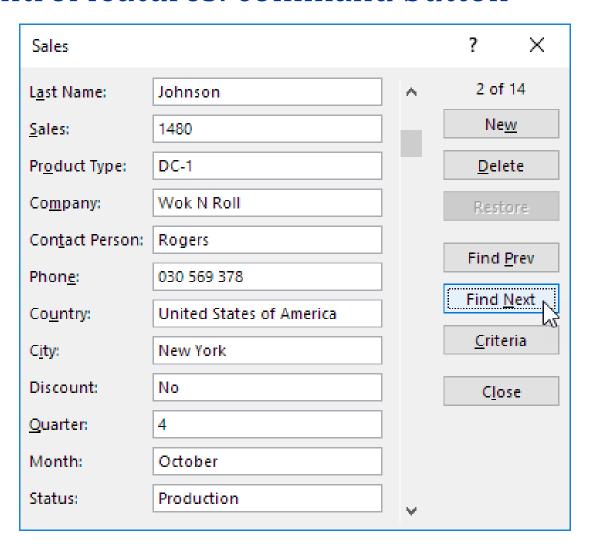
9. Add control features

✓ Use menu bars, toolbars, dialog boxes, text boxes, radio buttons, list boxes, scroll bars, drop-down list boxes, option buttons, check boxes, command buttons, calendar

controls...



9. Add control features: command button



- 1. Introduction
- 2. Types of reports
- 3. User involvement in Report Design
- 4. Report design principles
- 5. Discussion

Answer some common questions before designing output:

- 1. What is the purpose of the output?
- 2. Who wants the information, why is it needed, and how will it be used?
- 3. What specific information will be included?
- 4. Will the output be printed, viewed on-screen, or both? What type of device will the output go to?
- 5. When will the information be provided, and how often must it be updated?
- 6. Do security or confidentiality issues exist?

- ✓ Produce reports that are attractive and user friendly
- ✓ Reports must be easy to read and well organized
- ✓ Printed reports: maybe colours are not the same onscreen and printed report

2. Types of reports

A report must include the information that a user needs.

- ✓ Detail report
- ✓ Exception report
- ✓ Summary report

2. Types of reports

✓ Detail report: produces one or more lines of output for each record processed.

Page 1			/11	Employee Hours week ending date: 6/24/11		
	Total Hours	Overtime Hours	Regular Hours	Position	Employee Name	Store Number
	20.0	0.0	20.0	Clerk	Andres, Marguerite	8
	12.5	0.0	12.5	Clerk	Bogema, Michelle	8
	45.0	5.0	40.0	Asst Mgr	Davenport, Kim	8
	32.7	0.0	32.7	Clerk	Lemka, Susan	8
	48.5	8.5	40.0	Manager	Ramirez, Rudy	8
deta	20.0 }	0.0	20.0	Clerk	Ullery, Ruth	8
	48.4	8.4	40.0	Clerk	De Martini, Jennifer	17
	40.0	0.0	40.0	Manager	Haff, Lisa	17
	51.0	11.0	40.0	Clerk	Rittenbery, Sandra	17
	20.0	0.0	20.0	Clerk	Wyer, Elizabeth	17
	32.0	0.0	32.0	Clerk	Zeigler, Cecille	17

FIGURE 8-21 A detail report with one printed line per employee.

2. Types of reports

✓ Exception report: displays only those records that meet a specific condition or conditions.

		Overtime Report ending date: 6/24/11	Page 1
Store Number	Position	Employee Name	Overtime Hours
8	Asst Mgr	Davenport, Kim	5.0
	Manager	Ramirez, Rudy	8.5
		Store 8 totals:	13.5
17	Clerk	De Martini, Jennifer	8.4
	Clerk	Rittenbery, Sandra	11.0
		Store 17 totals:	19.4
		Grand total:	32.9

FIGURE 8-22 An exception report that shows information only for employees who worked overtime.

2. Types of reports

✓ Summary report: displays total figures and do not need supporting details (manager)

	Employee Hours Sum week ending date: 6/2			Page 1
Store Number		Regular Hours	Overtime Hours	Total Hours
8		181.2	13.5	194.7
17		172.0	19.4	191.4
		—	—	—
	Totals:	337.2	32.9	370.1

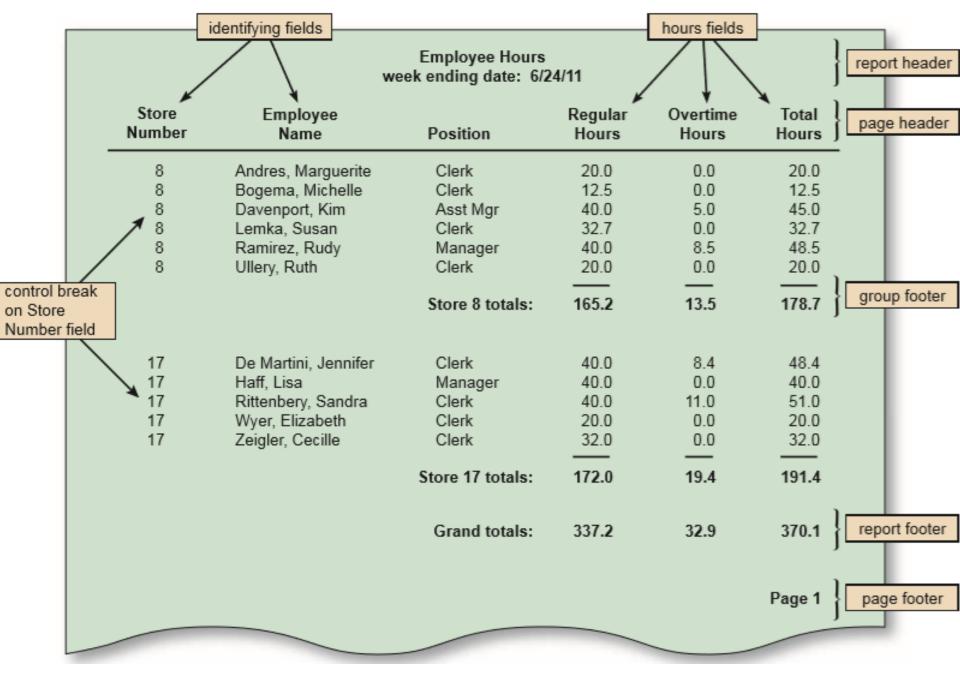
FIGURE 8-23 A summary report displays totals without showing details.

3. User involvement in Report Design

- ✓ Users should approve all report designs in advance.
- ✓ Prepare a sample report (mock-up, prototype) for users to review.

4. Report design principles

- ✓ Report Headers and Footers
- ✓ Page Headers and Footers
- ✓ Column Heading Alignment
- ✓ Column spacing,
- ✓ Field order, and
- ✓ Grouping of detail lines



ABC Company

[Street Address] [Address 2] [City, ST ZIP code]

Weekly Time Sheet with Breaks

Employee:		Mark		Employee phone:	Employee phone:	
Employee e-mail:		Mark@abc.com		Pay period start date: 1/1/2		
Manager:		David		Pay period end date:	1/14/2006	
Day	Date	Regular Hours	Overtime Hours	Sick	Vacation	Total
Monday	1/1/2006	8.00				8.00
Tuesday	1/2/2006	8.00	2.00			10.00
Wednesday	1/3/2006			8.00		8.00
Thursday	1/4/2006				8.00	8.00
Friday	1/5/2006	4.00	1.00			5.00
Saturday	1/6/2006	6.00				6.00
Sunday	1/7/2006		4.00			4.00
Sunday	1/14/2006	7.00				7.00
	Total	33.00	7.00	8.00	8.00	56.00
	Rate per hour	10.00	15.00	10.00	10.00	
	Total pay	\$330.00	\$105.00	\$80.00	\$80.00	\$595.00
E 1				_	Date	
Employee signatu	ire				Date	
Manager signatur	re			-	Date	

Cộng hòa xã hội chủ nghĩa Việt Nam

Độc lập - Tự do - Hạnh phúc

BÁO CÁO SỐ LƯỢNG HÀNG ĐÃ BÁN

TRONG NGÀY 20/3/2015

Đơn vị tiền tệ: VNĐ

STT	Mã hàng	Tên hàng	Số lượng	Đơn giá	Thành tiền	Ghichú
1	TV01	Ti vi Sony 19 inch	3	4.000.000	12.000.000	
2	TL02	Tù lạnh LG	1	6.000.000	6.000.000	
3	XM03	Xe máy Dream 2	2	28.000.000	56.000.000	
4	MS02	Máy sấy tóc Philip	5	170.000	850.000	
		Tổng cộng			74.850.000	

(Bằng chữ: Bảy mươi bốn triệu tám trăm năm mươi nghìn đồng)

Ngày giờ lập: 23h00 20/03/15.

Tp. HCM, ngày 20 tháng 03 năm 2015

Giám đốc

Phụ trách BP bán hàng

Lập bảng

Nguyễn Văn Hoàng

Trần Trọng Hữu

Lê Thị Mai



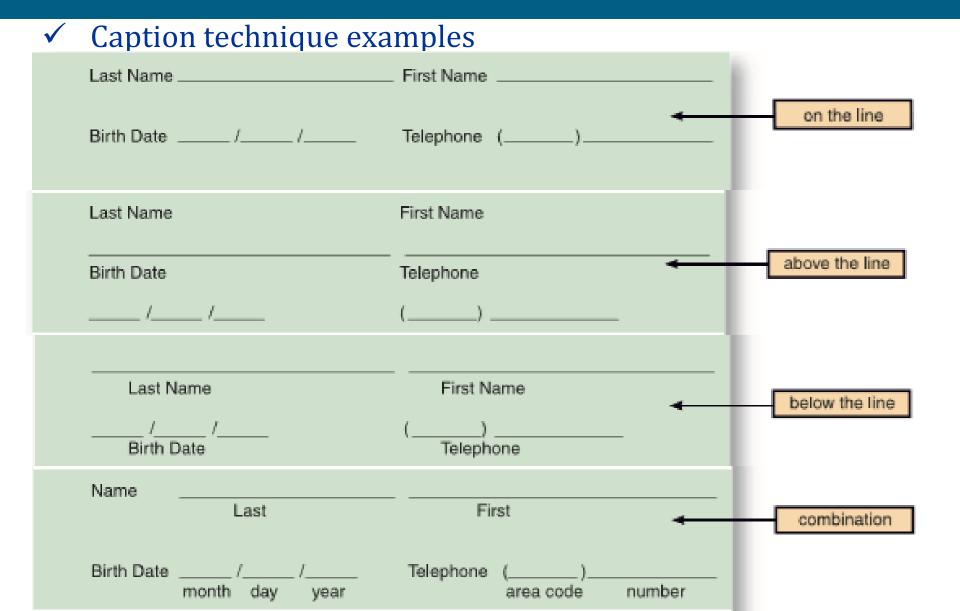


Input design

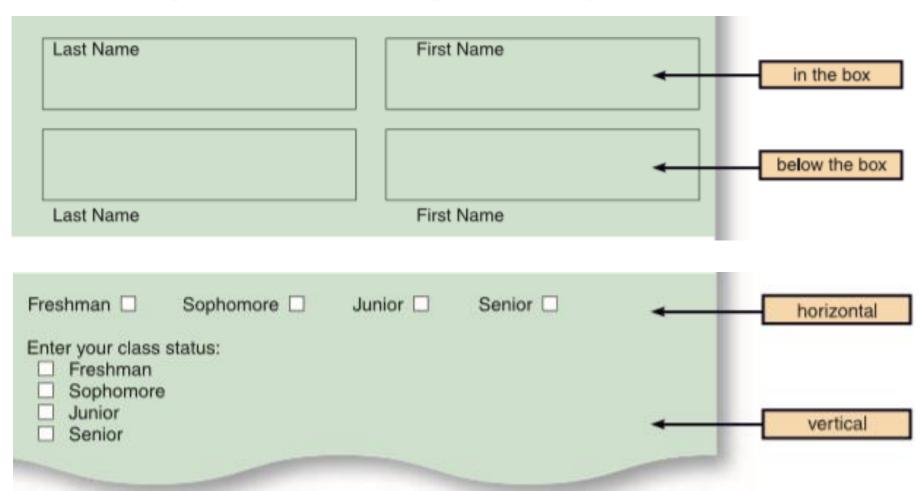
Input design

- 1. Introduction
- 2. Data Entry Screens
- 3. Input masks
- 4. Validation Rules
- 5. Discussion

- ✓ Input design requires attention to human factors and technology issues
- ✓ Good form layout makes the form easy to complete and provides enough space for users to enter the data.



✓ Box Caption, Check box caption examples



- ✓ Input screen
- ✓ Determine how data will be captured and entered into the system.
 - Data capture: uses operated device to identify source data and convert it into computer-readable form. Examples: credit card scanners, bar code readers.
 - Data entry: is the process of manually entering data into the information system usually in the form of keystrokes, mouse clicks, touch screens, or spoken words.

- ✓ Input screen
- ✓ Determine how data will be captured and entered into the system.
 - Data capture: uses operated device to identify source data and convert it into computer-readable form. Examples: credit card scanners, bar code readers.
 - Data entry: is the process of manually entering data into the information system usually in the form of keystrokes, mouse clicks, touch screens, or spoken words.

✓ Some tips

- 1. All captions/Labels have to be short, clear.
- 2. Special data: user does not enter. System generates and puts it into the form
- 3. Display the data corresponding to ID for checking.
- 4. Display a sample format
- 5. Display default values. If the default value is not appropriate, the operator can change it.
- 6. Use suitable objects (label, list, combo box, button...)
- 7. Provide users with an opportunity to confirm information.
- 8. Show the running situation.

- ✓ Input design:
 - 1. 1 table: CUSTOMER, ITEM,...
 - 2. 2 tables: ORDER and OrderDetail...

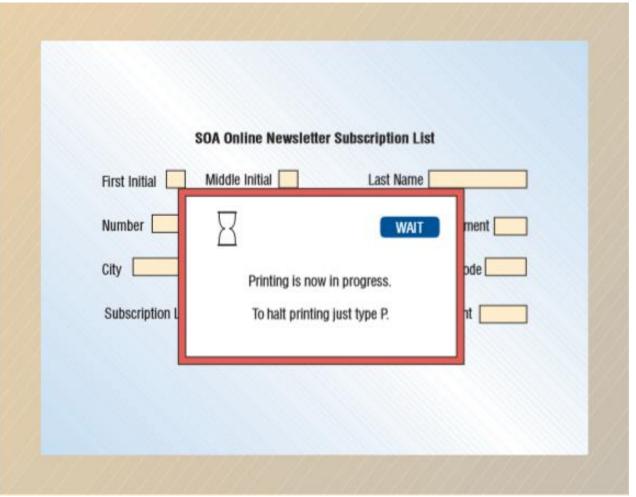
Feedback informs the user that input was not in the correct form

and lists options. (1) Good sides; (2) Improvements

First Initial	Middle Initial C	Last Na	me HURST
Number 33	49 Street SOUTH STRE	ET	Apartment
City LINC	OLN State	NE	Zip Code 68506
Subscription I	ength in Weeks 14	Method	of Payment CHK
	not currently b	length you enter eing offered. Plea 13, 26, or 52 wee	ase

Feedback tells the user that there will be a delay during printing.

(1) Good sides; (2) Improvements



A form-fill interface. (1) Good sides; (2) Improvements



Order. (1) Good sides; (2) Improvements





