

SECD2613

System Analysis and Design



PART V #1

Output, Input and User Interface Design

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■ MAJOR TOPICS

USER INTERFACE DESIGN

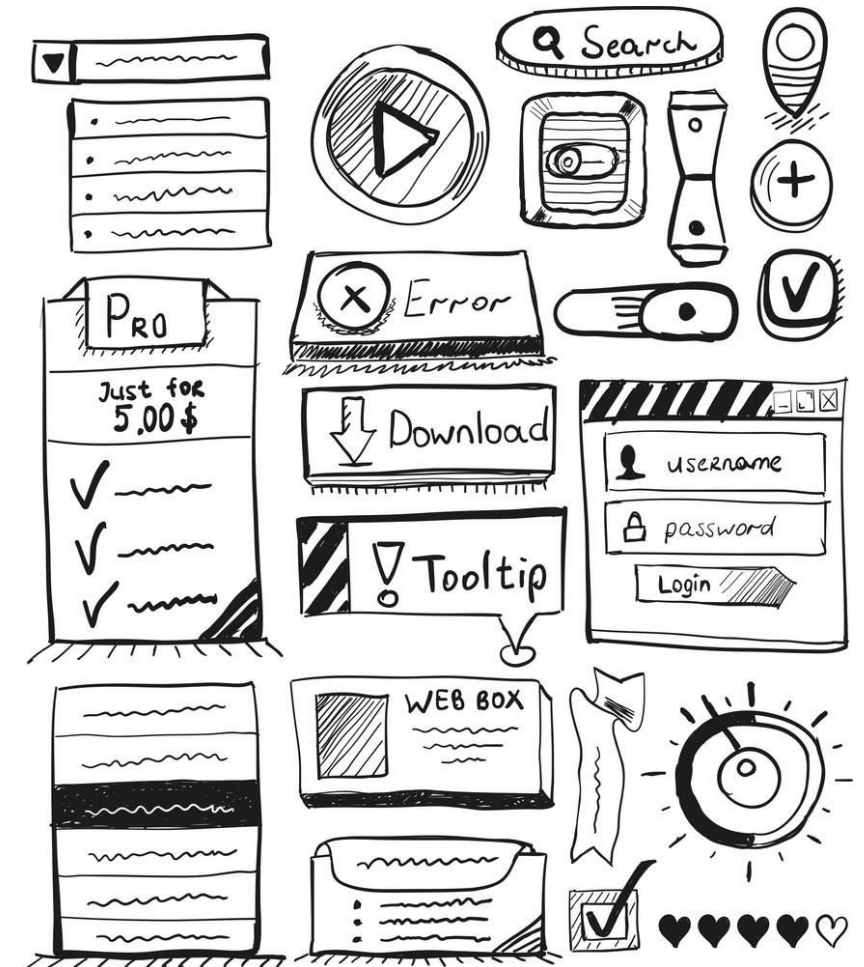
- Guidelines for user interface design
- Storytelling HCI

■ USER INTERFACE DESIGN

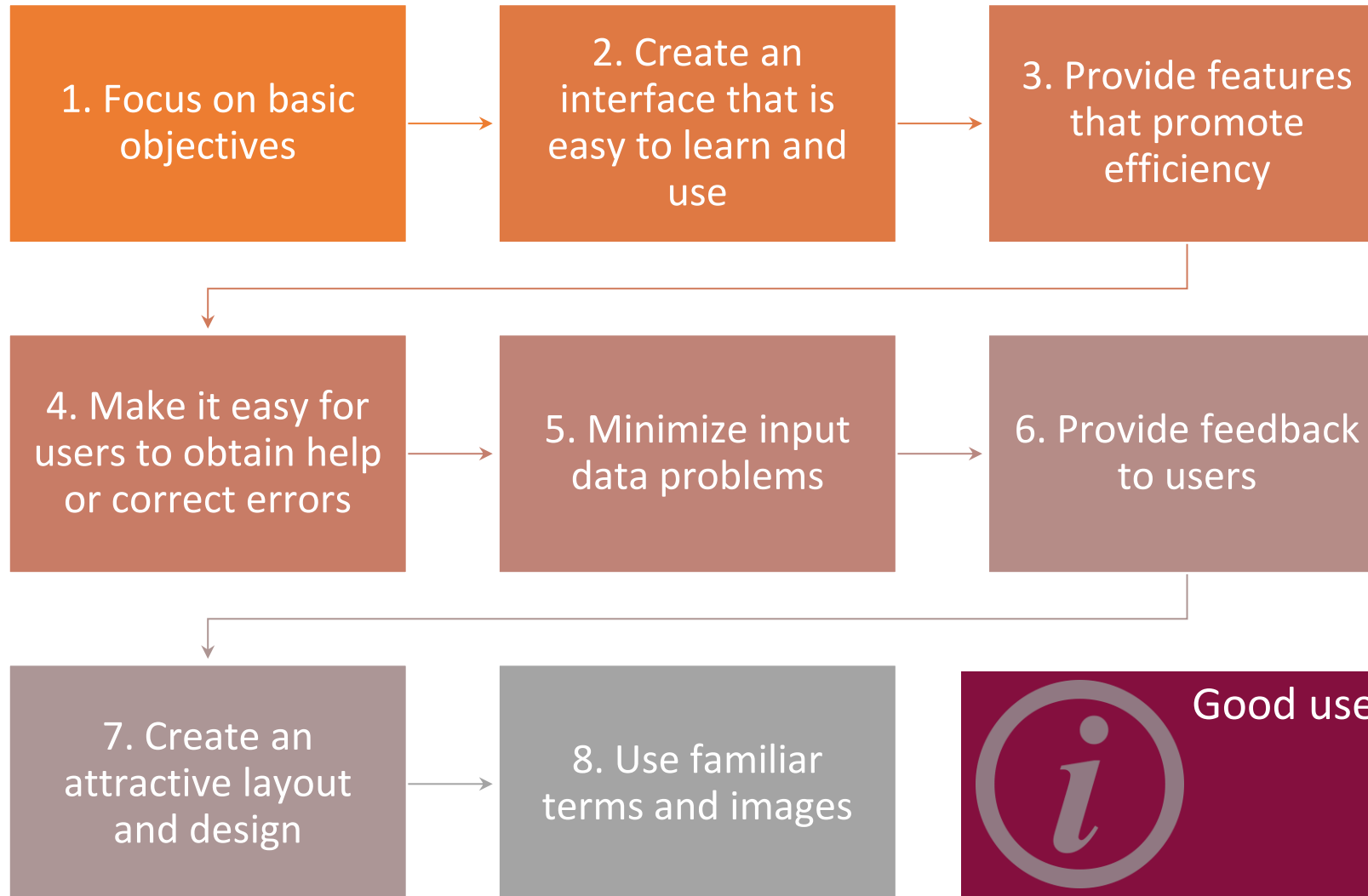
- Goal of **systems design** - To build a system that is effective, reliable, and maintainable
 - A system is:
 - Effective if it supports business requirements and meets user needs
 - Reliable if it handles input errors, processing errors, hardware failures, or human mistakes
 - Maintainable if it is flexible, scalable, and easily modified

■ USER INTERFACE DESIGN

- Output design is an integral part of a larger concept called a **USER INTERFACE (UI)**
- **USER INTERFACE (UI)** describes how users interact with a computer system
 - Consists of all the hardware, software, screens, menus, functions, and features that
 - affect two-way communications between the user and the computer
 - Objective - to create a user-friendly design that is easy to learn and use
 - UI is the key to **usability**



■ USER INTERFACE DESIGN GUIDELINES



Good user interface design is based on a combination of **ERGONOMICS**, **AESTHETICS**, and **INTERFACE TECHNOLOGY**.

1. FOCUS ON BASIC OBJECTIVES

- Focus on system design objectives, rather than calling attention to the interface.
- interface designer must understand the business function and system goals.
- overall objective to design an interface
 - helps users to perform their jobs.
 - improve user efficiency and productivity.
- analyze a business function that
 - starts with major functions and
 - then breaks them down into several levels of detail
- Each tasks must be included in the interface design

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

- Create a design that is easy to understand and remember
- Provide commands, actions, and system responses that are consistent and predictable
- Allow users to correct errors easily
- Clearly label all controls, buttons, and icons
- Select only those images that a user can understand easily
- Show all commands in a list of menu items
- Make it easy to navigate or return to any level in the menu structure



Flights



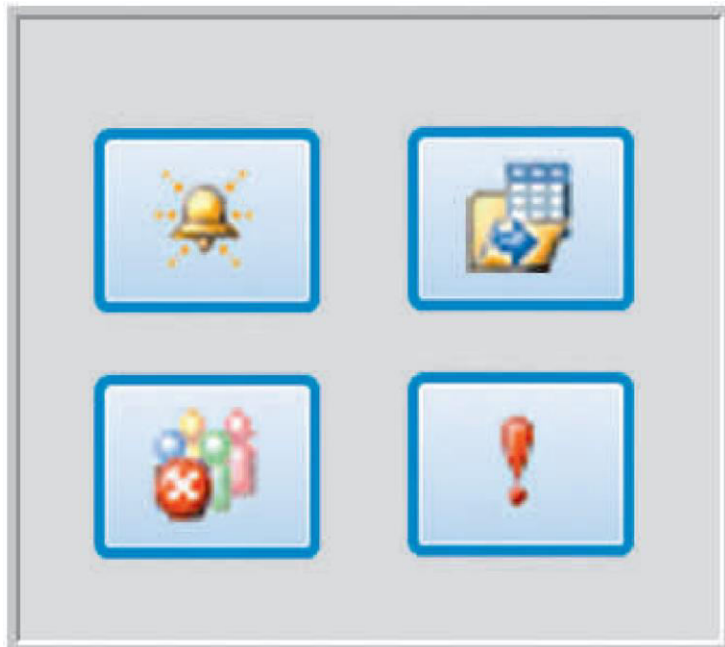
Hotels



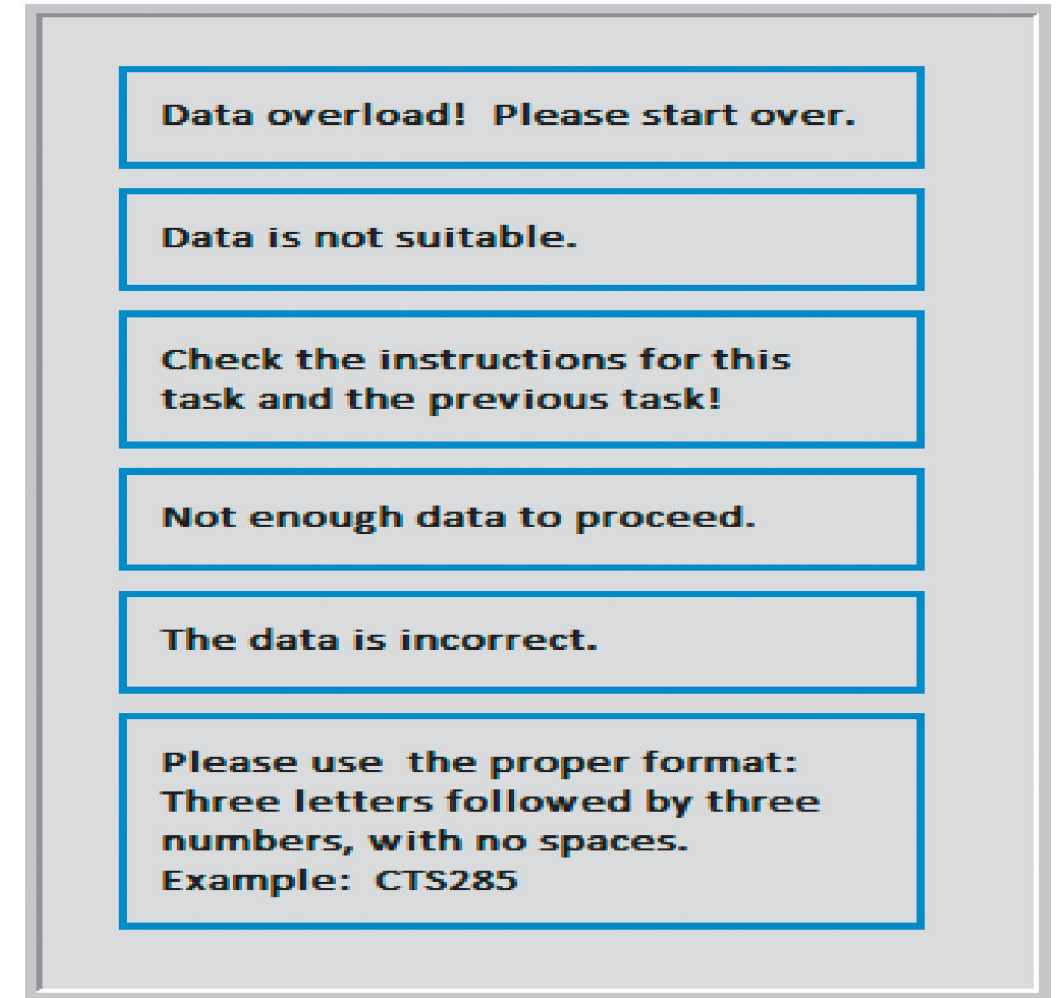
SNAP

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

- Select only those images that a user can understand easily



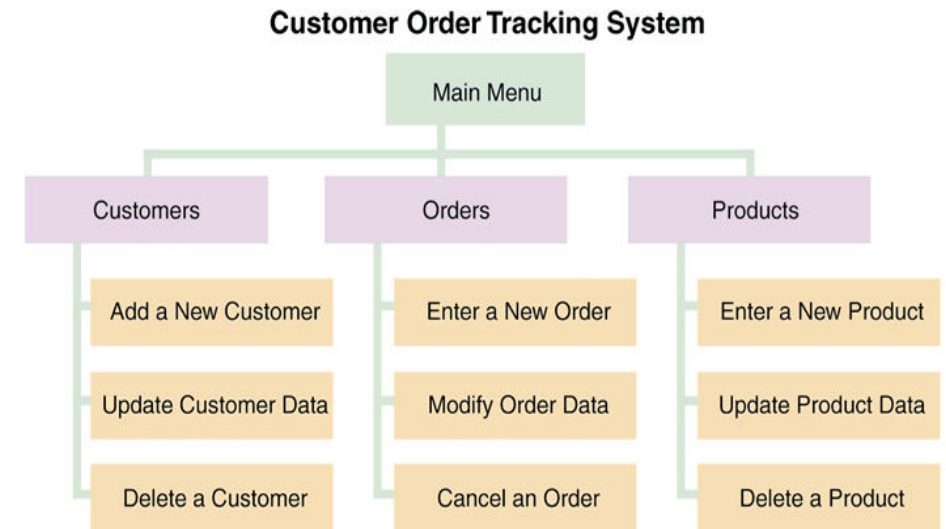
The icons do not have a clear message.



In the Help text examples at the bottom, only one message is understandable. The others would frustrate and annoy most users.

3. PROVIDE FEATURES THAT PROMOTE EFFICIENCY

- Organize tasks, commands, and functions in groups that resemble actual business operations
- Create alphabetical menu lists
- Provide shortcuts so experienced users can avoid multiple menu levels
- Use default values if the majority of values in a field are the same e.g Female for default value gender.



State

c
California (CA)
Colorado (CO)
Connecticut (CT)

4. MAKE IT EASY FOR USERS

- Ensure that Help is always available
- Provide user-selected Help and context-sensitive Help
- Provide a direct route for users to return to the point from where Help was requested
- Include contact information

Provide search


Student Details (Total: 316)

Search By Name, Email, Barcode ... Scan Barcode ...

Information

- Plans
- Notes
- History
- Medical Alert
- Tab Updates
- Mailing Lists
- Help**

Student Profile:

 **Barcode:** **Member Since:** 2014-01-12

Name: Saul **Active Plans:** **On Tab:** €0.00 Edit

Senecal

Date of Birth: yyyy-mm-dd **Parent Account:** Roodolph Senecal

Country: United States **Referral Type:** Select Referral Method ...

State: New York **Referred by Name:**

Postal Code: 11223 **Flash Note:**

City: Brooklyn

Address: 123 Yoga Lane

Mobile #: +1-800-555-1212 ☐ Disclaimer

Phone #: ☐ Don't send automated emails

Work #: ☐ Excluded from payroll

Email:

Gender: Male Female

Emergency Contact:

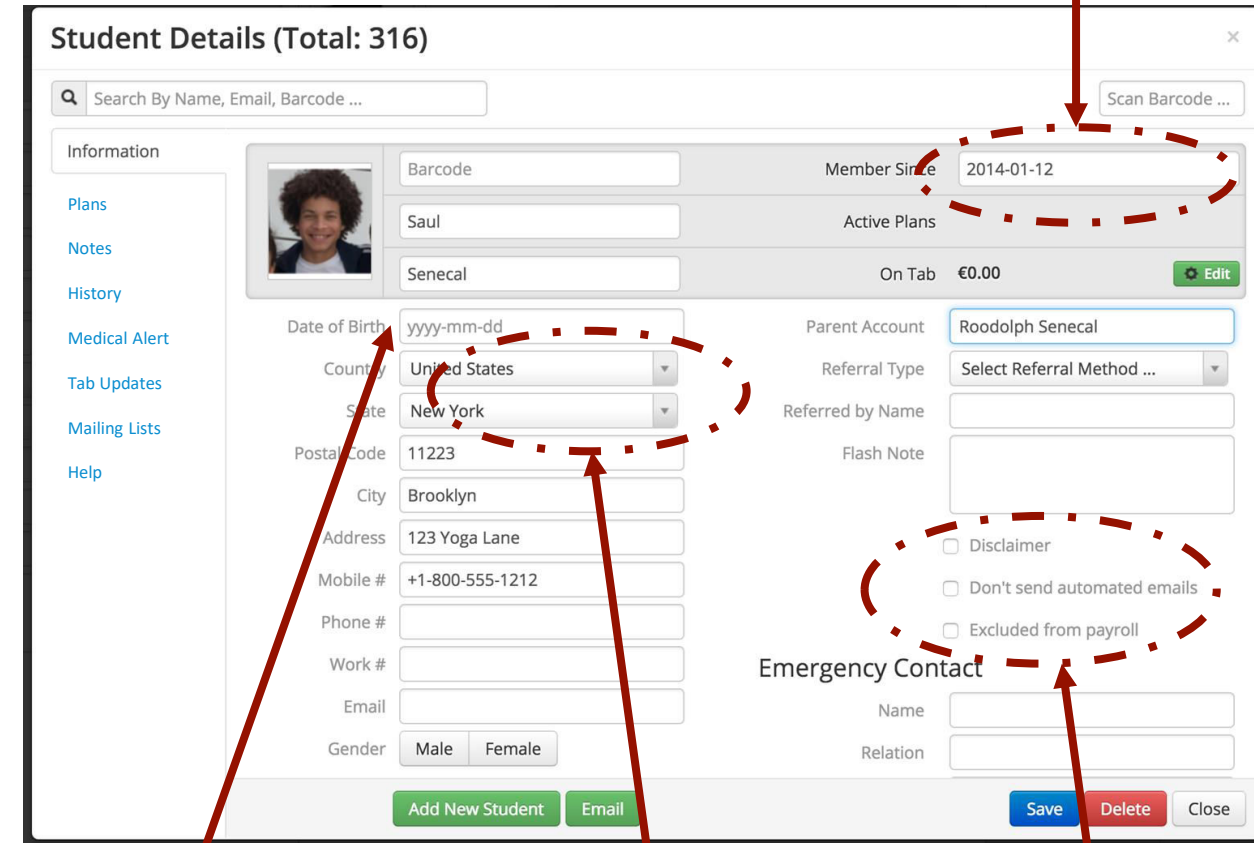
Name: **Relation:**

Add New Student Email Save Delete Close

Provide HELP

5. MINIMIZE INPUT DATA PROBLEM

- Provide data validation checks
- Display event-driven messages and reminders
- Establish a list of predefined values that users can click to select
- Build in rules that enforce data integrity
- Use input masks. Display a sample Date format like MMDDYY



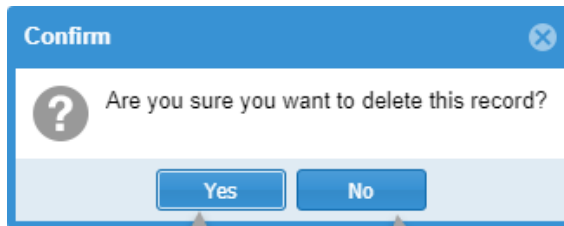
The screenshot shows a 'Student Details' form for a student named Saul Senecal. The form includes various input fields and sections. Annotations highlight specific UI design elements:

- Use system date:** Points to the 'Member Since' field, which displays '2014-01-12'.
- Set input:** Points to the 'Date of Birth' field, which has a mask 'yyyy-mm-dd'.
- Use drop down menu:** Points to the 'Country' and 'State' fields, which are dropdown menus.
- Use check box:** Points to the 'Emergency Contact' section, which includes checkboxes for 'Disclaimer', 'Don't send automated emails', and 'Excluded from payroll'.

The form also includes a search bar, a sidebar with navigation links (Plans, Notes, History, Medical Alert, Tab Updates, Mailing Lists, Help), and buttons for 'Add New Student', 'Email', 'Save', 'Delete', and 'Close'.

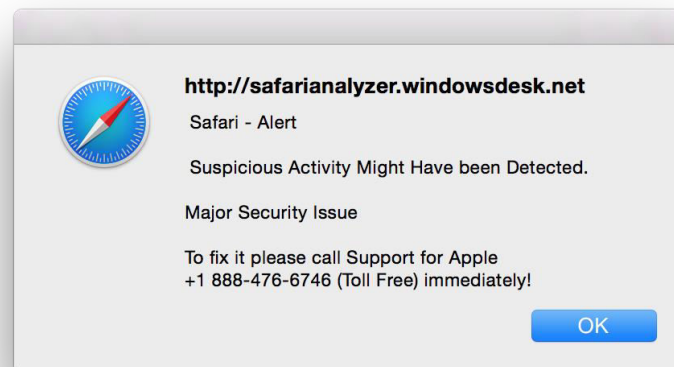
6. PROVIDE FEEDBACK TO USERS

- Display messages at a logical place on the screen
- Alert users to lengthy processing times or delays
- Allow messages to remain on the screen long enough for users to read them
- Let the user know whether the task or operation was successful or not



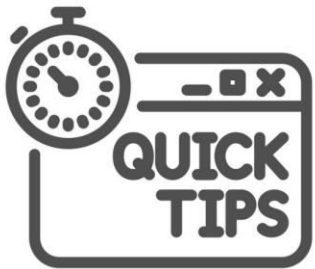
Change button colour when
mouse cursor hovers over it

Default to this button



■ 7. CREATE ATTRACTIVE LAYOUT AND DESIGN

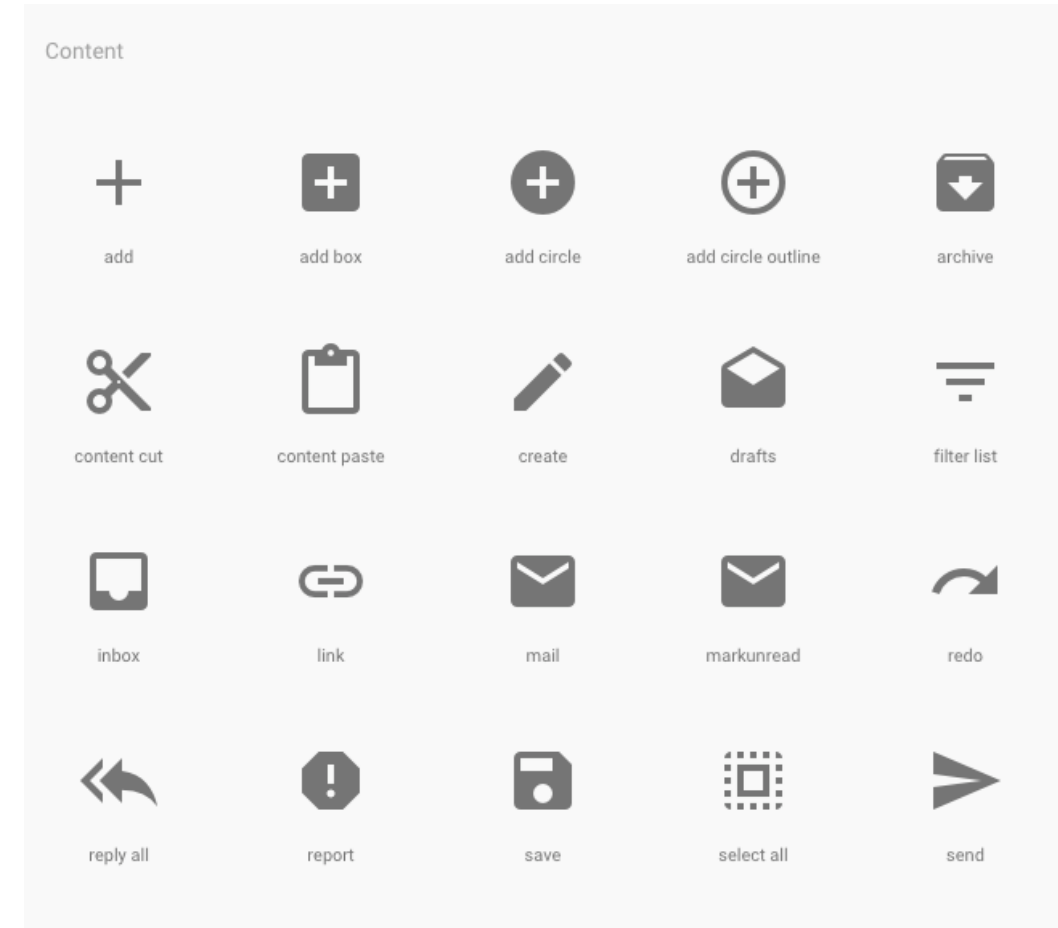
- Use appropriate colors to highlight different areas of the screen
- Use special effects sparingly
- Use hyperlinks that allow users to jump to related topics
- Group related objects and information



See the list of [Websites of Really Awesome UI Design](#)

8. USE FAMILIAR TERM AND IMAGES

- Remember that users are accustomed to a pattern of **RED** is **STOP**, **YELLOW** is **CAUTION**, and **GREEN** is **GO**.
- Provide a keystroke alternative for each menu command
- Use familiar commands
- Provide a Windows look and feel in your interface design if users are familiar with Windows-based applications



■ USER INTERFACE CONTROL



Do you know any of these??

Menu bar

Toolbar

Command
button

Dialog box

Text box

Toggle button

List box –
scroll bar

Drop-down
list box

Option
button, or
radio button

Check box

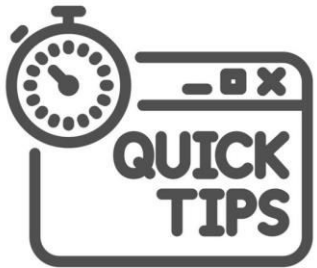
Calendar
control

Switchboard

■ USER INTERFACE CONTROL

Controller	How to use ?
Text Box	Text boxes should be large enough to accommodate all the characters
	Captions should be to the left of the text box
	Character data is left-aligned within the box
	Numeric data is right-aligned
Check Box	Check boxes are used for nonexclusive choices or more than one value can be selected at a time
	Check box text or label is placed to the right of the check box
	If there are more than ten check boxes, group together in a bordered box
Option Button	Option or radio buttons are used for exclusive choices
	Choices are listed to the right of the button, in some sequence
	Often they are placed in a rectangle called an option group
	If more than six option buttons are used, a list box or drop-down list box should be implemented
Drop-Down List Boxes	Used when there is little room available on the page
	If there is a commonly selected choice, it is usually displayed in the drop-down list by default
Control Dialogue Box	Create a separate tab for each unique feature
	Place the most commonly used tabs in front and display them first
	Consider including three basic buttons in your design: OK, Cancel, Help
Sliders and Spin Buttons	Sliders and spin buttons are used to change data that have a continuous range of values
Calendar Controls	A calendar control to select a date, a date and time, or a local date and time
	Selecting dates from a pop-up calendar is easier and less error-prone than entering text

■ UI DESIGN TIPS



Check out tips for good UI design: 8 Tips for great UI & Using Light, Color & Contrast

■ STORYTELLING HCI/ UI Design (Vision-infotech, 2004)

- Storytelling in UI/UX design: A powerful way to create engaging and memorable user experiences.
- By leveraging storytelling techniques, designers can craft immersive user journeys that captivate audiences and leave a lasting impression.

■ STORYTELLING HCI/ UI Design (Vision-infotech, 2004)

- In UI/UX design, this means going beyond mere functionality and aesthetics to create experiences that resonate with users on a deeper level.
- By weaving narratives into the design process, designers can guide users through a journey that feels personal and meaningful.

STORYTELLING HCI/ UI Design (Vision-infotech, 2004)

4 Key aspects of storytelling :

1. **Establishing a Narrative Structure:** Like any good story, a well-designed user experience should have a clear beginning, middle, and end.
2. **Evoking Emotion Through Design Elements:** By using color, typography, imagery, and other design elements strategically, designers can evoke specific emotions and create a more immersive experience.
3. **Creating Characters and Personas:** Creating relatable personas can help humanize the user experience and make it more engaging
4. **Building Tension and Resolution:** By introducing challenges and obstacles along the user journey, designers can create moments of suspense and anticipation, followed by moments of triumph and satisfaction when users successfully overcome them.

EXAMPLE: FOOD ORDERING SYSTEM

Storytelling Aspect	Example in Food Ordering UI
Narrative Structure	Menu → Order → Confirmation → Tracking
Evoking Emotion	Color, food images, typography
Creating Personas	Young busy user, parent, tourist
Building Tension & Resolution	Payment → Confirmation → Tracking

EXAMPLE: STUDENT REGISTRATION SYSTEM

Storytelling Aspect	Student Registration System Example
Establishing a Narrative Structure	Beginning → Student logs in & sees available courses Middle → Selects courses, checks for time clashes, confirms choices End → Registration confirmation & timetable output
Evoking Emotion Through Design Elements	Use calm, trustworthy colors (blue/green) to convey system reliability Show progress bar → reduces anxiety Use success messages on completion
Creating Characters and Personas	Persona 1: First-year student — nervous, unfamiliar with system Persona 2: Final-year student — experienced, wants efficiency Persona 3: International student — may need multilingual support
Building Tension and Resolution	Tension: “Will I get all my courses? Are there time clashes? Will system crash?” Resolution: Smooth, reassuring confirmation screen → “You are successfully registered. Here is your timetable.”



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Thank You

update: August 2019 (sharinhh)

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