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

Introduction

Introduction

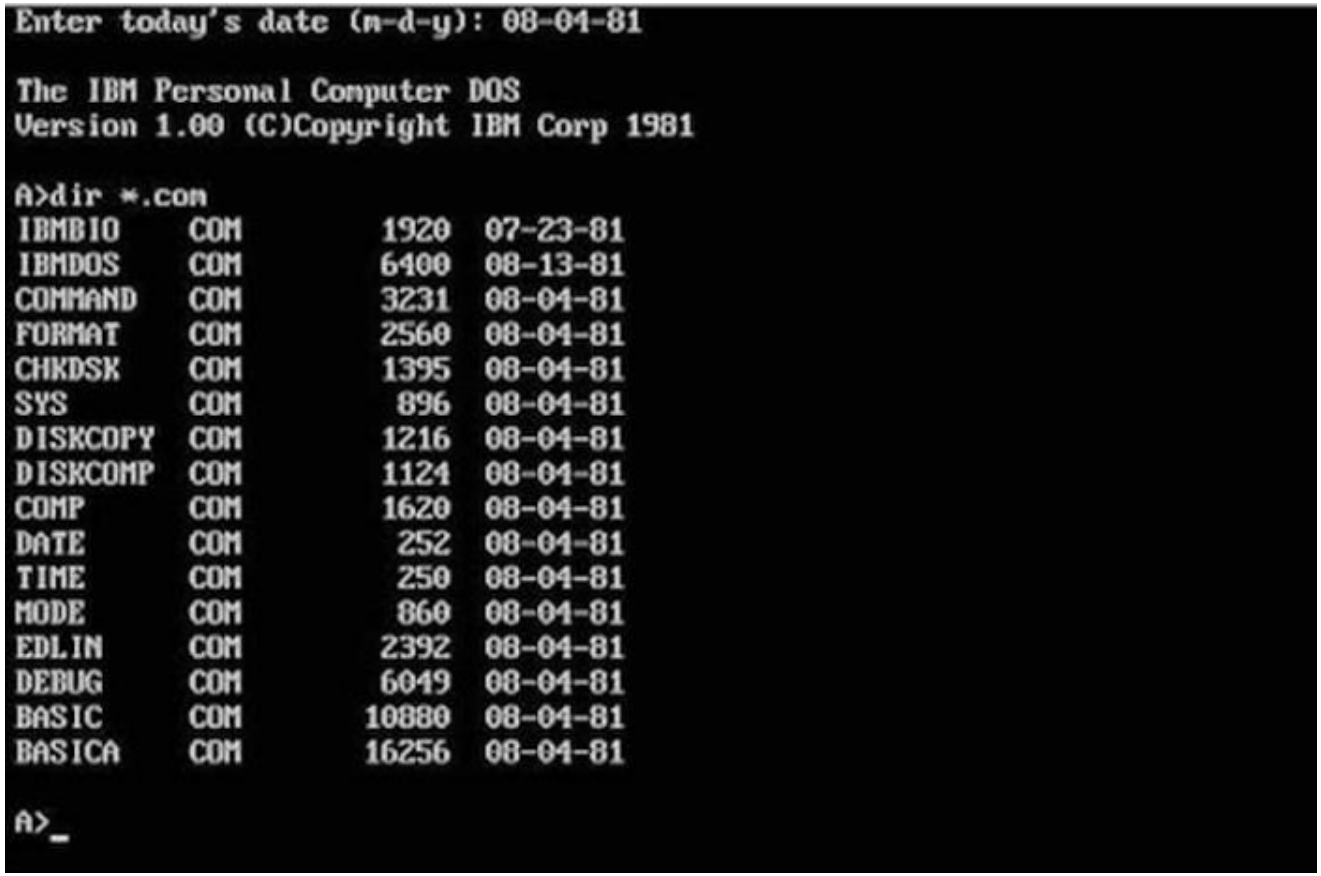
1. User Interface
2. Evolution of the User Interface
3. Human-Computer Interaction

Introduction

- 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

Introduction

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



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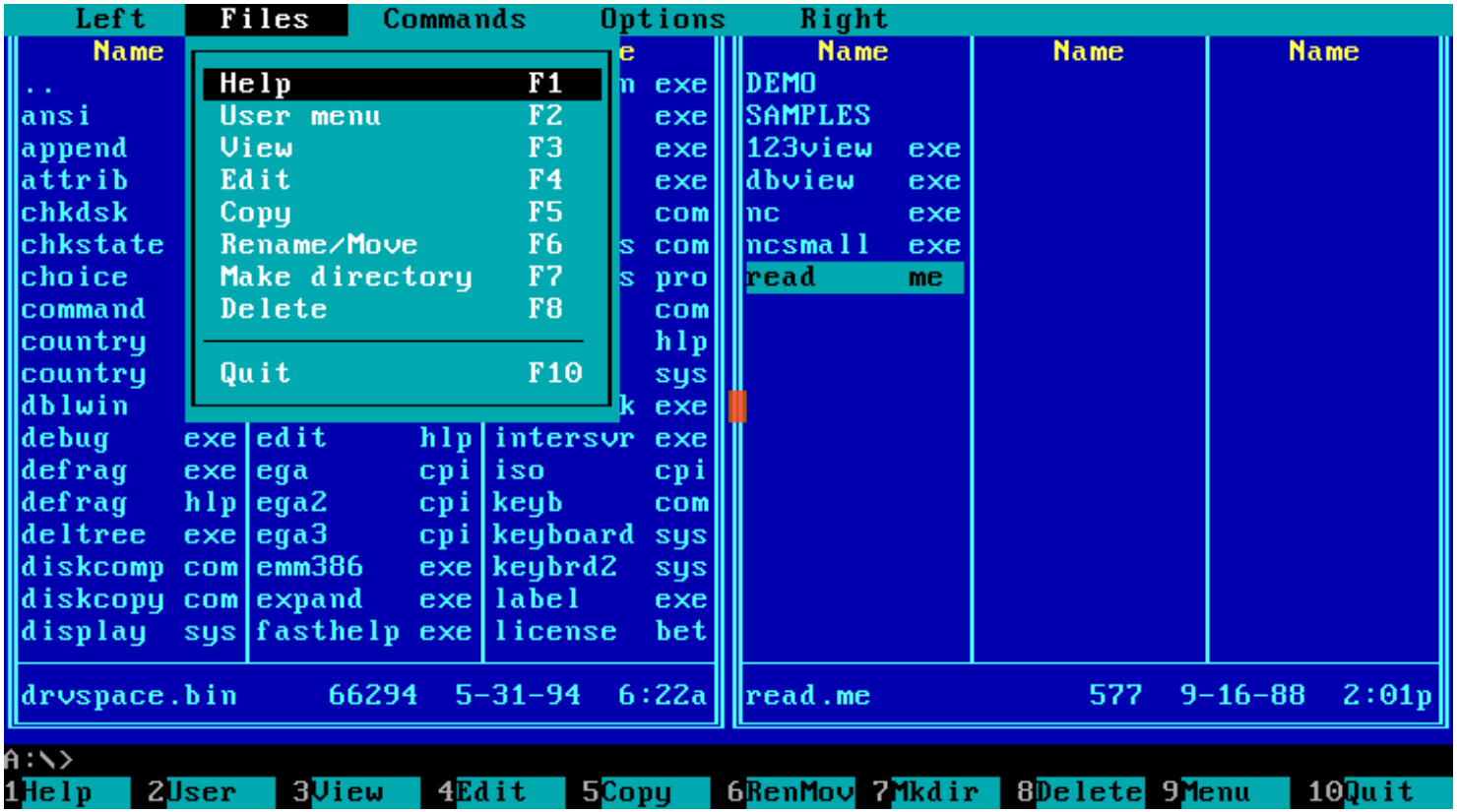

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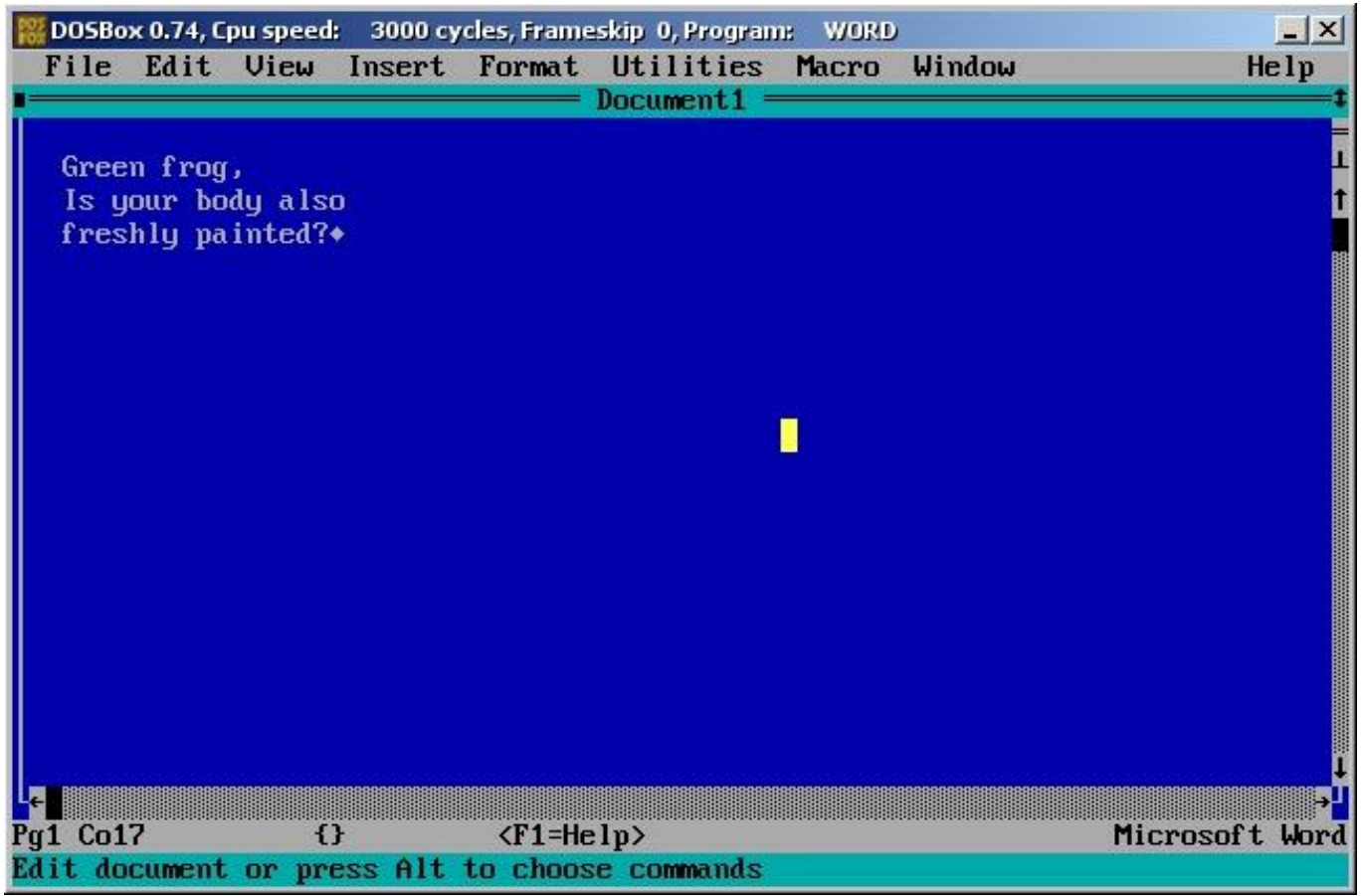

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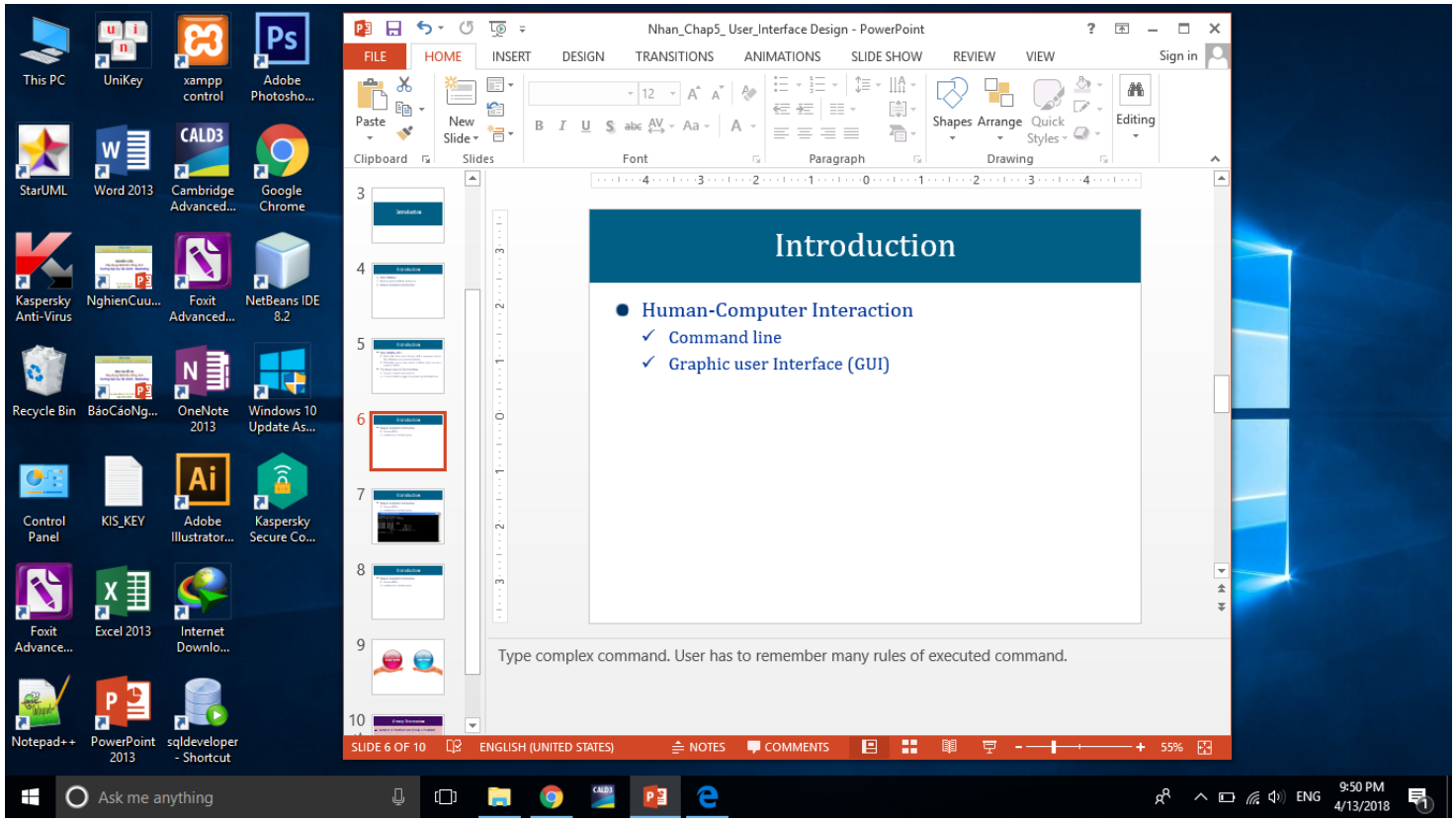


Introduction

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

Giảng viên

Nhập điểm thi | Quản lý điểm thi

THÔNG TIN NHẬP ĐIỂM THI

Điểm Giữa kỳ

Học kỳ Học kỳ 1

Năm học 2018-2019

Xem danh sách lớp

Mã lớp IS208.J12.HTCL

Tải danh sách sinh viên

Thầy Cô Nhấn vào tải danh sách để lấy danh sách sinh viên, sau khi nhập điểm vào danh sách, Thầy Cô nhập điểm lên hệ thống bằng cách chọn file và nhấn vào Nhập điểm bên dưới.

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.

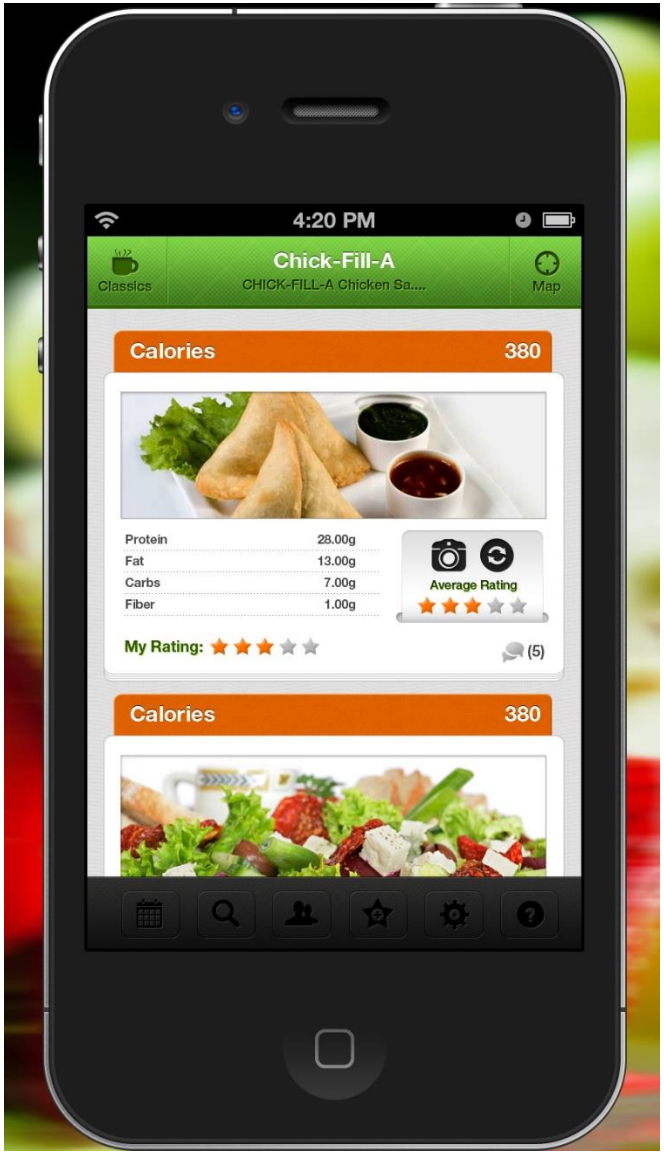
File điểm sinh viên

Choose File No file chosen

Nhập điểm

Introduction

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



Introduction

- Human-Computer Interaction
  - ✓ Command line
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Introduction

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

Principles of User-centered design

Principles of user-centered design

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

Principles of user-centered design

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.

Principles of user-centered design

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.

Principles of user-centered design

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.

Designing User Interface

Designing User Interface

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

Designing User Interface

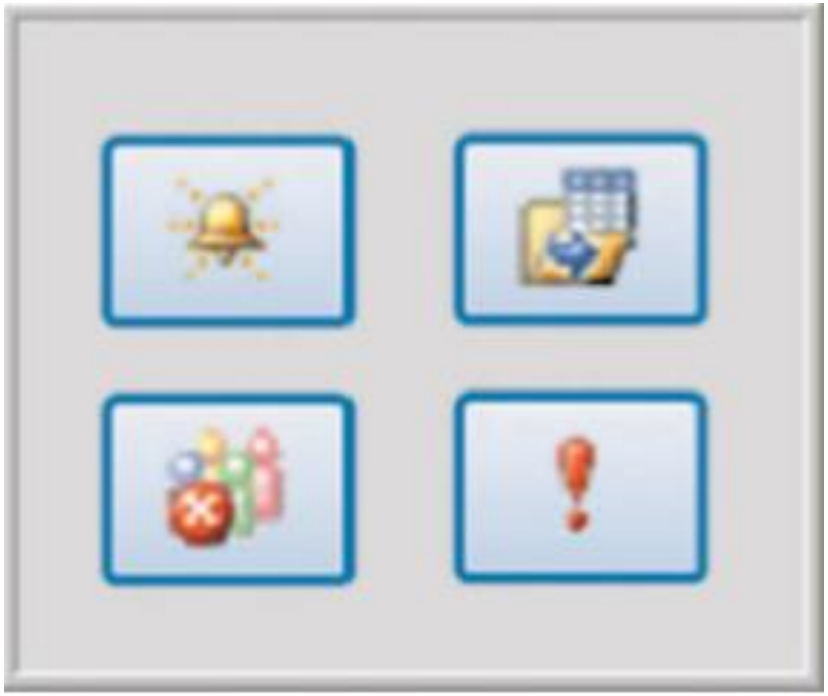
1. Design a transparent interface
   - ✓ Facilitate the system design objectives, rather than calling attention to the interface.
   - ✓ Create a design that is easy to learn and remember.
   - ✓ Design the interface to improve user efficiency and productivity.
   - ✓ Write commands, actions, and system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

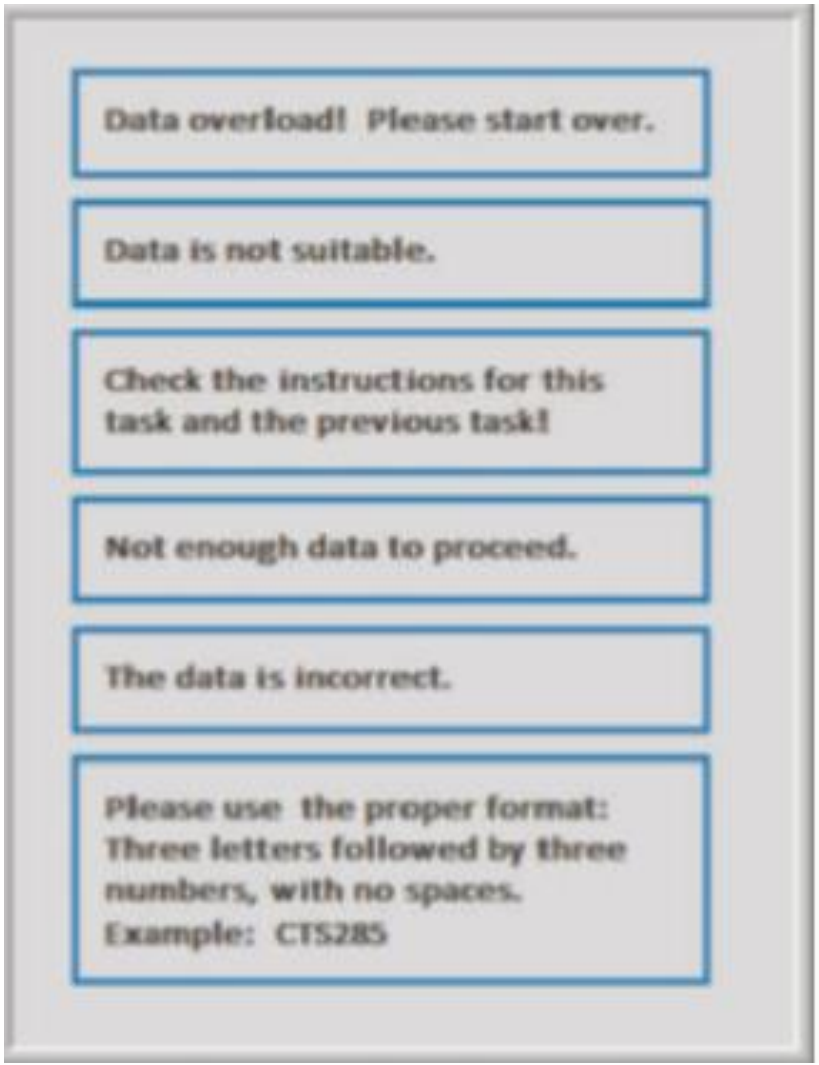
Designing User Interface

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

Designing User Interface

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



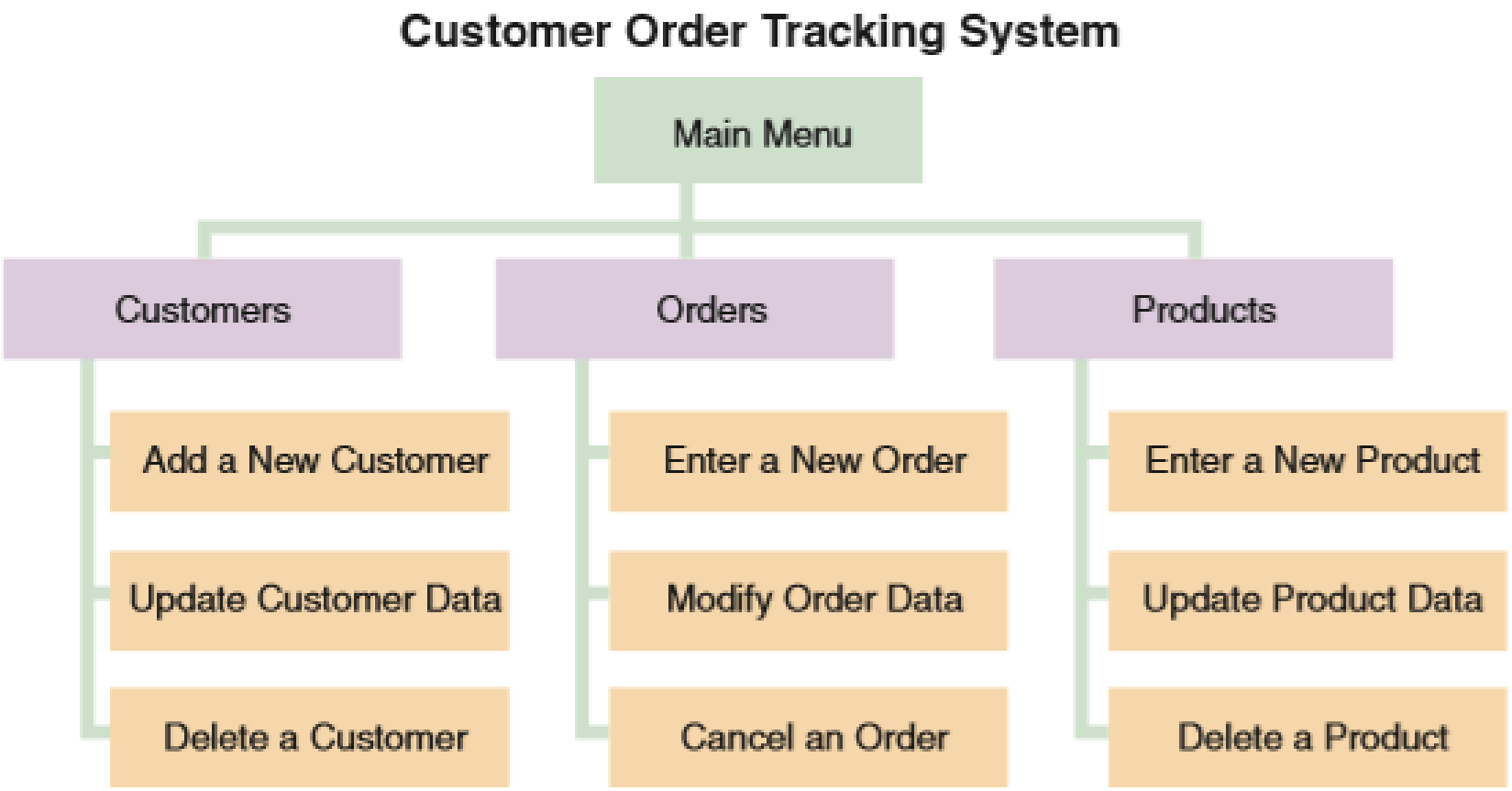


Designing User Interface

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

Designing User Interface

3. Enhance user productivity



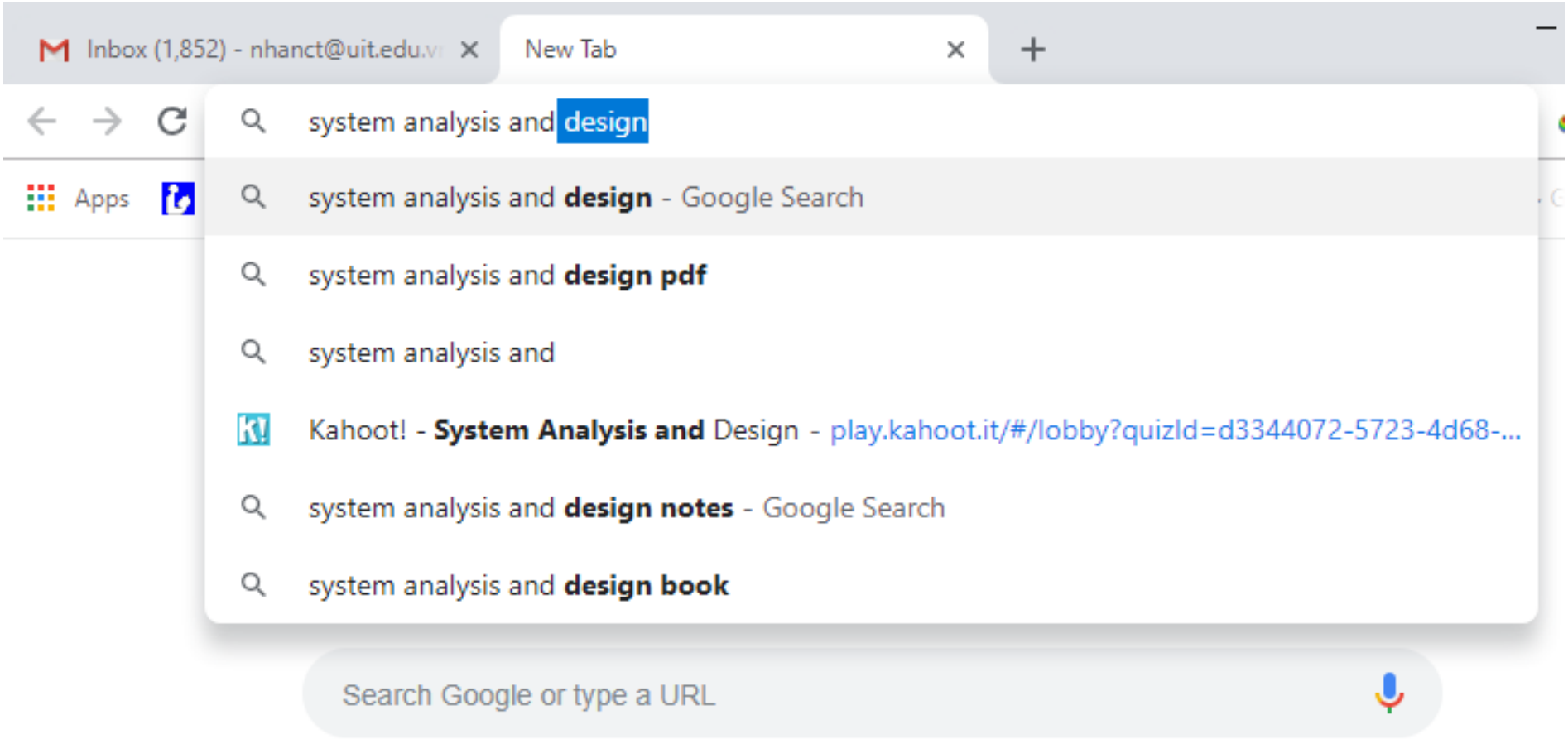
Designing User Interface

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	

Designing User Interface

3. Enhance user productivity



Designing User Interface

3. Enhance user productivity

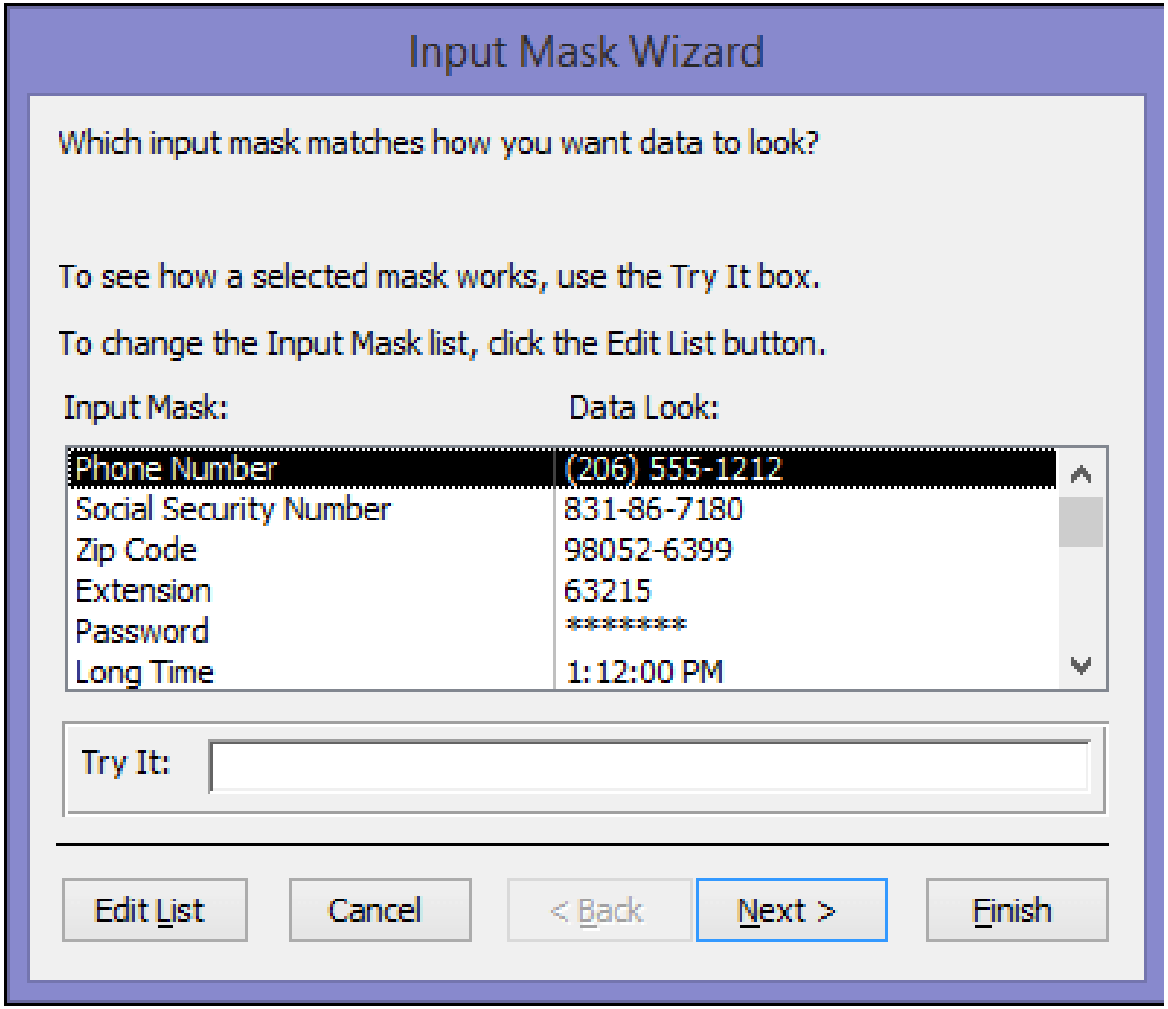
https://www.speechtexter.com/

Designing User Interface

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.

Designing User Interface

5. Minimize input data problems

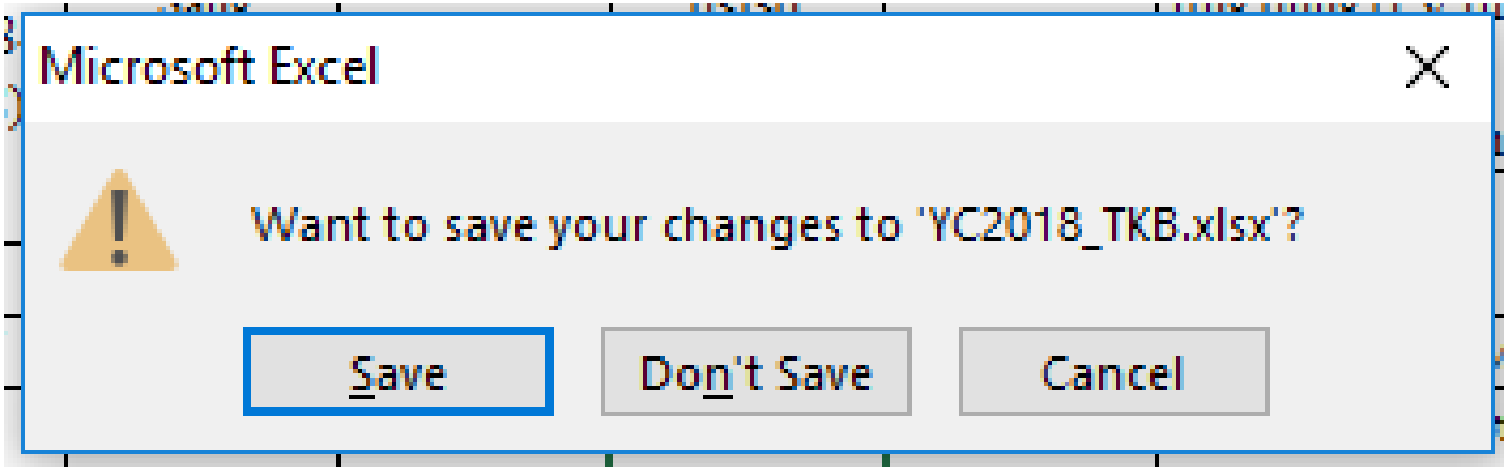


Designing User Interface

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.

Designing User Interface

6. Provide feedback to users



Designing User Interface

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…

Designing User Interface

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.

Designing User Interface

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…

Designing User Interface

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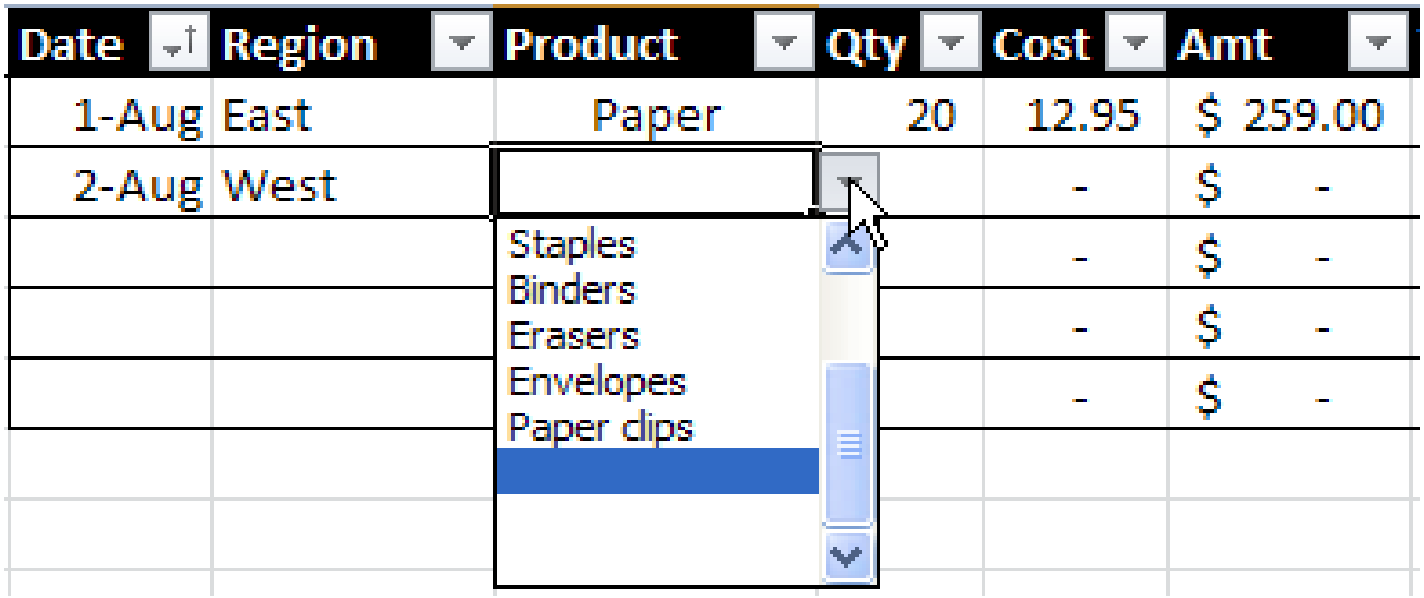

Designing User Interface

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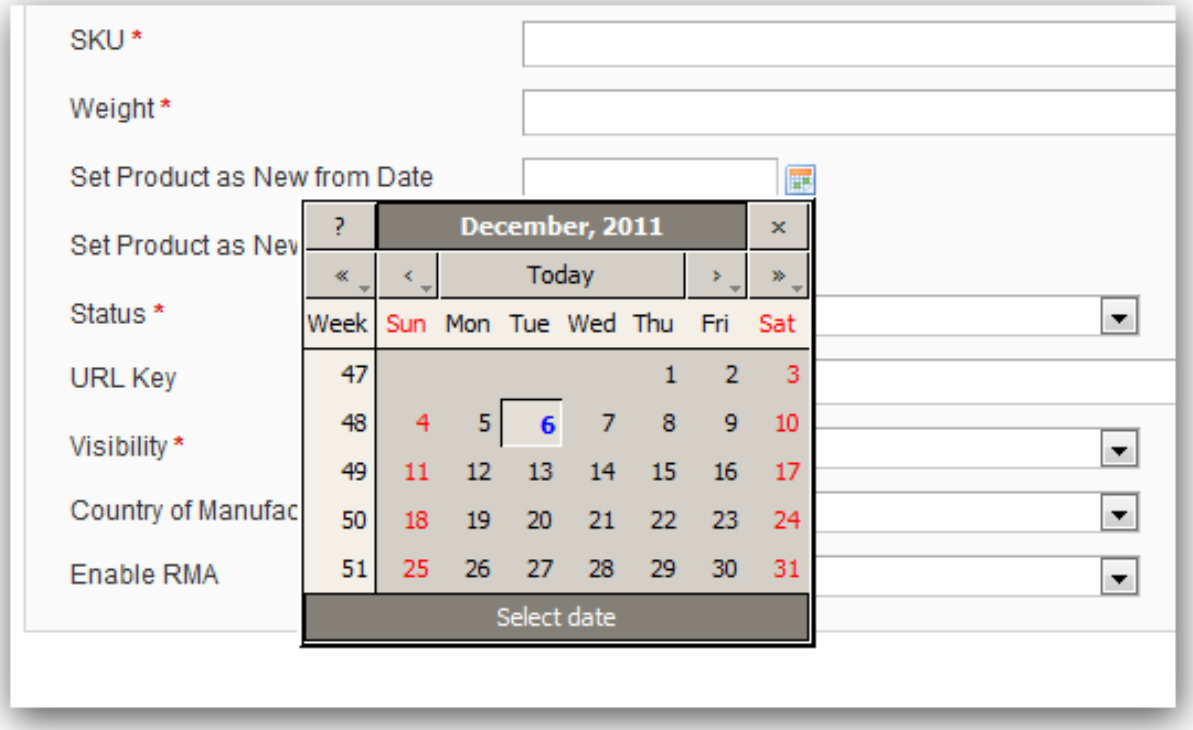
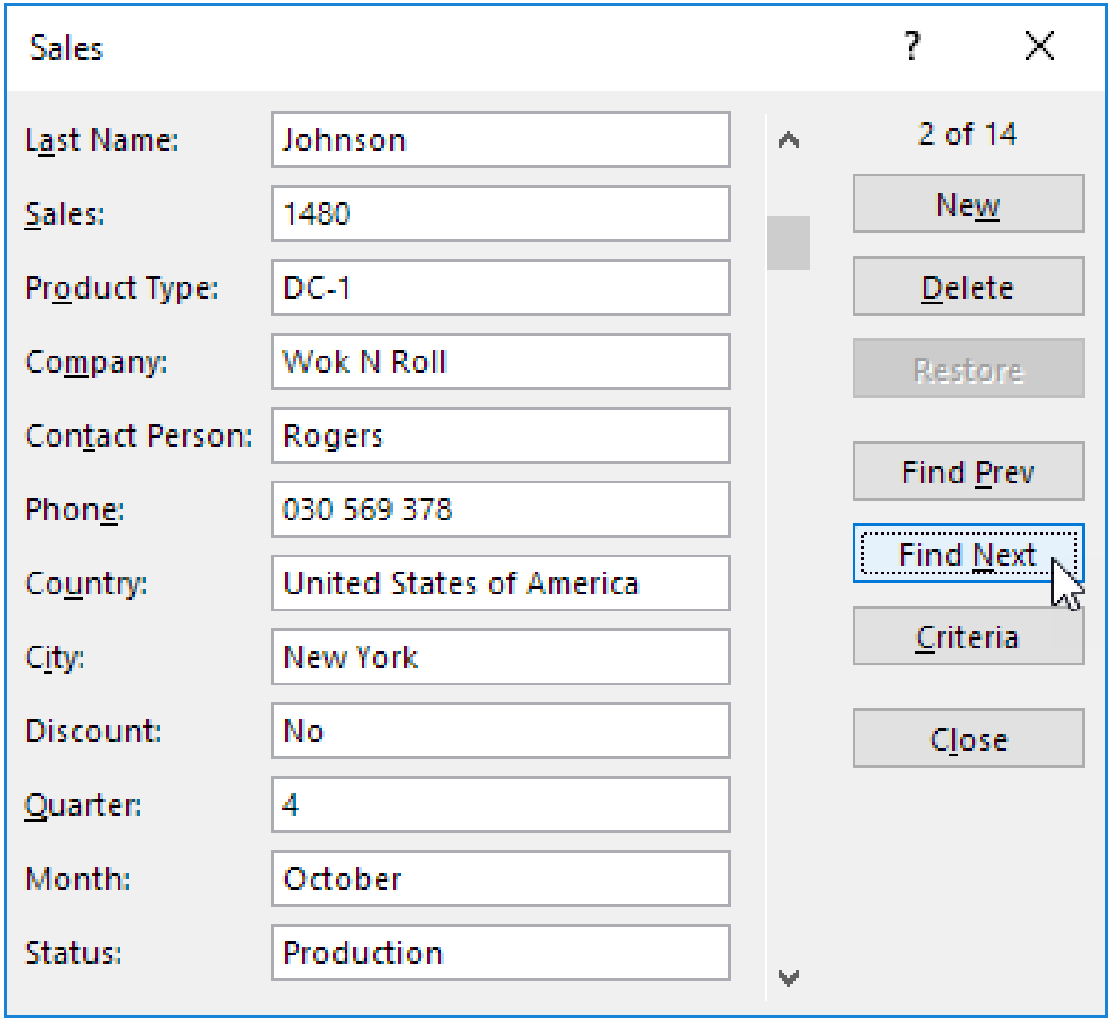


Designing User Interface

9. Add control features: command button



Output design

Output design

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

Introduction

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?

Introduction

- ✓ 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 on-screen and printed report

Question?

- Graphical reports and character-based reports, which one do you prefer? Why?

Output design

2. Types of reports

A report must include the information that a user needs.

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

Output design

2. Types of reports

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

Employee Hours
week ending date: 6/24/11

Page 1

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

detail lines

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

Output design

2. Types of reports

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

Overtime Report
week 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.

Output design

2. Types of reports
   - ✓ Summary report: displays total figures and do not need supporting details (manager)

Employee Hours Summary
week ending date: 6/24/11

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

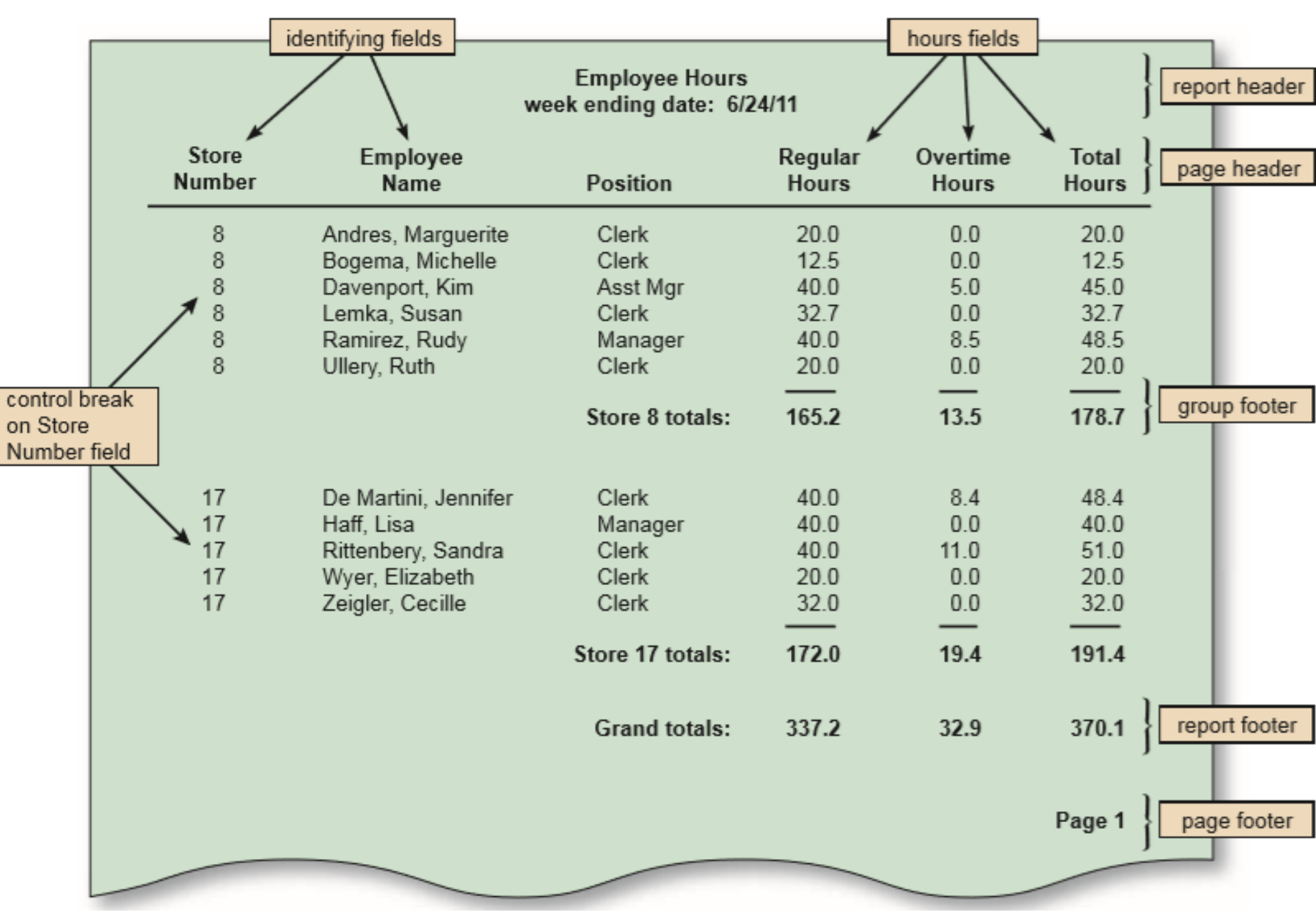
FIGURE 8-23 A summary report displays totals without showing details.

Output design

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.

Output design

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


identifying fields
hours fields
Employee Hours
week ending date: 6/24/11
report header
Store Number
Employee Name
Position
Regular Hours
Overtime Hours
Total Hours
page header
8 Andres, Marguerite Clerk 20.0 0.0 20.0
8 Bogema, Michelle Clerk 12.5 0.0 12.5
8 Davenport, Kim Asst Mgr 40.0 5.0 45.0
8 Lemka, Susan Clerk 32.7 0.0 32.7
8 Ramirez, Rudy Manager 40.0 8.5 48.5
8 Ullery, Ruth Clerk 20.0 0.0 20.0
Store 8 totals: 165.2 13.5 178.7
group footer
control break on Store Number field
17 De Martini, Jennifer Clerk 40.0 8.4 48.4
17 Haff, Lisa Manager 40.0 0.0 40.0
17 Rittenbery, Sandra Clerk 40.0 11.0 51.0
17 Wyer, Elizabeth Clerk 20.0 0.0 20.0
17 Zeigler, Cecille Clerk 32.0 0.0 32.0
Store 17 totals: 172.0 19.4 191.4
Grand totals: 337.2 32.9 370.1
report footer
Page 1
page footer

ABC Company

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

Weekly Time Sheet with Breaks

Employee:	Mark	Employee phone:	09836582174
Employee e-mail:	Mark@abc.com	Pay period start date:	1/1/2006
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

Employee signature

Date

Manager signature

Date

Công ty TNHH Tân Tiến

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	Ghi chú
1	TV01	Ti vi Sony 19 inch	3	4.000.000	12.000.000	
2	TL02	Tủ 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


QUESTIONS
ANSWERS

Input design

Input design

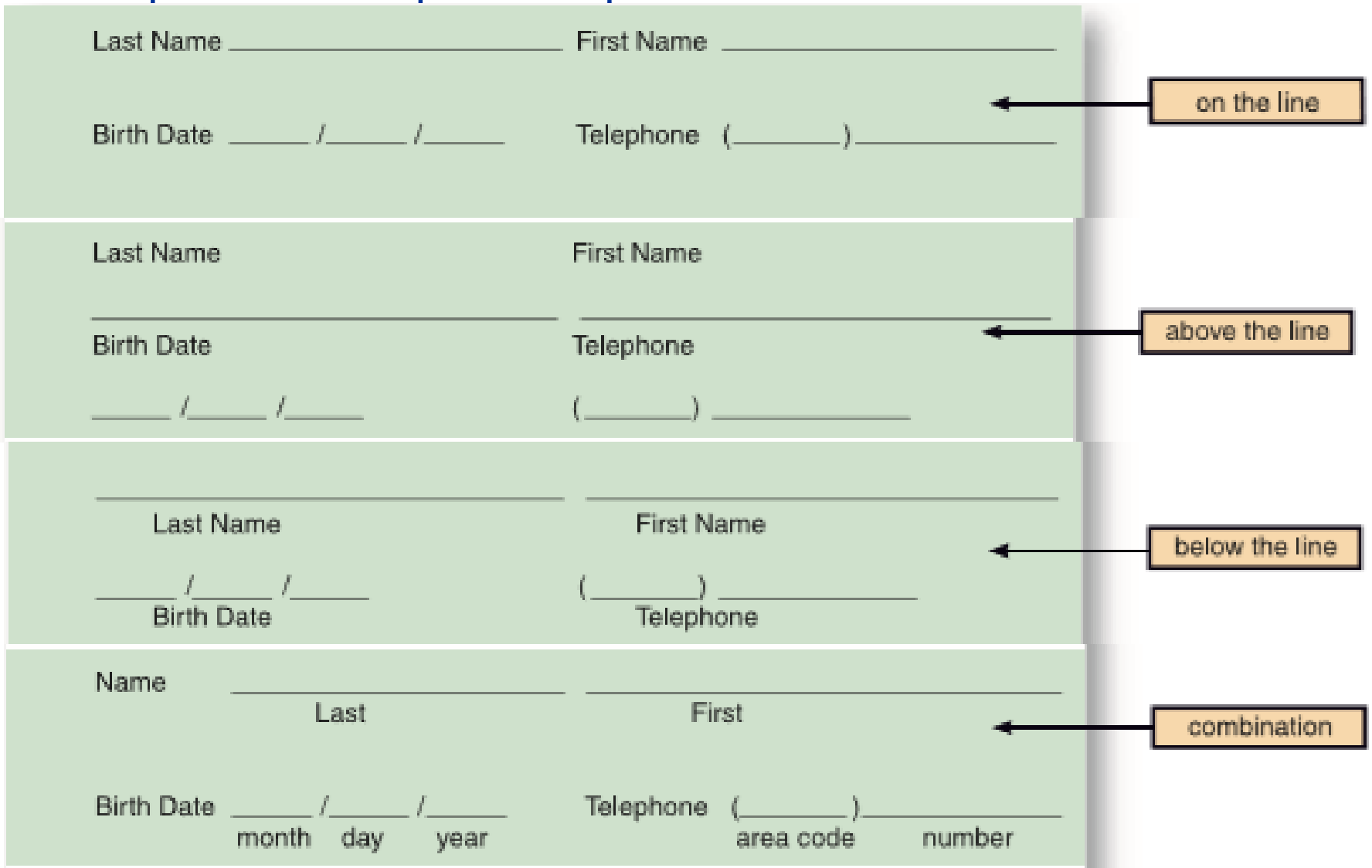
1. Introduction
2. Data Entry Screens
3. Input masks
4. Validation Rules
5. Discussion

Introduction

- ✓ 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.

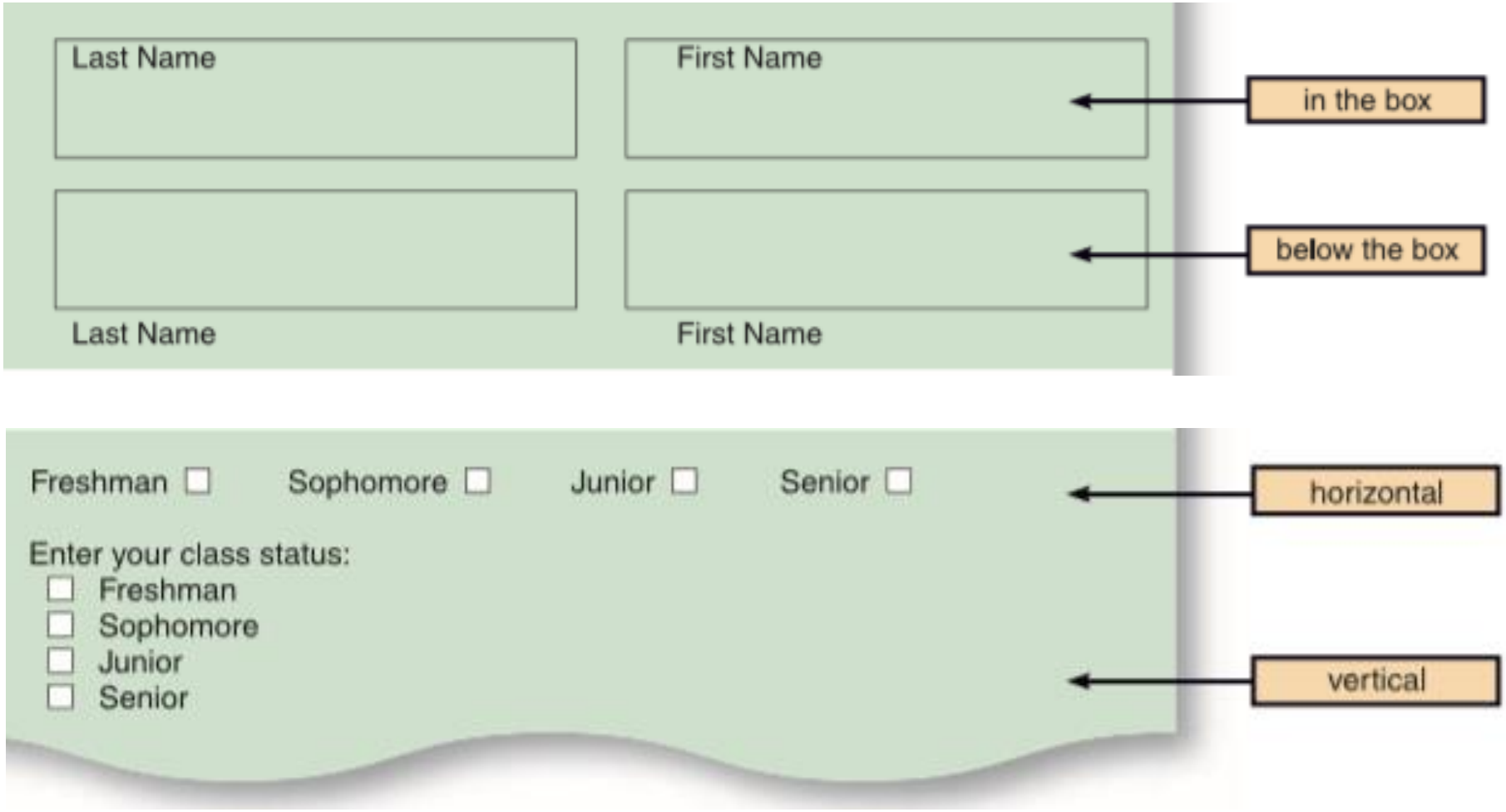
Introduction

- ✓ Caption technique examples



Introduction

- ✓ Box Caption, Check box caption examples



Data Entry Screens

- ✓ 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.

Data Entry Screens

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Data Entry Screens

- ✓ 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.

Homework

- Number of members/group: 5 students.
- Design a receipt. Some tables of the relational data model are:
  1. CUSTOMER (CustomerID, FullName, Phone, Address, IdentityID, Email, CustomerType, Score)
  2. ORDER (OrderID, DateofOrder, CustometID, StaffID, Total)
  3. OrderDetail (OrderID, ItemID, Quantity, Discount)
  4. ITEM (ItemID, ItemName, Suggested_Price, Description)
  5. STAFF (StaffID, S_Name, S_Phone)

Data Entry Screens

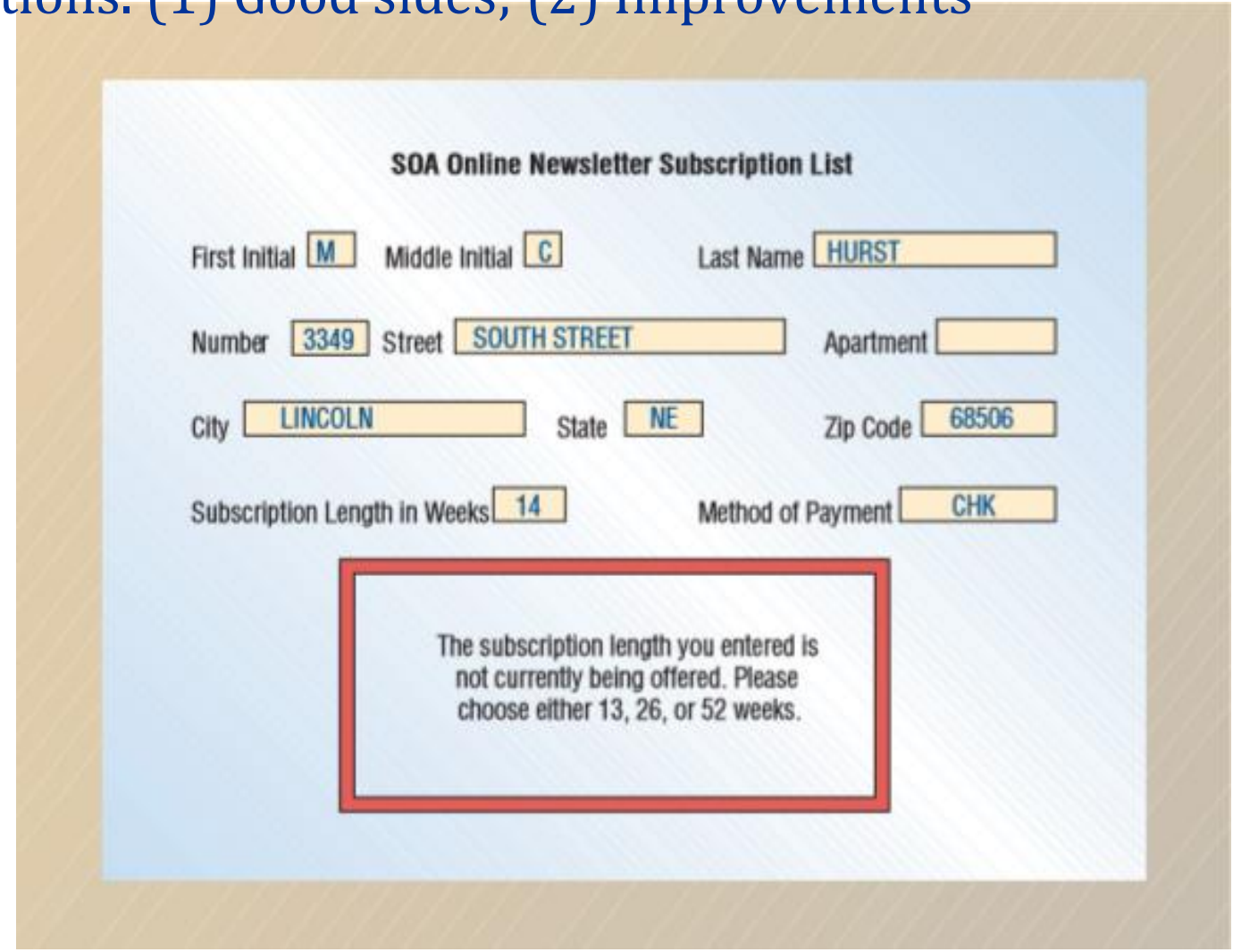
- ✓ Input design:
  1. 1 table: CUSTOMER, ITEM,…
  2. 2 tables: ORDER and OrderDetail…

Group Discussion

- Number of members per group: 5 students
- Time: 5 mins / 1 situation
- For each interface below, show:
  1. Good sides
  2. Are there any things can do better? If yes, show your improvements?

Discussion

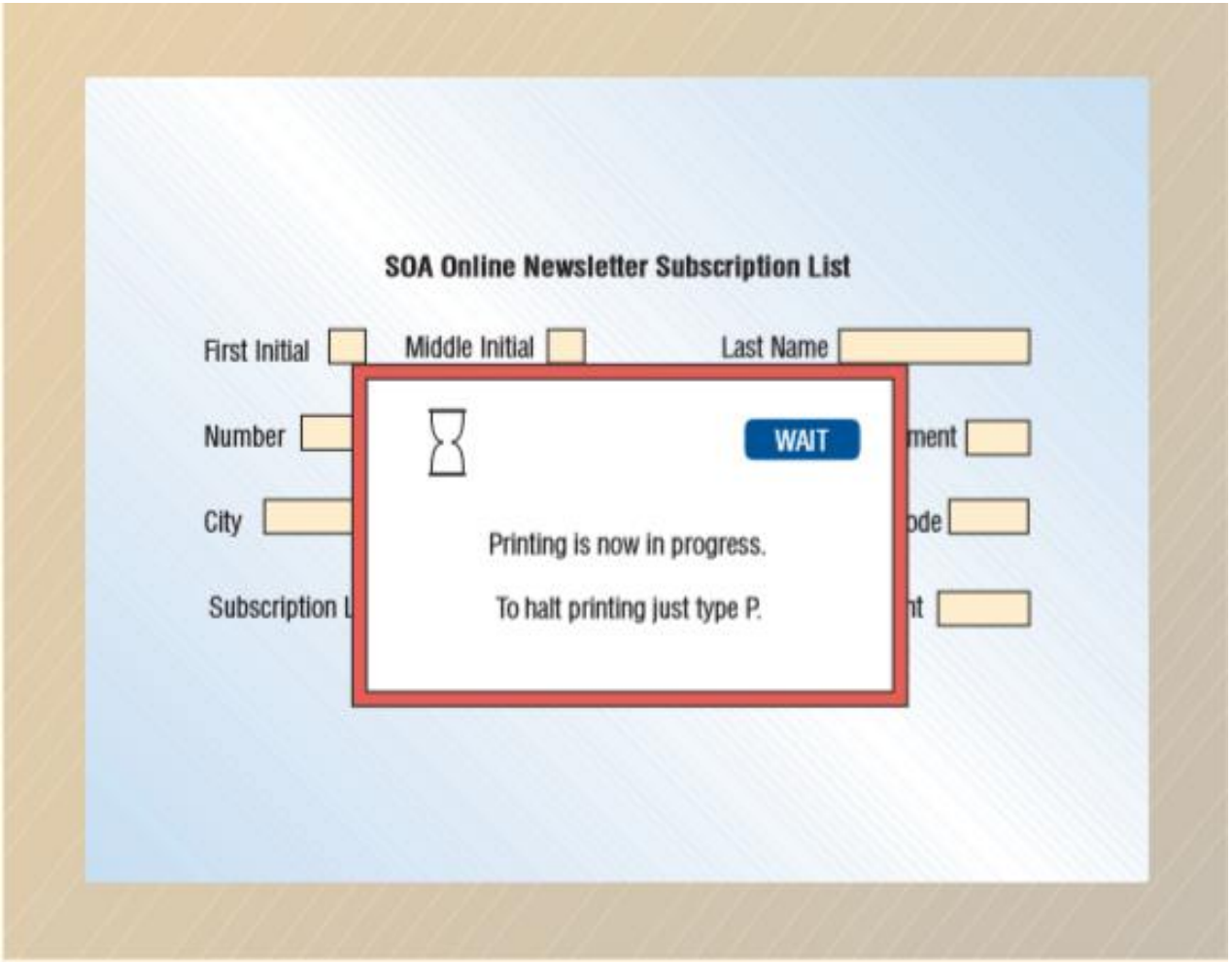
Feedback informs the user that input was not in the correct form and lists options. (1) Good sides; (2) Improvements



Discussion

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

(1) Good sides; (2) Improvements



Discussion

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

Discussion

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


QUESTIONS
ANSWERS