

WIMP user interfaces



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User interfaces




- WIMP user interfaces

WIMP user interfaces

- **W**indows
- **I**cons
- **M**enus
- **P**ointers
- Other typical elements of GUI (Graphical User Interface)
 - Lists
 - Controls
 - Text entry fields
 - ...

WIMP user interfaces

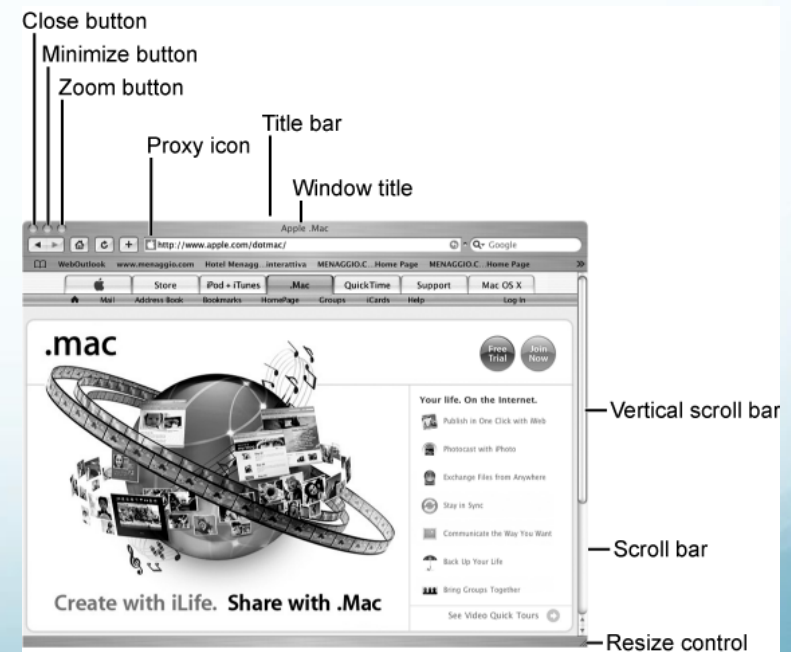
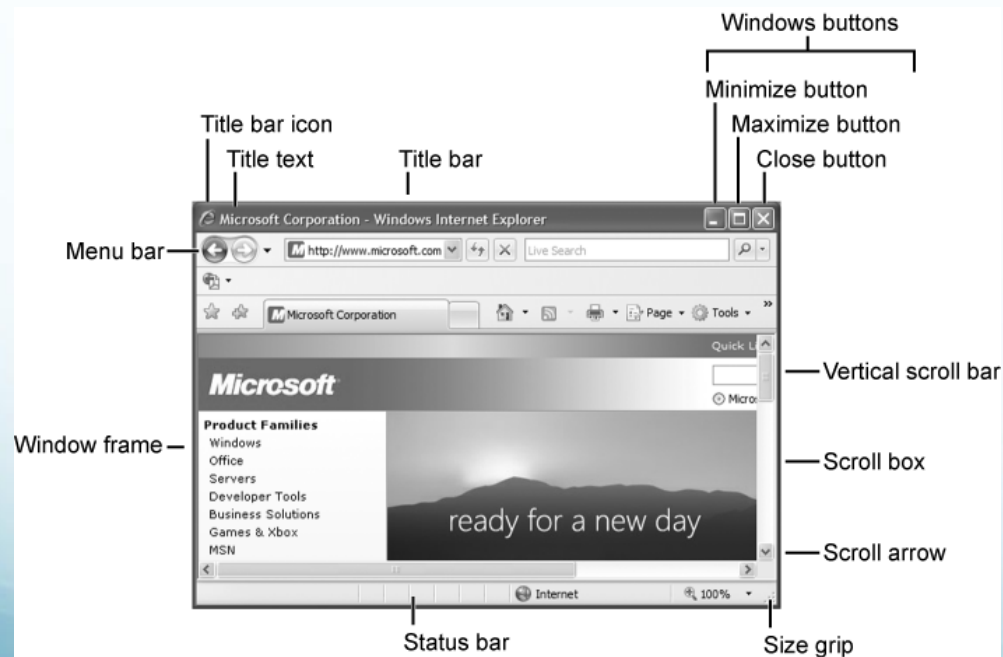
Windows

<p>Tiled windows</p> 	<p>Screen divided into mutually non-overlapping frames</p> <p>Allow drag-and-drop</p>
<p>Overlapping windows</p> 	<p>Efficient use of the screen real state</p> <p>Difficult to handle</p>
<p>Cascading windows</p> 	<p>Efficient use of the screen real state</p> <p>Easy to organise</p>

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Windows

- Windows are generally populated with standard components that are located in prescribed locations



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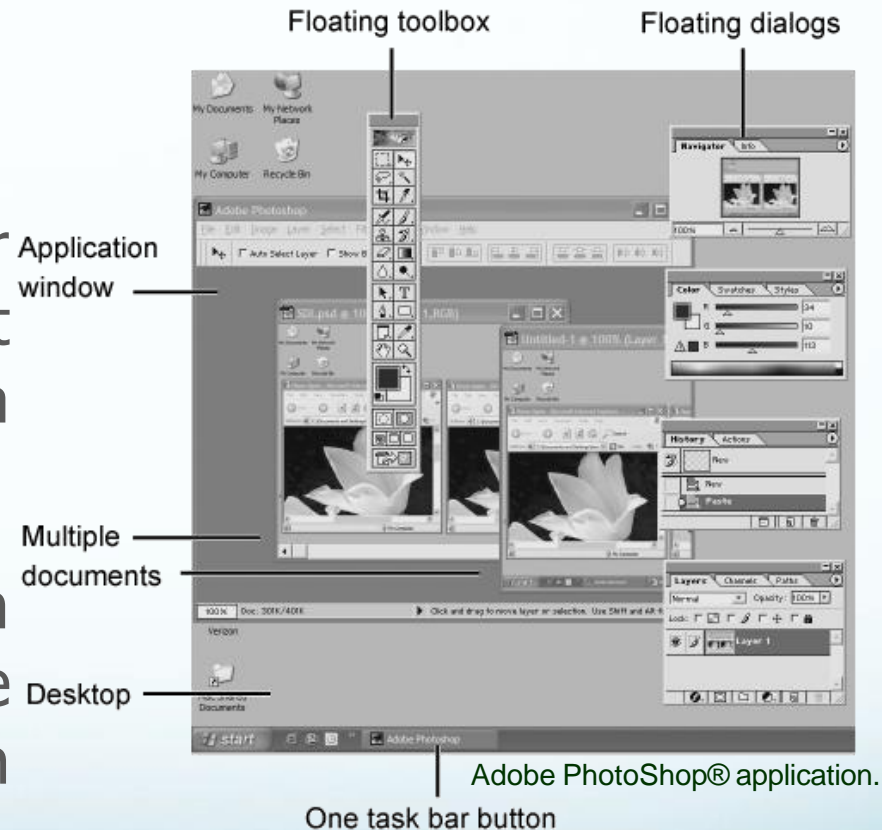
Windows

- Three types of WIMP interfaces
 - Multiple Document Interface (MDI)
 - Single Document Interface (SDI)
 - Tabbed Document Interface (TDI)

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Windows - MDI

- MDI is application-centric
- Windows reside under a single parent window (a.k.a application window)
- This contrasts with SDI = all windows are independent of each other



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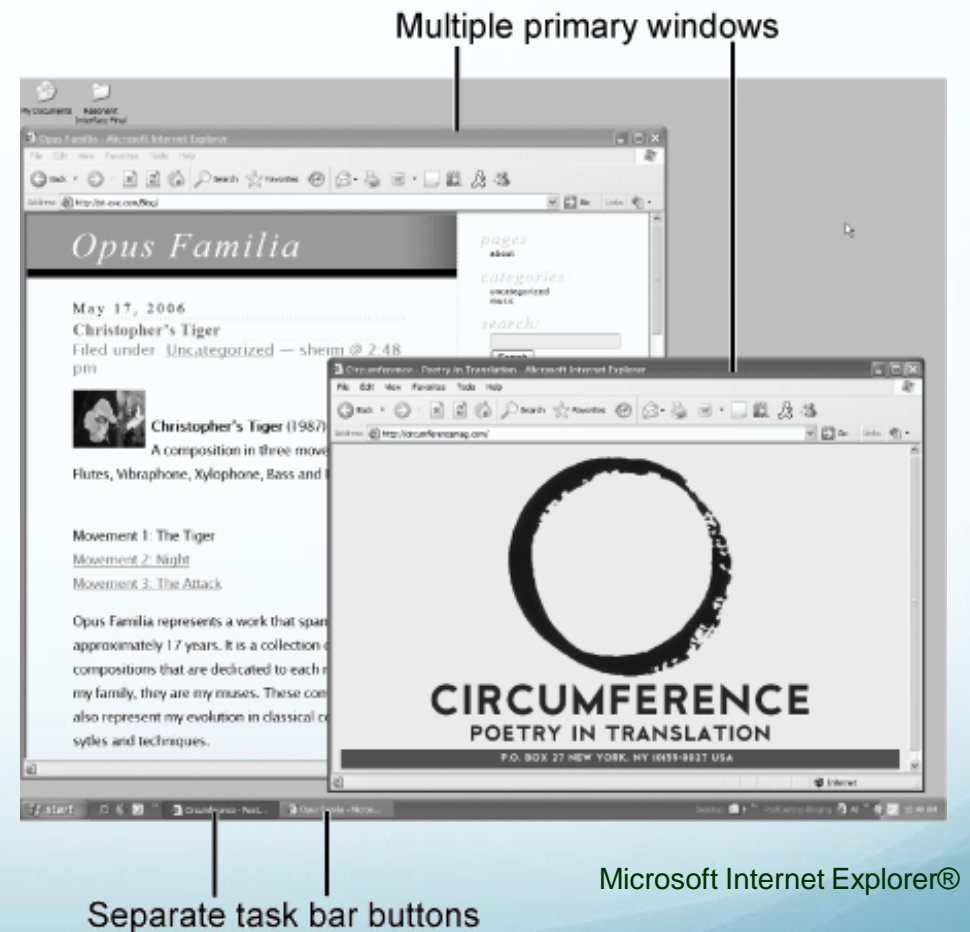
Windows - MDI

- Advantages:
 - Multiple documents to be simultaneously visible
 - Coordinated work space
 - Create minimal visual clutter – only one menu or toolkit is required for all documents
 - Conserves system resources because only one instance of the application runs at a time
- Disadvantages:
 - The menus change according to the state of the active document – this can increase the learning curve
 - Document windows must remain within the MDI primary window – this eliminates the advantages of using multiple displays
 - Child windows are minimised within the parent window - increasing visual complexity

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Windows - SDI

- SDI are document-centric
- They open new primary windows for each instance of an application document
- Each primary window contains all the program's menus and toolkits



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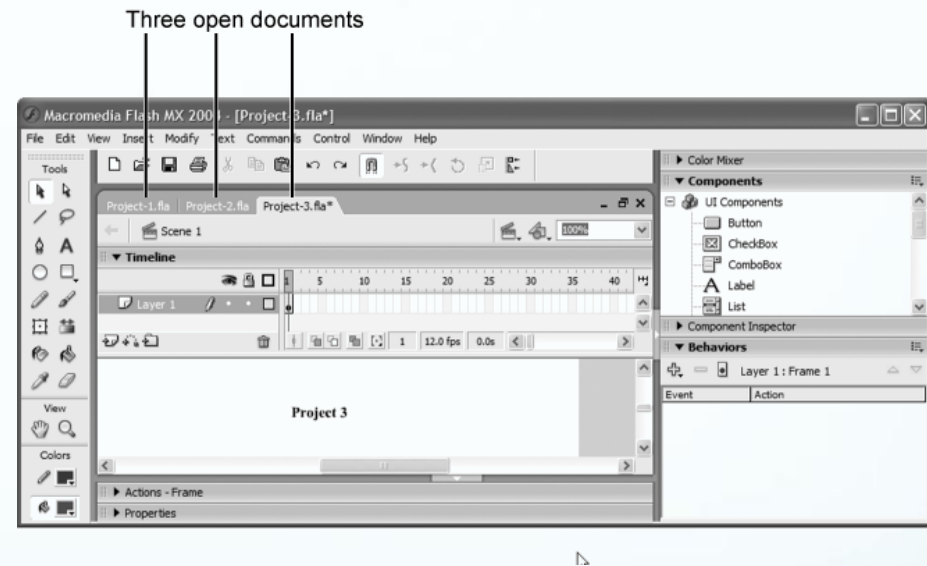
Windows - SDI

- Advantages:
 - User's view – all the applications are document-centric
 - They are less visually complex – the primary window and the document window are connected
- Disadvantages:
 - They do not provide a way to group diverse but related document windows
 - The task bar can become full when too many documents are open
 - Moving from one window to another might be complex

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Windows - TDI

- A type of MDI (aka workbook)
- Tabs to move from one document to another
- Some applications limit the size of the window and neither “tiling” nor “cascading” is allowed
- Other application let us change the size of windows, becoming MDI applications



Adobe Flash® application.

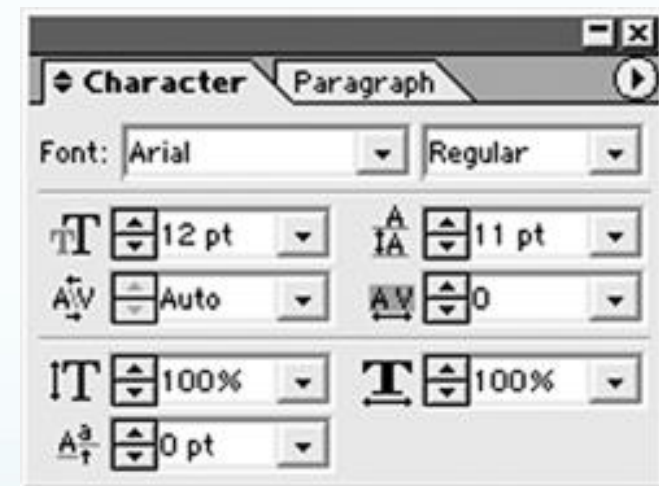
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Windows – Dialog boxes

- Dialog boxes are a type of secondary window
- They support less common tasks and provide sets of related functionality in a well-defined container
 - implement a command (confirm actions, execute functions)
 - respond to a question or an "alert"
 - Provide information about errors

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Windows – Dialog boxes



Text formatting dialogue—Windows XP. (b) Preferences dialogue—Mac OS X.

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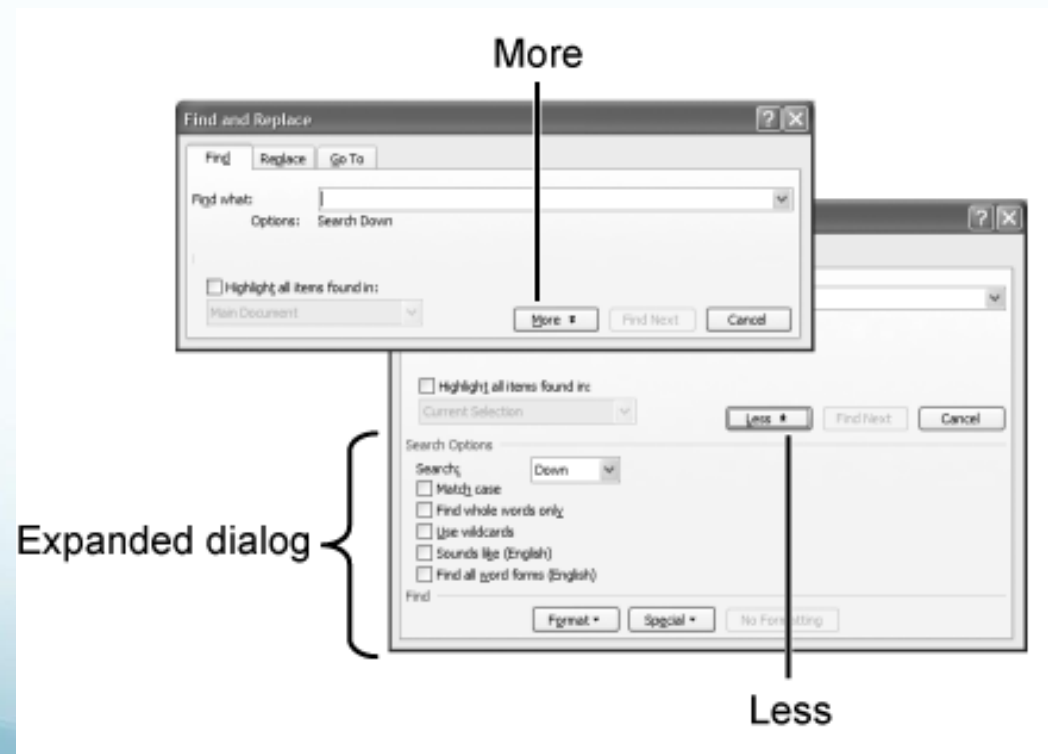
Windows – Dialog boxes

- Dialog boxes can be modals or modeless
 - Modals: block interaction, e.g. confirmation dialog box
 - Modeless: do not block interaction (requested information is not essential to continue, and so the window can be left open while work continues elsewhere)

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Windows – Dialog boxes

- Expanding dialog = some dialogues allow experienced users to access to advanced functionality by clicking on a button that expands the size of the dialogue and exposes other options



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Windows – Other elements

- *Panels*

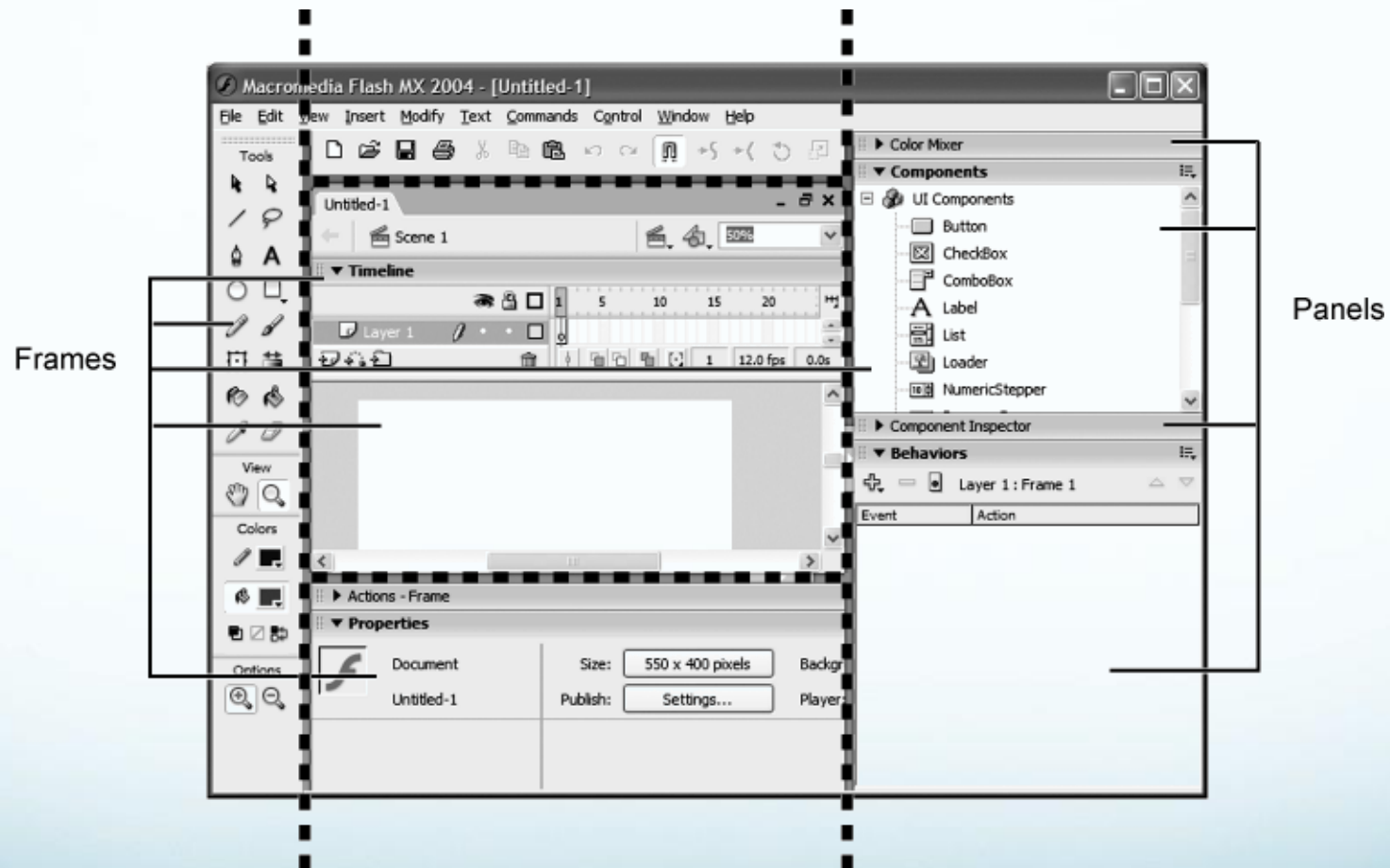
- Are an efficient way to provide functionality required by other aspects of an application without forcing the user to leave the document window
- Group related functions

- *Frames*

- Change size (e.g. minimize)
- On web pages, several areas

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Windows – Other elements



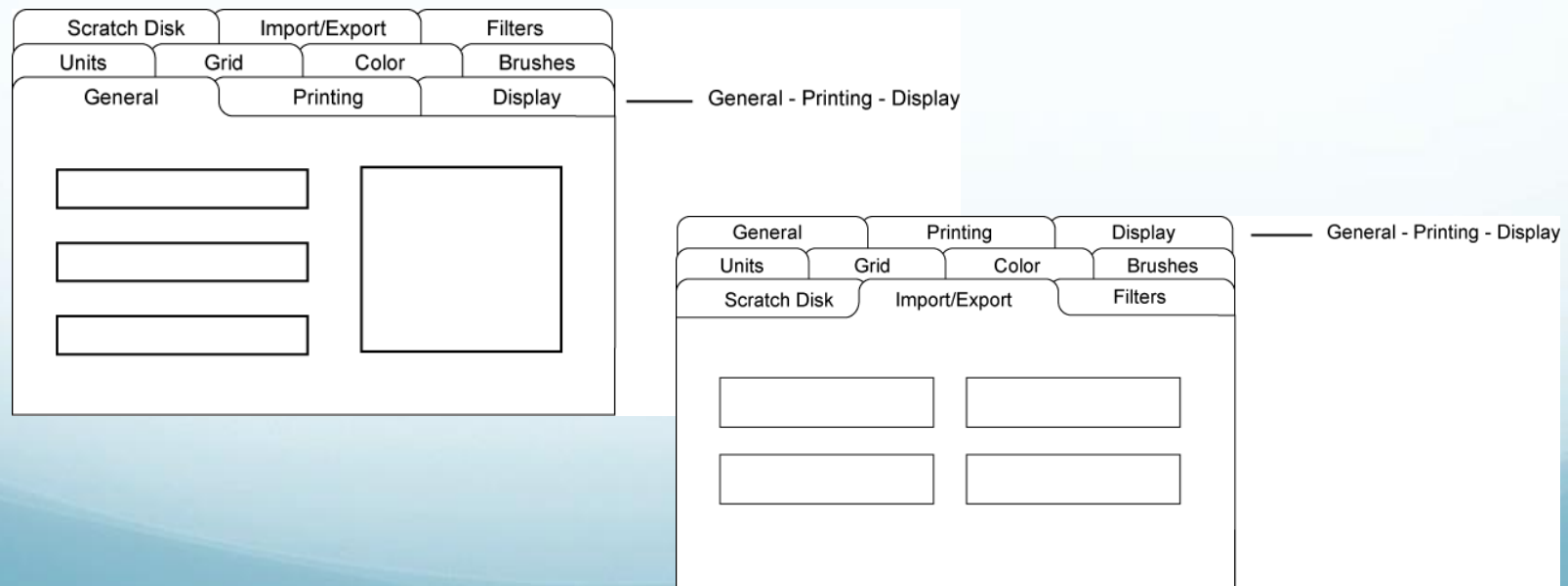
Panes and Frames, Adobe Flash®.

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Windows – Other elements

- Tabs

- Stacking levels and more elements in the same window / dialog box
- Potential lack of consistency: different number of elements in tabs



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Windows – Recommendations

- Decide the type of user interface (MDI, SDI, TDI)
- Make sure the components of a window are related to each other
- Trade-off between:
 - lots of windows with few elements and functions
 - few windows with lots of elements and functions

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Windows – Recommendations

- Avoid too many windows
 - Windows only when needed
 - Secondary windows for secondary tasks / elements
- Window components are sufficiently related
- Tabs and panels help us organise the functions of a system
- Most often used components = easy to identify and accessible
- Windows status (opened, minimised,...) must be clear

WIMP interfaces

Icons

- Icons are signs and represent a significant degree of cognitive complexity
- A good design of icons is important
 - a well-designed icon improves the user experience
 - an icon difficult to understand, vague... results in frustrating user experiences

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Icons

- Few and meaningful icons



Too many elements in one icon

WIMP user interfaces

Icons

- Simple – unnecessary information is not needed



Add
Database



Remove
Database



Search
Database



Database
Administrator



Save
Database



Add
Database



Remove
Database



Search
Database



Database
Administrator



Save
Database



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Menus

- Menus afford access to system functionality
- Menu option lists can consist of any type of data such as images or symbols
- Options are generally indented in relation to the title
- Frequently used items should be placed at the top
- These lists can be ordered or unordered

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Menus

- Structure
 - Menus should have at least two options; otherwise, they should be combined with another menu
 - Options organized semantically, and the organization is clear

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Menus

- Presentation
 - Consistency in placement, order, wording, highlighting, and all other aspects should be maintained
 - Clear names
 - Apple suggests “standard” names, since they are expected to ring a bell to us
 - Options should be listed in Title Case
 - What is that?

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Menus

- How they work
 - Options should be highlighted when the pointer passes over time
 - Visual clues to distinguish between active or inactive options (background color – text color)
 - Inactive options should not disappear
 - Why?

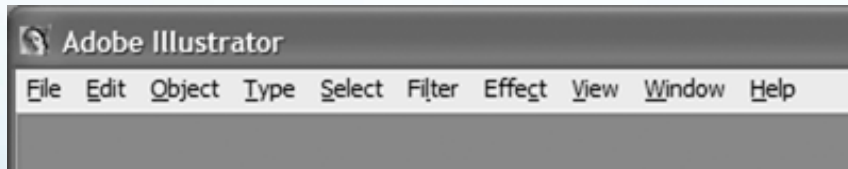
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Menus

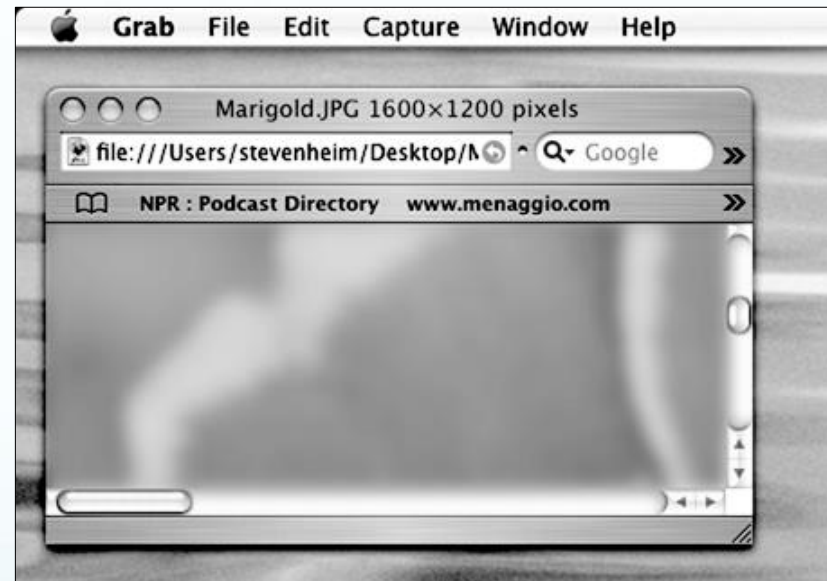
- We might add secondary menus
 - Reduce the visibility of available options
 - Those elements with a secondary menu should indicate so clearly
 - Can be detached from the primary menu and we can move them around the screen

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Menus



Menu bar—Adobe Illustrator®

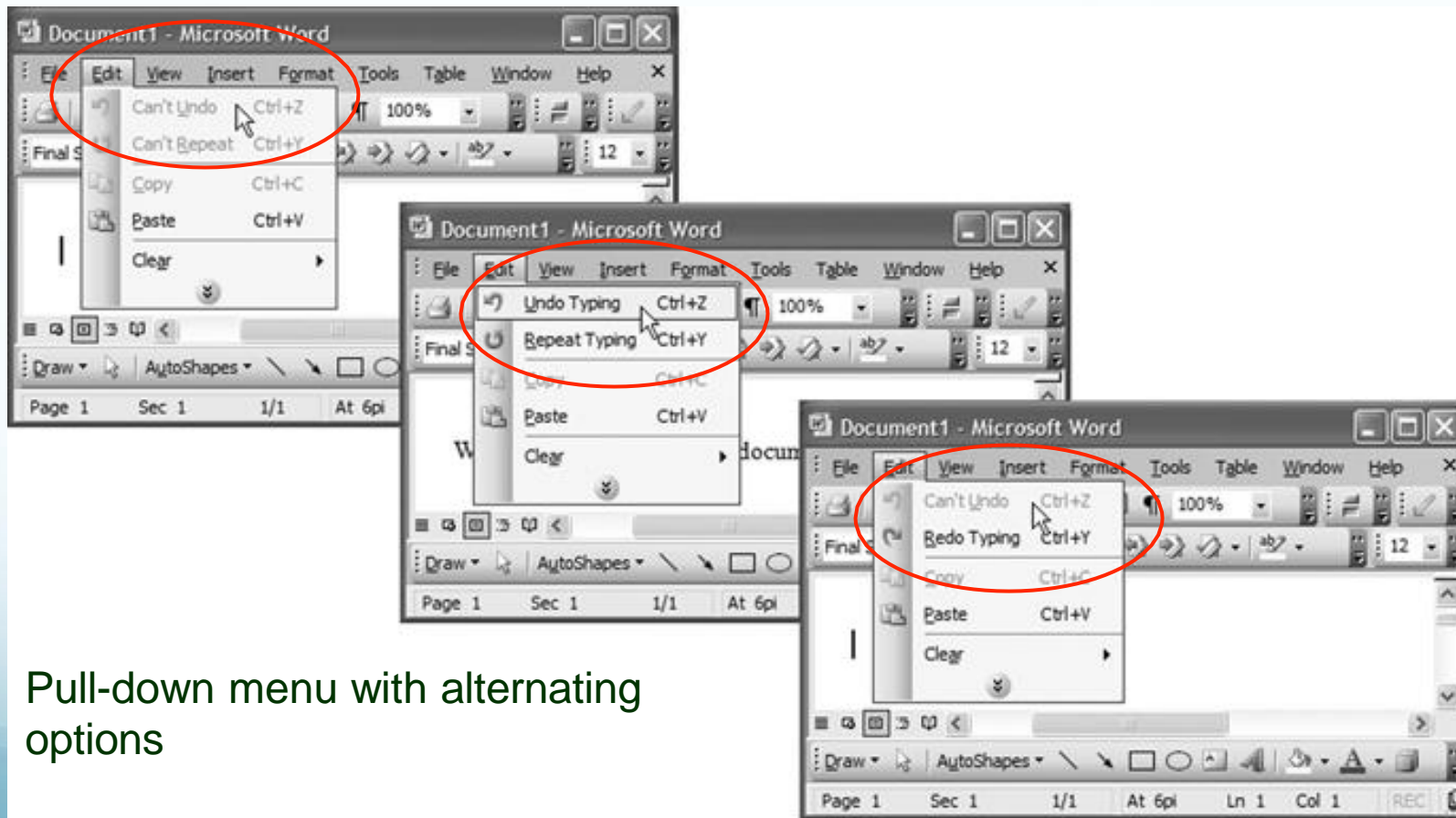


Menu bar—Mac OS X.

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Menus

- Pull-down menus

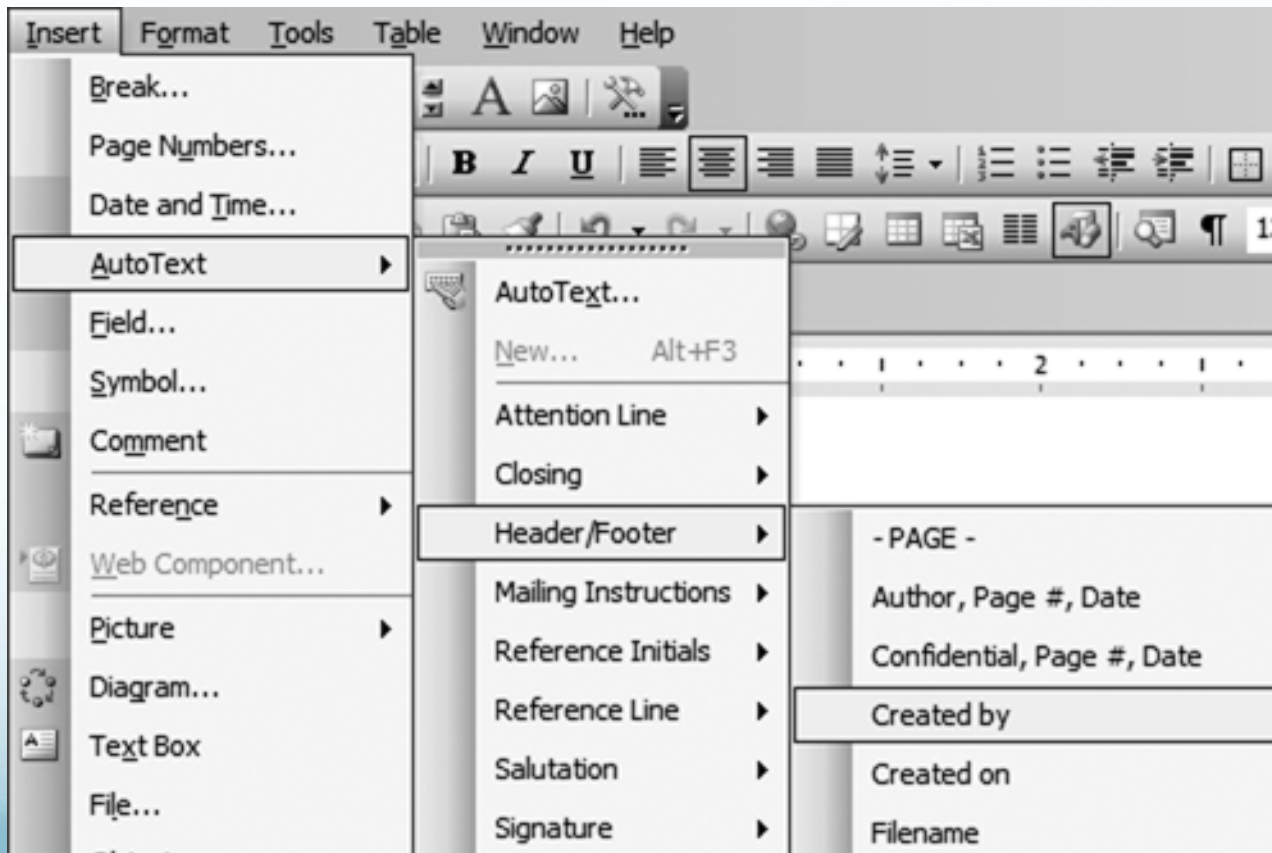


Pull-down menu with alternating options

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Menus

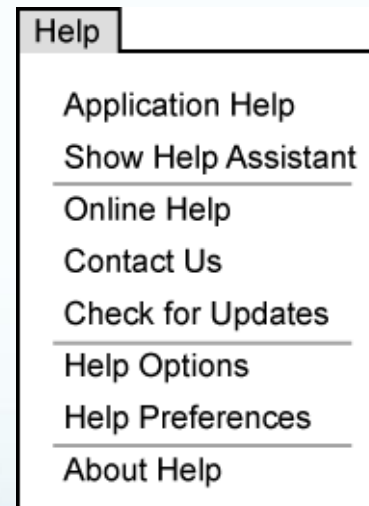
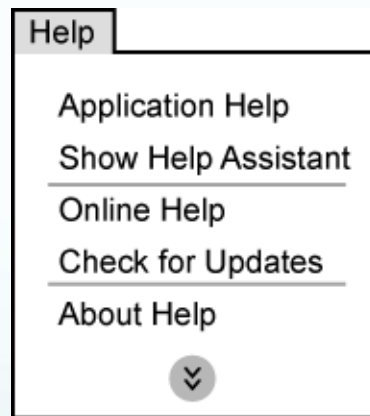
- Cascading menu



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Menus

- Expanding menu



WIMP user interfaces

Menus

- Pop-up menus are not always visible
- They offer context-sensitive options and are located within the work space
- They are activated when the pointer is over a “hot spot” and sometimes require a specific mouse clic

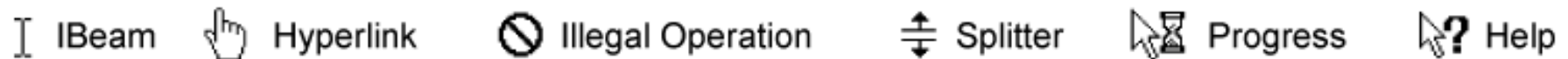
Exercise

- You have been asked to design an user interface which allows professional users to edit the color of frames of a digital movie.
- The users need to work with multiple frames at the same time in order to see how changes in one frame impact on other related frames (e.g. a scene consists of multiple frames) of the movie.
- The functionalities are the same (e.g. select area and/or frame, save and undo), and the most important one is to apply filter, which can be applied to one or multiple frames, and to a specific area of a frame (an object). Apply filter lets the user choose an algorithm of image grading.
- When the user makes a change in the color of a frame or an element of it, (s)he can't do any other operation until the changes have been applied.
- Discuss the design of the interface in terms of the WIMP paradigm (icons and windows).

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Pointers

- The pointer (cursor) is the visual manifestation of the mouse or pointing device and, as such, acts as the user's proxy in the GUI environment
- Allow us to do actions and also provide us with contextual information (e.g. wait)



- Sometimes they are not easy to perceive (e.g. cursor gets lost)

WIMP user interfaces

Other elements

- Radio buttons allow only single choices, which are always visible

Board Games	1	2	3	4
Chess	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Checkers	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Backgammon	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

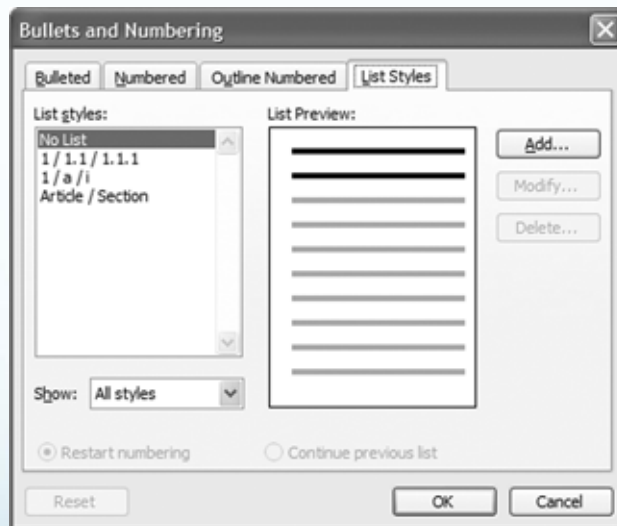
- Checkboxes allow multiple choices, which are always visible

Hobbies
Please check the hobbies that you enjoy.
<input checked="" type="checkbox"/> Biking
<input type="checkbox"/> Skating
<input type="checkbox"/> Hot Air Balloning
<input checked="" type="checkbox"/> Computer Games

WIMP user interfaces

Other elements

- Lists do not represent functionality or dialogues; they can be found within dialogues



Windows XP

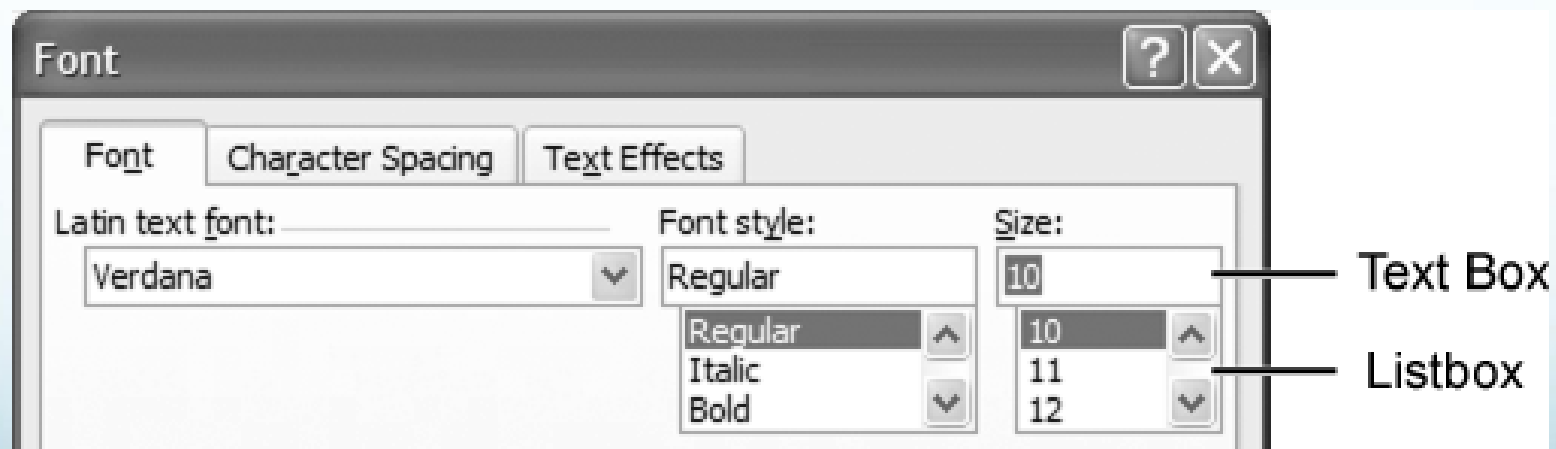


Mac OS X

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Other elements

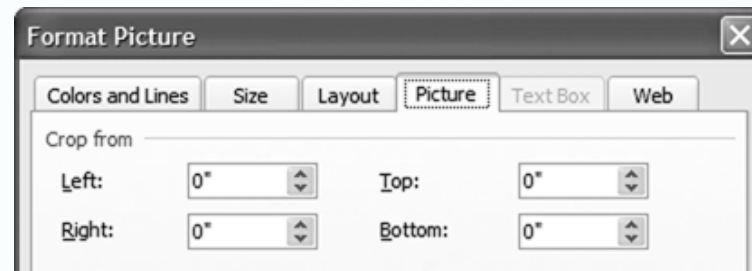
- Combobox: list box plus text box (and spinner too). The user can select an option from the list or can enter text in the text box



WIMP user interface

Other elements

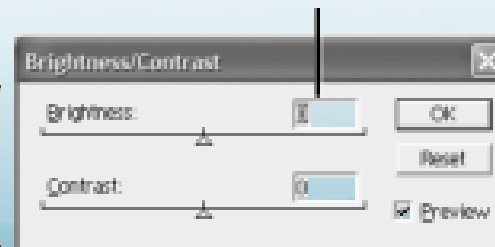
- A *Spinner* is a text box with two arrows, one pointing upward and one pointing downward



- A *slider* is manipulated by moving an arm on a track back and forth or upward and downward.

Text Box controls

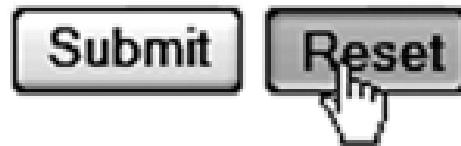
Sliders



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Other elements

- The most common control component is the button
 - A command button incorporates a short text label on the face of the button



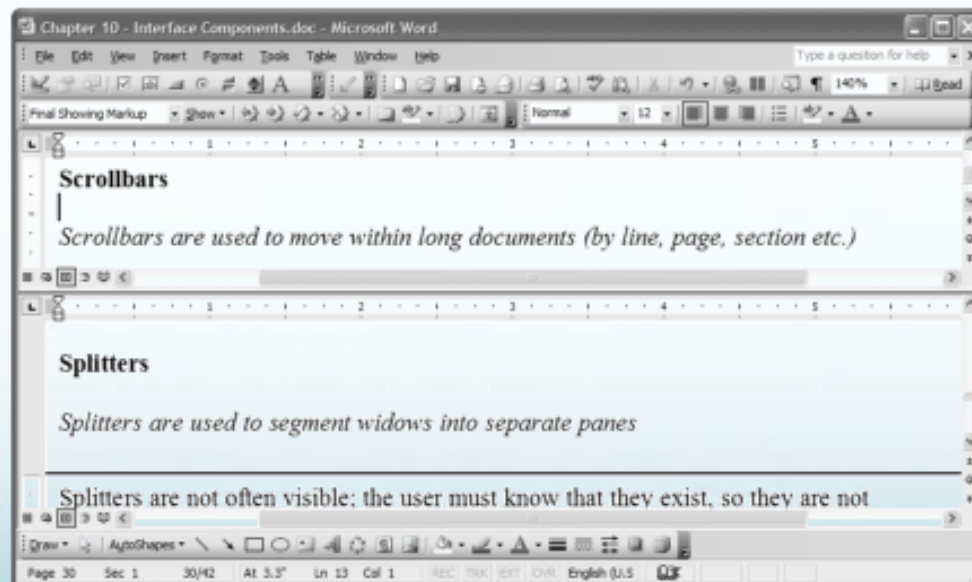
- Toolbar buttons – they look like icons that act as buttons, visually grouped together



WIMP user interfaces

Other elements

- Scrollbars: horizontal and/or vertical
- Splitters are used to segment windows into separate panes

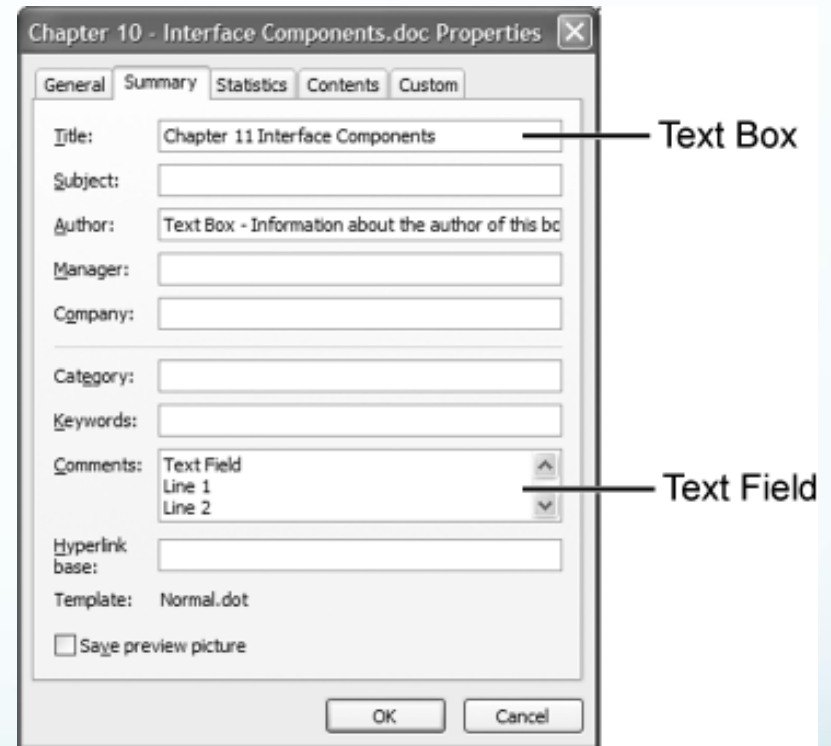


— Splitter

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Other elements

- Text Entry Components
 - Text boxes
 - Text field



The user interface

- ✓ WIMP interfaces
- Design principles

References

- Human-Computer Interaction
 - Alan Dix, Hanet Finlay, Gregory Abowd, Russel Beale
- Human-Computer Interaction
 - Jenny Preece, Yvonne Rogers, David Benyon, Simon Holland, Tom Carey
- The Resonant Interface: HCI Foundations for Interaction Design
 - Steven Heim