

IAT Scheme and Solutions



Internal Assessment Test 2 – December 2022

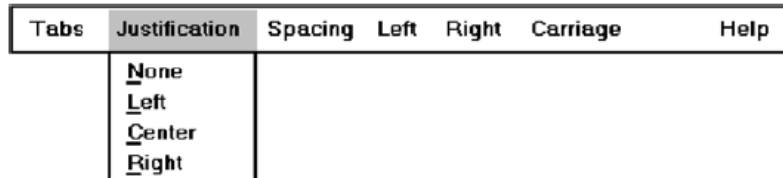
Sub:	User Interface Design				Sub Code:	18CS734	Branch:	ISE
Date:	01/12/2022	Duration:	90 min's	Max Marks:	50	Sem/Sec:	VII A, B & C	OBE

1 Draw the structure of Pull-down Menu and explain its characteristics in detail. 10 MARKS CO2 L3

Pull-Down Menu

- ✓ Proper usage:
 - To initiate frequently used application actions that take place on a wide variety of different windows.
 - A small number of items.
 - Items best represented textually.
 - Items whose content rarely changes.
- ✓ The advantages of pull-down menus are:
 - The menu bar cues a reminder of their existence.
 - They may be located relatively consistently on the screen.
 - No window space is consumed when they are not used.
 - They are easy to browse through.
 - Their vertical orientation is most efficient for scanning.
 - Their vertical orientation is most efficient for grouping.
 - Their vertical orientation permits more choices to be displayed.
 - They allow for display of both keyboard equivalents and accelerators.
- ✓ The disadvantages of pull-down menus are:

- They require searching and selecting from another menu before seeing options.
- They require looking away from main working area to read.
- They require moving the pointer out of working area to select (unless using keyboard equivalents).
- The items are smaller than full-size buttons, slowing selection time.
- They may obscure the screen working area.



Display

- ✓ Display all possible alternatives.
- ✓ Gray-out or dim items that cannot be chosen due to the current state of an application.

Location

- ✓ Position the pull-down directly below the selected menu bar choice.

Size

- ✓ Must contain a minimum of two choices.
- ✓ Restrict to no more than 5 to 10 choices, preferably 8 or less.

Title

- ✓ Not necessary on a pull-down menu. The title will be the name of the menu bar item chosen.

Item Descriptions

- ✓ Use mixed-case, headline-style words to describe choices.
 - If the choices can be displayed graphically, for example, as fill-in patterns, shades, or colors, textual descriptions are not necessary.
- ✓ Do not:
 - Identify a menu item by the same wording as its menu title.
 - Change the meaning of menu items through use of the Shift key.
 - Use scrolling in pull-downs.
 - Place instructions in pull-downs.

Organization

- Follow standard platform ordering schemes when they exist.
 - Place application-specific choices where they fit best.
- Place frequent or critical items at the top.
- Separate destructive choices from other choices.
- Align choices into columns, with:
 - Most frequent choices toward the top.
 - Related choices grouped together.
 - Choices found on more than one pull-down consistently positioned.
- Left-align choice descriptions.
- Multicolumn menus are not desirable. If necessary, organize top-to-bottom, then left-to-right.

Layout

- Leave the menu bar choice leading to the pull-down highlighted in the selected manner (reverse video or reverse color).
- Physically, the pull-down menu must be wide enough to accommodate the longest menu item description and its cascade or accelerator indicator.
- Align the first character of the pull-down descriptions under the second character of the applicable menu bar choice.
- Horizontally, separate the pull-down choice descriptions from the pull-down borders by two spaces on the left side and at least two spaces on the right side.
 - The left-side border will align with the left side of the highlighted menu bar choice.
 - The right-side border should extend, at minimum, to the right side of its highlighted menu bar choice.
 - Pull-downs for choices on the far right side of the menu bar, or long pull-down descriptions, may require alignment to the left of their menu bar choice to maintain visibility and clarity.

Groupings

- Provide groupings of related pull-down choices:
 - Incorporate a solid line between major groupings.
 - Incorporate a dotted or dashed line between subgroups.
 - Left-justify the lines under the first letter of the columnized choice descriptions.
 - Right-justify the lines under the last character of the longest choice description.
 - Display the solid line in the same color as the choice descriptions.

Mark Toggles or Settings

- If a menu item establishes or changes the attributes of data or properties of the interface mark the pull-down choice or choices whose state is current or active “on.”
 - For nonexclusive items, display a check mark to the left of the item

description.

- If the two states of a setting are not obvious opposites, a pair of alternating menu item descriptions should be used to indicate the two states.
- For exclusive choices, precede the choice with a contrasting symbol such as a diamond or circle.

Pull-Downs Leading to Another Pull-Down

- If a pull-down choice leads to another pull-down, provide a cascade indicator as follows:
 - Place an arrow or right-pointing triangle after the choice description.
 - Align the triangles to the right side of the pull-down.
 - Display the triangle in the same color as the choice descriptions.

Pull-Downs Leading to a Window

- For pull-down choices leading to a window:
 - Place an ellipsis (three dots) after the choice description.
 - Do not separate the dots from the description by a space.
 - Display the ellipsis in the same color as the choice descriptions.

Keyboard Equivalents and Accelerators

- Provide unique mnemonic codes by which choices may be selected through the typewriter keyboard.
 - Indicate the mnemonic code by underlining the proper character.
- Provide key accelerators for choice selection.
 - Identify the keys by their actual key-top engravings.
 - Use a plus (+) sign to indicate that two or more keys must be pressed at the same time.
 - Enclose the key names within parentheses ().
 - Right-align the key names, beginning at least three spaces to the right of the longest choice description.
 - Display the key alternatives in the same color as the choice descriptions.

Separation

- Separate the pull-down from the remainder of the screen, but visually relate it to the menu bar by:
 - Using a background color the same as the menu bar.
 - Displaying choice descriptions in the same color as the menu bar.
 - Incorporating a solid-line border completely around the pull-down in the same color as the choice descriptions.
- A drop shadow (a heavier shaded line along two borders that meet) may also be included.

Selection Cursor

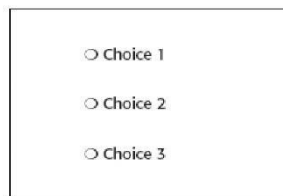
- Use a reverse video, or reverse color, selection cursor the same color as the menu bar to surround the choice.
- Create a consistently sized cursor as wide as the pull-down menu.

2 Explain the structures of Menus in detail.10 MARKS

CO2 L2

Single Menu

- In this simplest form of menu, a single screen or window is presented to seek the user's input or request an action to be performed

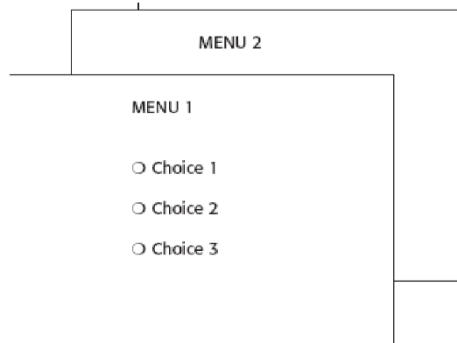


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- A single menu may be iterative if it requires data to be entered into it and this data input is subject to a validity check that fails. The menu will then be represented to the user with a message requesting reentry of valid data.

Sequential Linear Menu

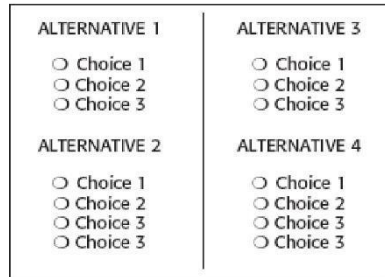
- Sequential linear menus are presented on a series of screens possessing only one path.
- The menu screens are presented in a preset order, and, generally, their objective is for specifying parameters or for entering data.



- Sequential path menus have several shortcomings. A long sequence may become tedious as menu after menu is presented.

Simultaneous Menu

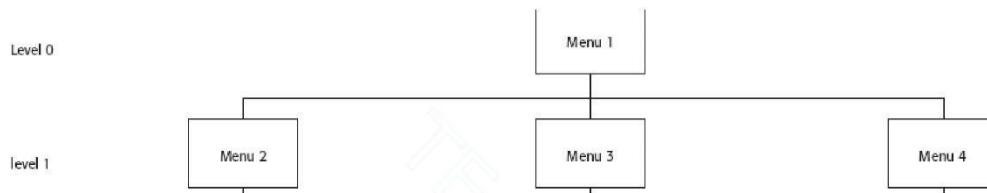
- Instead of being presented on separate screens, all menu options are available simultaneously



- Problems with simultaneous menus are that for large collections of menu alternatives screen clutter can easily occur, and screen paging or scrolling may still be necessary to view all the choices.
- Presenting many menu dependencies and relationships on a screen, especially if poorly indicated, can also be very confusing

Hierarchical Menus

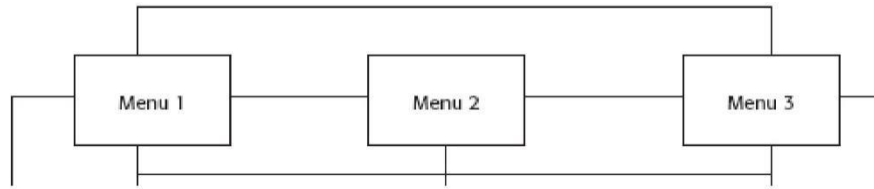
- A hierarchical structure results in an increasing refinement of choice as menus are stepped through, for example, from options, to suboptions, from categories to subcategories, from pages to sections to subsections, and so on
- A hierarchical structure can best be represented as an inverse tree, leading to more and more branches as one moves downward through it.
- Common examples of hierarchical design today are found in menu bars with their associated pull-downs



- A disadvantage of a hierarchical scheme is that the defined branching order may not fit the users conception of the task flow.
- If users are not familiar with the hierarchical menu, or are unable to predict what suboptions lie below
- a particular choice, they may go down wrong paths and find it necessary to go back up the tree to change a choice, or perhaps even return to the top-level menu

Connected Menus

- Connected menus are networks of menus all interconnected in some manner. Movement through a structure of menus is not restricted to a hierarchical tree, but is permitted between most or all menus in the network.
- A connected menu system may be cyclical, with movement permitted in either direction between menus, or acyclical, with movement permitted in only one direction. These menus also vary in connectivity, the extent to which menus are linked by multiple paths.



- The biggest advantage of a connected menu network is that it gives the user full control over the navigation flow. Its disadvantage is its complexity,

Event-Trapping Menus

- Event Trapping menus provide an ever-present background of control over the system's state and parameters while the user is working on a foreground task.
- Event-trapping menus generally serve one of three functions.
 - (1) They may immediately change some parameter in the current environment (bold a piece of text),
 - (2) they may take the user out of the current environment to perform a function without leaving the current environment (perform a spell check), or
 - (3) they may exit the current environment and allow the user to move to a totally new environment (Exit).

3 Apply direct methods for determining the business user requirements with suitable examples. 10
MARKS CO1 L3

Individual Face-to-Face Interview

- A one-on-one visit with the user to obtain information. It may be structured or somewhat open-ended.
- A formal questionnaire should not be used, however. Useful topics to ask the user to describe in an interview include:
 - The activities performed in completing a task or achieving a goal or objective.
 - The methods used to perform an activity.
 - What interactions exist with other people or systems?
- It is also very useful to also uncover any:
 - Potential measures of system usability
 - Unmentioned exceptions to standard policies or procedures.
 - Relevant knowledge the user must possess to perform the activity.
- **Advantages**
 - Advantages of a personal interview are that you can give the user your full attention, can easily include follow-up questions to gain additional information, will have more time to discuss topics in detail, and will derive a deeper understanding of your users, their experiences, attitudes, beliefs, and desires.
- **Disadvantages**
 - Disadvantages of interviews are that they can be costly and time-consuming to conduct, and someone skilled in interviewing techniques should perform them.

Telephone Interview or Survey

- A structured interview conducted via telephone.
- **Advantages**
 - Arranging the interview in advance allows the user to prepare for it.
 - Telephone interviews are less expensive and less invasive than personal interviews.
 - They can be used much more frequently and are extremely effective for very specific information.
- **Disadvantage**
 - It is impossible to gather contextual information, such as a description of the working environment, replies may be easily influenced by the interviewer's comments, and body language cues are missing.
 - Also, it may be difficult to contact the right person for the telephone interview.

Traditional Focus Group

- A small group of users and a moderator brought together to verbally discuss the requirements.
- The purpose of a focus group is to probe user's experiences, attitudes, beliefs, and desires, and to obtain their reactions to ideas or prototypes
- Setting up focus group involves the following:
 - Establish the objectives of the session.
 - Select participants representing typical users, or potential users.
 - Write a script for the moderator to follow.
 - Find a skilled moderator to facilitate discussion, to ensure that the discussion remains focused on relevant topics, and to ensure that everyone participates.
 - Allow the moderator flexibility in using the script.
 - Take good notes, using the session recording for backup and clarification

Facilitated Team Workshop

- A facilitated, structured workshop held with users to obtain requirements information. Similar to the traditional Focus Group
- Like focus groups, they do require a great deal of time to organize and run.

Observational Field Study

- Users are observed and monitored for an extended time to learn what they do.
- Observation provides good insight into tasks being performed, the working environment and conditions, the social environment, and working practices
- Observation, however, can be time-consuming and expensive.
- Video recording of the observation sessions will permit detailed task analysis.

Requirements Prototyping

- A demo, or very early prototype, is presented to users for comments concerning functionality.

User-Interface Prototyping

- ▭ A demo, or early prototype, is presented to users to uncover user-interface issues and problems

Usability Laboratory Testing

- ▭ Users at work are observed, evaluated, and measured in a specially constructed laboratory to establish the usability of the product at that point in time.
- ▭ Usability tests uncover what people actually do, not what they think they do a common problem with verbal descriptions
- ▭ The same scenarios can be presented to multiple users, providing comparative data from several users.

Card Sorting for Web Sites

- ▭ A technique to establish groupings of information for Web sites.
- ▭ Briefly, the process is as follows:
 - o From previous analyses, identify about 50 content topics and inscribe them on index cards. Limit topics to no more than 100.
 - o Provide blank index cards for names of additional topics the participant may want to add, and colored blank cards for groupings that the participant will be asked to create.
 - o Number the cards on the back.
 - o Arrange for a facility with large enough table for spreading out cards.
 - o Select participants representing a range of users. Use one or two people at a time and 5 to 12 in total.
 - o Explain the process to the participants, saying that you are trying to determine what categories of information will be useful, what groupings make sense, and what the groupings should be called.
 - o Ask the participants to sort the cards and talk out loud while doing so. Advise the participants that additional content cards may be named and added as they think necessary during the sorting process.
 - o Observe and take notes as the participants talk about what they are doing. Pay particular attention to the sorting rationale.
 - o Upon finishing the sorting, if a participant has too many groupings ask that they be arranged hierarchically.
 - o Ask participants to provide a name for each grouping on the colored blank cards, using words that the user would expect to see that would lead them to that particular grouping.
 - o Make a record of the groupings using the numbers on the back of each card.

- o Reshuffle the cards for the next session.
- o When finished, analyze the results looking for commonalities among the different sorting sessions.

4 Discuss Website Navigation in detail.10 MARKS

CO2 L3

Following are some of the important components required for a good web site navigation.

1. **Scrolling:**

- Do not require scrolling of navigation-only pages.
- Minimize the need for scrolling to view all links on pages containing content.
- Never require horizontal scrolling.

2. **Number of Links:**

- **One link:** At a minimum, every page should contain at least one link. To follow a path and then reach a dead end
- **Conservative number:** A smaller number of links also increases the likelihood that those being looked for will be noticed. It is not necessary to mention all features of a site on all pages. To reduce the number of links, restrict those presented to the most important site content or useful features.
- **Embedded links:** Embedded links can be a distraction and reduce page readability, especially if used in abundance. They may also be overlooked in text scanning, especially if the scanning is not carefully done. The best trade-off is to incorporate embedded links in moderation.

3. **Presenting Links:**

■ **Link text:**

- Underline all link text, including that:
 - Embedded in page content.
 - Contained in explicit menu listings.
 - Contained in headings.
 - Used as graphical labels.
- Distinguish between unselected/unvisited links and selected/visited links.
 - Make unselected/unvisited links blue.
 - Make selected/visited links purple.

Kinds of links:

- Distinguish links leading to different Web destinations through a differentiating symbol:
 - Precede links to content within the same page with a pound sign (#).
- For links moving downward in the page, use: #The principles of design.
- For links moving upward in the page use: #^ Principles introduction.
 - Precede links to external or foreign sites with another unique symbol such as an asterisk (*)

Additional information.

- Do not precede links to other site pages with any symbol:
- More principles of design.
- Also distinguish links leading to different Web destinations by presenting them in consistent locations.

■ **Graphical links:**

- Distinguish graphical links from decorative graphics through:
 - Underlining graphical text labels.

■ **Links in toolbars:**

- Distinguish links contained in toolbars through:
 - Presenting in consistent locations.
 - Using different colored backgrounds.

Other Link Guidelines:

■ **Writing:**

- Provide links to satisfy a range of user needs.

— Create descriptive links clearly indicating their destination or resulting action.

■ **Grouping:**

— Group links by the most relevant menu-grouping scheme.

— Separate visually the following types of navigation:

- Upward to the immediate parent page.
- Upward to the beginning of the section or category of information.
- Across to main sections or categories of information.
- To basic utilities.

Ordering:

— Order links by the most relevant menu choice-ordering scheme.

■ **Heading:**

— Where appropriate, provide a listing heading describing the organizing category, principle, or theme.

■ **Size:**

— Provide graphical images and command buttons of sufficient and equal size.

■ **Spacing:**

— Create equal spacing between choices graphical image and textual listing toolbars.

■ **Inapplicability:**

— Disable and display dimmed links conditionally not applicable.

5. Kinds of Links:

■ **Within a page:**

— For long pages, include links to internal page content.

■ **Within a Web site:**

— On all pages include links to:

- The Web site home page.
- Global Web site features.
- Other main pages, navigation points, or categories.
- The likely Web site starting point.
- Main pages with links to the page.

— On sequential pages, include links to the:

- Next page.
- Previous page.

— Also consider including links to:

- Places of related interest.
- Important pages.

• Background or explanatory information.

- Supplemental information.
- New or changed content.
- Web site Quit or Exit.

■ **External links:**

— Most appropriate for informational sites.

— Provide links to relevant information on other Web sites.

- Related content.
- Reference information.
- Background reading.

— Place external links on a separate page.

— Provide an indication when a link goes outside the current site.

Link Maintenance:

■ **Maintain correct internal links.**

■ **Frequently check and correct external links.**

- As sites are modified, internal links may have to be revised.
- Carefully check sequential pages if *Next* and *Previous* links are used within the site. External links should also be checked and corrected frequently.

- Due to the volatile nature of the Web, a linked site's content may change, its location may change, or a site may cease to exist.
- The credibility of a site's entire content suffers if it is not properly maintained.

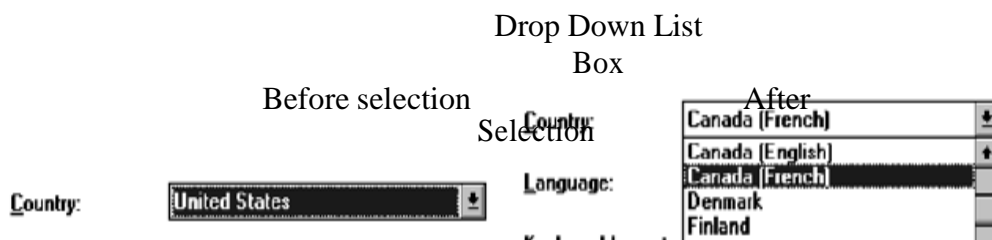
5 Write a brief note on Pop-Up Menu and Tear-off Menus.10 MARKS

CO2

L2

Drop-down/Pop-up List Boxes

- ✓ Description
 - A single rectangular control that shows one item with a small button to the right side.
 - The button provides a visual cue that an associated selection box is available but hidden.
 - When the button is selected, a larger associated box appears, containing a list of choices from which one may be selected.
 - Selections are made by using the mouse to point and click.
 - Text may not be typed into the control.
 - ✓ Purpose:
 - To select one item from a large list of mutually exclusive options when screen space is limited.
 - ✓ Advantages:
 - Unlimited number of choices.
 - Reminds users of available options.
 - Conserves screen space.
 - ✓ Disadvantages:
 - Requires an extra action to display the list of choices.
 - When displayed, all choices may not always be visible, requiring scrolling.
 - The list may be ordered in an unpredictable way, making it hard to find items.
 - ✓ Proper usage:
 - For selecting values or setting attributes.
- For choices that are mutually exclusive (only one can be selected).
- Where screen space is limited.
- For data and choices that are:
- Best represented textually.
 - Infrequently selected.
 - Not well known, easily learned, or remembered.
 - Ordered in a unpredictable fashion.
 - Large in number.
 - Variable or fixed in list length.
- Use drop-down/pop-up lists when:
- Screen space or layout considerations make radio buttons or single-selection list boxes impractical.
 - The first, or displayed, item will be selected most of the time.
- Do not use a drop-down list if it important that all options be seen together.



Horizontal: 

Tear-off Menus

- ✓ It may also be called a pushpin, detachable, or roll-up menu. Its purpose is to present alternatives or choices to the screen user that are needed infrequently at some times
- ✓ Follow all relevant guidelines for pull-down menus. Advantages/disadvantages. No space is consumed on the screen when the menu is not needed. When needed, it can remain continuously displayed. It does require extra steps to retrieve, and it may obscure the screen working area.

6 Describe guidelines to be followed in phrasing of menus during the development of system menus. 10 MARKS CO2 L2

- A menu must communicate to the user information about:
 - The nature and purpose of the menu itself.
 - The nature and purpose of each presented choice.
 - How the proper choice or choices may be selected.

Menu Titles

- Main menu:
 - Create a short, simple, clear, and distinctive title, describing the purpose of the entire series of choices.
- Submenus:
 - Submenu titles must be worded exactly the same as the menu choice previously selected to display them.
- General:
 - Locate the title at the top of the listing of choices.
 - Spell out the title fully using either an:
 - Uppercase font.
 - Mixed-case font in the headline style.
 - Superfluous titles may be omitted.

Menu Choice Descriptions

- Create meaningful choice descriptions that are familiar, fully spelled out, concise, and distinctive.

- Descriptions may be single words, compound words, or multiple words or phrases.
 - Exception: Menu bar items should be a single word (if possible).
- Place the keyword first, usually a verb.
- Use the headline style, capitalizing the first letter of each significant word in the choice description.
- Use task-oriented not data-oriented wording.
- Use parallel construction.
- A menu choice must never have the same wording as its menu title.
- Identical choices on different menus should be worded identically.
- Choices should not be numbered.
 - — Exception: If the listing is numeric in nature, graphic, or a list of varying items, it may be numbered.

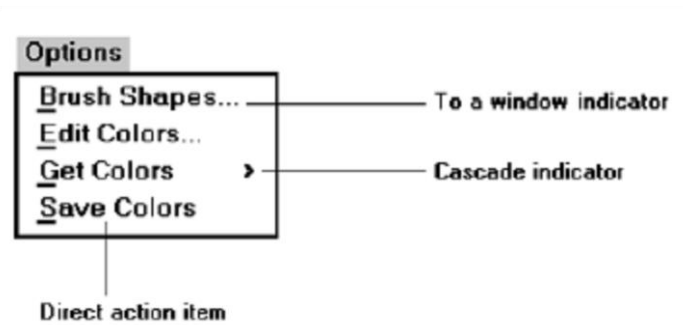
- ✓ If menu options will be used in conjunction with a command language, the capitalization and syntax of the choices should be consistent with the command language.
- ✓ Word choices as commands to the computer.

Menu Instructions

- For novice or inexperienced users, provide menu completion instructions.
 - Place the instructions in a position just preceding the part, or parts, of the menu to which they apply.
 - Left-justify the instruction and indent the related menu choice descriptions a minimum of three spaces to the right.
 - Leave a space line, if possible, between the instructions and the related menu choice descriptions.
 - Present instructions in a mixed-case font in sentence style.
- ✓ For expert users, make these instructions easy to ignore by:
 - Presenting them in a consistent location.
 - Displaying them in a unique type style and/or color.

Intent Indicators

- ✓ Cascade indicator:
 - To indicate that selection of an item will lead to a submenu, place a triangle or right-pointing solid arrow following the choice.
 - A cascade indicator must designate every cascaded menu.
- ✓ To a window indicator:
 - For choices that result in displaying a window to collect more information, place an ellipsis (. . .) immediately following the choice.
 - Exceptions—do not use when an action:
 - Causes a warning window to be displayed.
 - May or may not lead to a window.
- ✓ Direct action items:
 - For choices that directly perform an action, no special indicator should be placed on the menu.



Keyboard Equivalents

- ✓ To facilitate keyboard selection of a menu choice, each menu item should be assigned a keyboard equivalent mnemonic.
- ✓ The mnemonic should be the first character of the menu item's description.
 - If duplication exists in first characters, use another character in the duplicated item's description.
 - Preferably choose the first succeeding consonant.
- ✓ Designate the mnemonic character by underlining it.
- ✓ Use industry-standard keyboard access equivalents when they exist.