

UNIT 3

Understanding the Principles of Good Interface and Screen Design

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Unit Outcomes

- Identify the different human factors to be considered while designing an User-interface screen
- Apply the guiding principles to develop user-friendly and useful web pages
- Describe the technical aspects to be considered while designing an interface screen

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Introduction to Good Interface and Screen design

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Introduction

- A good interface and screen design are based on some guiding principles
- A good interface design should reflect the capabilities, needs, and tasks of its users
- It should also be developed considering the physical constraints of the hardware
- The design should use the software capabilities effectively and finally achieve the business objectives

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General Design guidelines

- A test for a good design
- Organizing screen elements
- Screen navigation and flow
- Visually pleasing composition
- Typography
- Keying procedures
- Data output
- Web sites and Web pages
- Technological considerations

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Human Considerations in Interface & Screen Design

Many factors related to the screen design affect the use of a screen or Web page as listed below:

- The amount of information presented on the screen
- The organization of information
- The language used to communicate with the user
- The methods of displaying the components and the use of aesthetics
- Consistency of a screen or page with other screens or pages

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How to distract the Users

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Aspects of Poor design affecting the Users

Following were the list of poor design issues which affected the use of paper forms:

- Unclear captions and badly worded questions: may cause rereading and can be interpreted incorrectly**
- Improper type and graphic emphasis: may lead to the hiding of important information**
- Misleading headings: may create confusion about the content**

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Aspects of Poor design affecting the Users

- Cluttered and cramped layout: may create a bad initial impact and leads to more errors
- Poor quality of presentation, legibility, appearance, and arrangement reduces user performance

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Aspects of Poor design affecting the Users

The most common problems in the visual interface design are:

- Visual inconsistency in screen detail presentation and with the operating system
- Overuse of design features and elements
- Overuse of three-dimensional presentations
- Overuse of too many bright colors
- Poorly designed icons and bad typography

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Aspects of Poor design affecting the Users

The top design mistakes in Web design are listed below:

- There were legibility problems when font sizes were small and there was poor contrast between text and backgrounds
- Presentation of links in a non-standard way created confusion
- Flash usage was found to be annoying
- Navigation and searching were poor
- Forms were cumbersome to fill

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Aspects of Poor design affecting the Users

Other distractions affecting Web Page users are as below:

- Too many auditory and visual interruptions
- Too much visual clutter
- Poor information readability and clarity
- Screen components are not understandable
- Confusing and inefficient navigation
- Excessive or inefficient page scrolling

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Aspects of Poor design affecting the Users

- Too much information or outdated information
- Old design copied from the paged forms

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What Users want and What they do

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What Users want

The response of the people, when enquired about their requirements from a screen, are as given below:

- The appearance should be clean, clutter-free, and orderly
- There should be a proper one-to-one mapping between the elements and their function
- Information should be located where expected
- There should be a clear indication of the relationships between elements

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What Users want

- The language used should be plain, simple English
- The method of finding things in a system should be simple
- There should be a clear indication before making any permanent changes

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What Users do

The user performs the following tasks when interacting with a computer:

- Identification of a task to be performed
- Making a decision on a method to complete a task
- Changing the computer's controls as required
- Collecting useful data and ignoring meaningless data
- Judging whether the decisions were relevant or not

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Goals of Interface Design

- For an easy and pleasant user experience, an interface should be designed so that their visual, intellectual, memory, and motor work are reduced
- Instructions imposed by the technology should be minimized or eliminated

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Screen Meaning and Purpose, Consistency

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Test for a Good Design

The best test to identify a good design is to check whether all screen elements like the field captions, data, title, headings, text, and information, types of controls, navigation elements, can be identified without reading the words that identify them

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Screen Meaning and Purpose

- Every screen element, text, screen organization, color, graphic, message, animation, and all forms of feedback should have a meaning and a function
- The useful information on the screen is known as a signal
- The information on the screen without a purpose is called noise

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Organising Visual Elements

- A good design is where there is visual clarity
- The display elements are presented in a meaningful, recognizable, and understandable way
- Visual clarity is affected by a number of factors as given below:
 - There should be consistency in design
 - The composition of the elements should be visually pleasing
 - There should be a logical and sequential ordering of the elements

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Organising Visual Elements

- The right amount of information should be presented with groupings and proper alignment avoiding visual clutter

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Consistency

- Consistency in any component design is as important as it is required for a person in his attitudes, thoughts, and beliefs
- Consistency has the following benefits:
 - It leads to a reduction in task completion and learning times
 - It gives an increase in user satisfaction
 - It also aids learning
 - It establishes expectations and allows a person to use conceptual learning and transfer training

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Consistency

- It enables the user to easily find the location of screen elements.

Inconsistency in a screen design will result in following limitations:

- It forces the user to memorize, and remember, a number of different ways to do something or understand what is presented on the screen.
- It makes it difficult for a complete structure to emerge.
- It can also be distracting and confusing.

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Consistency

- It also creates a screen variation that makes it difficult to notice another variation that may be important for a person's task or need.

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Starting Point, Ordering of data, Navigation and Flow

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Starting Point

- A person scans an array of information based on the composition of a display and how it has been learnt
- Screen designs generally provide a starting point in the screen's upper-left corner
- This is near the location where visual scanning begins and will permit a left-to-right, top-to-bottom reading of information or text

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Starting Point

- According to a study, visual targets located in the upper-left quadrant of a screen were found the fastest and those located in the lower-right quadrant took the longest to find
- Graphical displays change a person's scanning behavior due to the visual cues like color, depth, form, and the movement they provide

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Ordering of data or content

- In a web page design, in order to retain the user's short-term memory, the number of information elements on a screen must be kept to a minimum
- To reduce memory requirements, a logical, meaningful, and sensible arrangement of screen data and content is required
- The content ordering on a web page should be completely based on the importance of information

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Ordering of data or content

General schemes of ordering information are as given below:

- Divide the information into logical, meaningful, and sensible units.
- Organize this information according to its relationship with the data.
- Order the screen components with the user's priority and needs as given below:
 - Sequence of use
 - Frequency of use
 - Function

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Ordering of data or content

- Importance
- General to specific
- Any information that needs to be compared is visible at the same time.
- Only needed information is visible on the screen.

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Ordering of Web Pages

A list of content ordering guidelines for web pages is as follows:

- A level of importance for the content should be established.
- The critical information should be placed near the top of the Web site.
- The important items should be placed at the top of a page and consistently.
- Information should be organized clearly and the scheme should facilitate scanning.
- For an easy comparison, information should be structured.

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Navigation and Flow

- Navigation is basically guiding the eye to scan the content on the screen.
- This can be best done by grouping and aligning screen controls and appropriately using border lines.
- The tab order should follow a logical order of information.
- The command buttons should be located at the end of the tab order.

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Navigation and Flow

The screen navigation scheme should consider the following points:

- The ordering of screen information and elements should be rhythmic, guiding a person's eye through the display.
- The most important and frequently used elements or controls should be located at the top left.
- The flow should be maintained from top-to-bottom and left-to-right.

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Navigation and Flow

- Attention should be sequentially directed in the order based on the information being,
 - Critical
 - Important
 - Secondary
 - Peripheral

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Visually Pleasing Composition

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Visually Pleasing Composition

Research studies indicate that during the scanning of a display in a clockwise direction, a person's visualization is affected by the following factors:

- The symmetrical balance
- Weight of the titles, graphics and text of the display
- When exposed to uncertainty, the perceptual mechanism in a person seeks some order and meaning.

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Visually Pleasing Composition

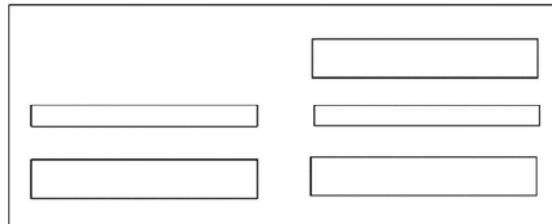
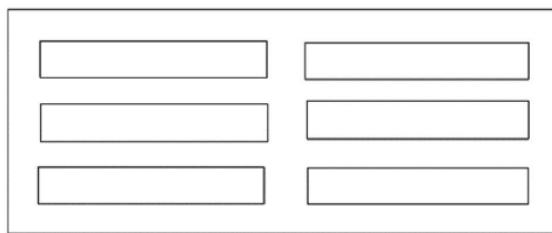
The following qualities are needed in a screen display for it to be pleasing:

- **Balance:** This can be provided by an equal weight of the screen elements on the left and right, top, and bottom of the screen.
- **Symmetry:** It can be done by replicating elements left and right of the screen centerline.

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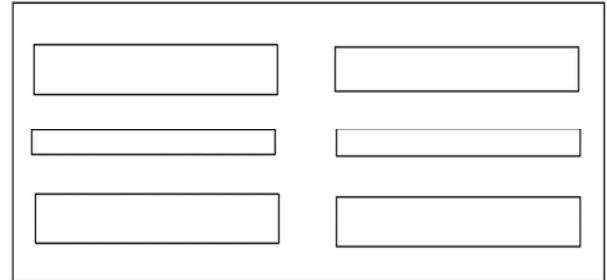
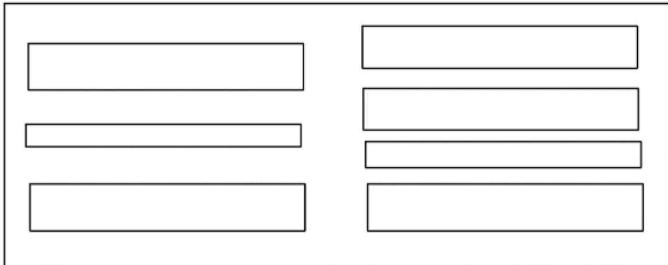
Balance vs Instability



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Non-Symmetry vs Symmetry of Elements



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Visually Pleasing Composition

- **Regularity:** The horizontal and vertical alignment points should be consistently spaced and element sizes, shapes, colors, and spacing should be similar.
- **Predictability:** This can be established by following some conventional order or arrangements of the elements.
- **Sequentiality:** The screen elements should be arranged in an obvious, logical, rhythmic, and efficient manner to guide the eye through the screen.

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Visually Pleasing Composition

- **Economy:** To get the message on the screen easily, usage of fewer font styles and colors can be used.
- **Proportion:** This can be provided by groupings of data or text with a pleasing proportion.
- **Simplicity:** Fewer elements on the screen can make visualization simpler.
- **Groupings:** The functionally associated elements can be grouped and evenly spaced.

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Distinctiveness, Focus and Emphasis, 3D Appearance

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Distinctiveness

- Distinctiveness refers to the proper separation of the screen elements so that they are clearly distinguished from each other.
- It is achieved through the following:
 - There should be adequate separation between adjacent elements and screen boundaries.
 - There should be enough separation between parts of an element.

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Distinctiveness

- There should be enough space between the screen controls, field, and group borders.
- The screen controls, field, and group borders should not touch the window borders.
- The buttons and their labels should not touch window borders or each other.
- The colors and shades of the adjacent screen elements should contrast well with one another.

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Focus and Emphasis

- Drawing the attention of the users to the important part of the screen is a vital consideration of the screen design.
- This can be done by applying a visual emphasis technique.
- The components on the screen which should be given importance are:
 - Critical elements
 - Changing elements
 - Prominent elements

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Focus and Emphasis

- Abrupt environmental changes (or edges) such as color changes capture a person's attention.
- Highlighting the elements of a matrix help in comparing and finding discrepancies in a pair of data.

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Focus and Emphasis

Visual Emphasis can be achieved by the following techniques:

- **Using more brightness**
- **Using a distinctive typeface such as Bold, Italics, and Underlining**
- **Blinking an important element**
- **Using line rulings and surrounding boxes or frames**
- **Using Colors**
- **Increasing component size**
- **Using animation**

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Focus and Emphasis

- **Proper positioning**
- **Using a distinctive or unusual shape**
- **Isolating the components from unimportant ones**
- **By minimizing the screen clutter**
- **In web design, emphasis should be given to new or changed content and the page text should not be overwhelmed by the page background**

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A Three-Dimensional Appearance

- Though all the real-world objects are not visually presented in three dimensional, human beings perceive them as three-dimensional.
- Following techniques can be used to foster this perception:
 - Overlapping: The relevant element should be displayed fully and the irrelevant element can be hidden beneath it.
 - Drop shadows: In the creation of the shadows, always assume that a light source is in the upper-left corner of the screen and the shadow in the lower-right corner.

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A Three-Dimensional Appearance

- Highlighting and lowlighting: Attention can be captured by highlighting the elements of relevance.
- Growing and Shrinking: Relevant elements can be made to grow in size, while less important elements remain small or shrink.
- Beveled or Curved edges: curved edges around the elements like windows, and buttons can make them appear to rise above the screen.
- Texture, color, size, and clarity change: This can highlight the relevant elements.

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Simple & Meaningful Information Presentation, Application & Page Size

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Presenting Information Simply & Meaningfully

- To convey the information on the screen effectively, it should be well presented.
- In this regard, the screen designer should have the following goals in mind:
 - The presentation form should be clear and simple.
 - The organization of the content should be easily understandable.
 - The information should be absorbed easily.
 - The content should be pleasant in its tone and color.

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Presenting Information Simply & Meaningfully

Following are the guidelines for presenting information on screens:

- For information to be noticeable and distinguishable it should be legible.**
- For information to be identifiable, interpretable, and attractive it should be readable.**
- The information should be presented in a usable form.**
- For attracting the attention of users to the screen elements, contrasting display features can be used.**

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Typography

- Typography is the art of laying out text for print or on screens for aesthetics and readability.**
- The textual content on the screen not only gives information, but the characteristics of the text such as the font type, style, case, and size.**

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Application and Page Size

- It is a very important aspect in the design of web pages.
- An application or web page can be designed to have a few long pages with a lot of scrolling to view the page content.
- It can also have many shorter pages with frequent movements between pages.
- The main design goal is to allow the users to move quickly and efficiently through the pages.

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Scrolling and Paging

- There are two methods used to move or navigate between web pages or an application:
 - **Scrolling:** It is the popular navigation method used currently.
 - **Paging:** It is an older moving technique where movement between pages is through a key press.

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Scrolling and Paging

Guidelines while scrolling are listed below:

- Scrolling a page to determine its subject and contents should be avoided.
- Vertical page scrolling should be avoided.
- Horizontal page scrolling can be avoided.

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Scrolling and Paging

- When vertical scrolling is necessary to view an entire page, the below guidelines should be followed:
 - Context-based colors can help while scrolling the page to view its entire contents.
 - Shorter pages can benefit the users if they are looking for specific pieces of information.
 - Highlighting major page items on a page can help in faster scrolling.
 - Provide an “end of page” structure.

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Scrolling and Paging

Paging:

- There can be two versions of a website created, one with paging and another with scrolling.

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Amount of Information to Present

Following guidelines should be considered by the designers:

- Proper amount of information
 - Too much information is taxing on the user to search for an element.
 - Too less information makes the users remember the information on different screens.
- Present all necessary information

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Amount of Information to Present

- **Screen density:** This measure gives the amount of something that is present on the screen.
- The more the density, more will be the time taken to find the information and also the errors in finding them.

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Paper vs Screen Reading

- The printed material is highly readable and attractive compared to screen reading.
- The CRT -based characters have technical limitations and offer less resolution, so the screen reading speeds are 40% lower and error-prone.
- Screen reading motor skills like scrolling, paging, etc., are found to be more exhausting than turning pages.

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Application Screen Elements – Title, Labels and Data Fields

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Application Screen Elements

- The elements on an application screen allow the user to enter, select, delete, view, and modify the data.
- Earlier, there were only rectangular boxes and were known as fields.
- With the introduction of graphical systems, various types of objects are used to place information in a database.
- These objects are called as controls.

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Application Screen Elements

- The controls have two attributes:
 - A data field: An area where data or information will be keyed, selected, or displayed.
 - A descriptive caption or label: Identifies the type of data contained within the field.
- Controls contain other information to provide context and help in interpreting the data.

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Title

- An appropriate title for the web page or the application helps the user to understand the application's organization and navigational structure.

Title for Windows:

- Window titles must be located at the top.
- There should be no title for windows containing messages.
- The purpose of the window should be clearly described by the title.

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Title

- Use uppercase or mixed-case font.
- It should be spelt fully.

Title for Web Pages:

- Web page titles must be located in the browser title bar and on the content pages themselves.
- The page title should be consistent with the browser title bar.

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Title

Titles should be:

- Descriptive
- Unique and meaningfully different from other Web pages
- Concise

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Labels

An appropriate label has the following benefits:

- Efficiency of finding an item increases
- Number of clicks to finish a task reduces
- Fewer errors and higher user satisfaction

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Data Fields

- Data fields should be visually very clear and highlighted.
- Data fields are of three types:
 - Data Entry or Modifiable
 - Inquiry or display/read-only
 - Temporarily inactive data fields

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Data Fields

Guidelines for the design of data fields are as follows:

For Data Entry or Modifiable

- The data should be displayed within
 - A line box or a box with a contrasting light-colored background.
 - Long structured data items should be broken into logical pieces.

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Data Fields

For inquiry or display/read-only screens containing non-changeable data

- The data should be displayed on the normal screen background with no borders.

For temporarily inactive data fields

- The data content of the data field should be displayed with a lighter hue than active fields.
- The background color of the entry area should not be changed.

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Headings

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Headings

- As headings are used with related controls in applications, they create a common identity.
- Benefits of using headings are as follows:
 - Provide meaning to a section
 - They create a group and a visual appeal to it.
 - This helps to learn.

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Headings

In the organization of screen controls there are three kinds of headings used:

- **Section headings**
- **Subsection or row headings**
- **Field group headings**

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Section Headings

Design guidelines for the section headings are as follows:

- A meaningful heading should be given for a section to clearly describe the relationship of the grouped controls.
- These headings should be located above their related screen controls.
- They should be displayed in a distinguishable font style and size in mixed case headline style.

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ADDRESS

House/Apartment Name or Number:

Street Name:

City Name:

PIN Code:

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Subsection or Row Headings

Design guidelines for the subsection or row headings are as follows:

- A meaningful heading should be given for a section to clearly describe the relationship of the grouped controls
- These headings should be located to the left of the row of associated fields or Topmost row of a group of associated fields.
- These headings should be separated from the adjacent caption through the use of a greater-than signs or a filled-in arrow.
- These headings may be left- or right-aligned.

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CAR >> Make: Model: Year:

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Field Group Headings

Design guidelines for the Field group headings are as follows:

- A meaningful heading should be given for a section to clearly describe the relationship of the grouped controls.
- These headings should be centered above the caption to which it applies.
- Relate it to the captions by a solid line.
- They should be displayed in a distinguishable font style and size in mixed case headline style.

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CAR

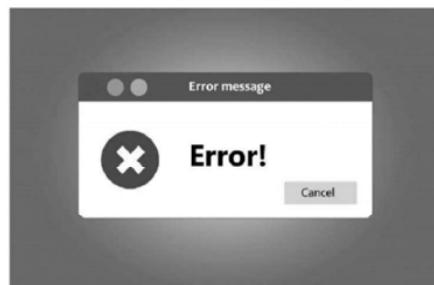
DRIVER	LICENSE NUMBER
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

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Other guidelines for Screen design

- Use special symbols where required for emphasis



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Other guidelines for Screen design

- Use instructions for data entry for the users

Type for changes only

Kind:

Model:

Number:

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Other guidelines for Screen design

- Use data field completion aids on a screen

Date of Birth: / / (MM/DD/YYYY)

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Lists, Keying Procedures and Data Output

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Lists

- A collection of related items should be presented in a vertical list.
- Use sentence or headline-style capitalization in a consistent manner.
- Provide a heading for each list.
- The lists should be ordered in a meaningful way.
 - Arrange equal-value items alphabetically or designate each item with a bullet.
 - Important or frequently chosen items should be placed at the top of the list.

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Lists

- Ordered items should be numbered.
- For easy identification and scanning, lists should be surrounded by borders, groupings, and white space.

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Keying Procedures

- Many a times during large data entry in applications, lot of keying in is required.
- The main considerations should not be on minimizing the keystrokes.
- Instead, the keying rhythm and the important goals of the system should be of other factors of concern.

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Data Output

Data outputs in a computer application or web application may be of two types:

- **Reports: They consist of a list of records.**
- **Tables: They consist of a list of records derived from a database.**

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Report

Following are the guidelines for creating a report:

Report body:

- **Column headings should be provided.**
- **Units of measurement should be shown.**
- **Right fonts should be selected.**
- **Rows should be clearly identified.**
- **Pages should be broken up logically**

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Report

- For a wide sizes body, users should be able to resize the columns or wrap the information column wise.

Headers:

- Include print date, name of the report or the person, the title, retrieval time, logo and other organizational identity details.

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Report

Footers:

- Include current page, number of pages, date, data source, format name, URL or location information and legal information.
- Repeat footer at the bottom of every page.

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The Web – Web Sites and Web Pages

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Introduction

The content or information on the Web is unlimited and the Web users access a site for three reasons:

- A focused search for a piece of information or an answer to a query.
 - A less focused browsing
 - Just surfing
- The main reason for web access by users is sufficient and good content.

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Dimensions of a Web site

Following three dimensions are considered in the creation of a web site:

- **Structure:** The issues considered in regards to the structure of a web site are:
 - Organization of the information
 - Number of pages
 - Length of its pages

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Dimensions of a Web site

Navigation: The issues considered in regards to the navigation of a web site are:

- Movement of the user around the site
- Support given by the site to help the movement

Information content: The issues considered in regards to the content of a web site are:

- The information of the site, the quantity of information, and its presentation

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Web User Interaction Styles

Following are the three different Web interaction approaches each with a different flow and activity behavior characteristics:

Browsing:

- It is non-specific surfing.**
- Users move through a Web site at their own pace.**
- Browsing is analogous to shopping.**

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Web User Interaction Styles

Information finding:

- This involves finding specific answers to specific questions or requirements.**

Information gathering:

- This involves looking for answers for future use.**

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The Web Experience

- There are many factors that affect the user experience of the Web.
- Some of the important factors are as follows:
 - The web sites design meeting the user's expectations, capabilities, and limitations
 - The visual appearance and content of the Web site
 - The functionality of the Web site

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The Web Experience

Following are the set of principles used to create a web site:

- **Expectations:** User's expectations w.r.t the web content, its flow and organization should be met.
- **Tasks:** The design should consider the user's capabilities and limitations and should be easy to use.
- **Visual appearance:** The visual appearance of the web site screens must be attractive and consistent.

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The Web Experience

- **Information Content:**
 - Content should be appropriate to the user's needs and frequently updated.
 - The most important information is should be positioned prominently.
 - The content should be visible without needing to scroll more.

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The Web Experience

- **Web Page Headings:** Properly labelled web page headings will provide a road map to understand the navigation and web site structure.
- **Platforms:**
 - The design should consider different platforms and screens.
 - In the design, an image-safe area should be specified so that users with a small or large screen can view the screen content.

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The Web Experience

- Processes:
 - The windows or graphics which are not required should not be displayed.
 - An option for printing a web page should be provided.
 - A warning message before a time-out should be provided.
- Downloading: Design should aim for minimizing downloading time.
- Web Applications: Web applications should be added only if necessary.

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The Web Experience

- Accessibility: Design should aim for a better accessibility of the web content.
- Assistance: Design should include instruction which would help in assisting users.

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The Web Structure and Page Persual

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The Web Structure

- The Web is a non-linear entity with hundreds of web pages that can be navigated in number of ways.
- This makes the web flexible.
- Too much flexibility can lead to confusion and the user cannot develop a mental model of a website structure.
- A website designer should develop a clear and meaningful site structure before its implementation.

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The Web Structure

- A basic guideline for developing a web site is that, the content should be organized in a natural way for the user.
- This way it reflects the structure of the tasks which the user wants to perform.

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Page Persual

- The most frequent way in which a user goes through a page is just scanning or skimming it and not going through its details and reading word by word.
- Enhancing the scanning process is a critical design issue.

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Page Persual

Page Scanning guidelines:

- The page content should be organized in a logical and systematic way.**
- Important information should be highlighted.**
- Headings and subheadings should be used at appropriate places.**
- Phrases and sentences should be short in length.**
- Paragraphs should be small and readable.**
- Use bullets for lists and tables for drawing attention.**

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Page Persual

Writing guidelines:

- A meaningful title for a content is very important.**
- There should be headings and sub headings where required.**
- Text should be concise using a simple language.**

Presentation guidelines:

- Important information and concepts must be highlighted.**
- Any new information added or modified should be notified.**

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Page Persual

Web Page length guidelines:

- Page length should be less especially for home page, navigation pages , pages to be read faster and downloaded.
- Page length should be longer for one which require uninterrupted reading, matching structure to paper counterpart.
- A complete content should be restricted to two or three screens of information.

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Home Page, Browsing and Searching

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Home Page

- This is a site's important page as it gives the first impression of the site.
- Some of the important characteristics of Home Page are as follows:
 - Purpose of home page: It is to tell the user about the contents of the site and the places to find.
 - Content: Provides all the content options.
 - Size: It should be limited to one screen.

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Home Page

- Elements:
 - Name or logo of the Web site owner
 - Web site name
 - Brief description of the web site
 - Summary of the key informational content
 - Site overview or map
 - Summary of the latest news or promotions
 - Searching facility

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Home Page

- **Organization and Layout:**

- **Important information should be placed at the top i.e, within top 4 inches of the page.**
- **Place the remaining elements based on their importance.**

- **Access:**

- **Access to the home page should be provided from all other pages.**

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Browsing and Searching

- **Browsing is a process where the user scans the content and tries to explore the relevant items from his or her memory and recognizes them.**
- **Searching is a process of recalling.**
- **Searching requires keywords which are dug from memory and entered into the search field.**
- **This results in contents nearer to the keyword.**

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Browsing and Searching

Browsing guidelines:

- Scanning the content should be facilitated.
- To make moving through the pages easy, a layered structure can be used along with links.
- Allow the user to leave the site conveniently and reorient themselves when they return back.

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Browsing and Searching

Searching guidelines:

- Know Your Search User
- Express the Search
- Launch the Search
- Progressive Search Refinement
- Presenting meaningful results
- Remember the search
- Locatability

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Statistical Graphics

- Whenever there is a need to present data in a graphical format such as a chart or a graph, statistical graphics are used.
- Following are the uses of statistical graphics:
 - They help in communicating complex ideas with clarity, precision, and efficiency in a short time and less clutter.
 - They will bind large amounts of information together in a meaningful way.
 - They will also help in comparing different types of data.

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Statistical Graphics

- They help in presenting time varying data.
- They help in statistical analysis of data.

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Technological Considerations in Interface Design

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Introduction

Following are the two factors that affect the Interface design:

- Characteristics of the hardware being used
- The interface's controlling software
- These factors are further divided into various subfactors under graphical systems.

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Graphical Systems

Screen design must be compatible with the capabilities of the system as follows:

System Power:

- Processing speed and memory affect the performance of a system in cases of feedback and animation capabilities.
- A slow screen refresh rate will increase the user's chances of perceiving screen flicker, which results in visual fatigue.

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Graphical Systems

Screen Size:

- Large screens can take advantage of windowing systems.

Screen Resolution:

- Poor screen resolution affects the use of a graphical system.
- They will not allow the use of sharp and realistic drawings and shapes.
- Window structure and icon design may be affected.

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Graphical Systems

Display Colors:

- More the number of colors, better the graphics effect.

Other display features:

- The screen design process is facilitated by a wide range screen attributes or properties, such higher brightness, reverse polarity, different font sizes and styles, underlining, blinking, line rules and boxes, color, and whitespace.

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Graphical Systems

- The designer must be aware of the capabilities of the system, their limitations and effective usage.

The screen design should also be compatible with the capabilities of the following:

System Platform:

- The screen design should be compatible with the system platform to be used such as Apple Computer's Macintosh, Microsoft Windows, etc.

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Graphical Systems

Development and Implementation tools being used:

- Today more than 50% of software code used on a system is used for the user interface design.
- The tools available to build them are toolkits, interface builders, and user interface management systems.
- Toolkit: It is a library of controls or widgets such as menus, buttons, and scroll bars.
- Examples of toolkit: Motif, OpenLook, and the Macintosh

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Graphical Systems

▪ Interface Builder:

- It is a graphical tool that helps a programmer create dialog boxes, menus, and other controls.
- It provides a palette to select and position controls, and to set properties.
- They cannot handle the parts of the interface that involve graphical objects moving around.

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Graphical Systems

- **User interface management system (UIMS):**

- This extends the features of a builder by also providing assistance with creating and managing the insides of windows.
 - Examples: HyperCard and Visual Basic

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Graphical Systems

Style Guides being used:

- Various style guides are available for system developers in order to provide design consistency in interface design.
- These guidelines provide the following features:
 - They specify the appearance and behavior of the user interface.
 - They describe the windows, menus, and other controls for a specific look and functionality.
 - They also help in the usage of various components.

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Graphical Systems

Popularly used Style Guides:

- Apple's Macintosh Human Interface Guidelines
- IBM's System Application Architecture Common User Access (SAACUA)
- Microsoft's The Windows Interface Guidelines for Software Design

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