# User Interfaces

The interaction between end-users and the computer is said to take place at the “Human Computer Interface” (HCI). The term “Human Computer Interface” is meant to cover all aspects of this interaction, not just the hardware. Of particular interest is what makes one HCI better than another one.

One of the most important features normally required in an HCI is that it be “user friendly.” As the name suggest, a user-friendly interface is one that the end-user finds helpful, easy to learn and easy to use. It is easy recognise unfriendly interfaces but not so easy to design one that is certain to be user friendly.

What makes an HCI user friendly? There is no simple answer but the following points are important.

1. It should be relatively easy for the user to start using the system.
2. As far as possible, the system should be self-contained so that the user is not forced into accessing manuals or dealing with things that should be kept outside the system.
3. The amount of effort and information required of the user to get the system to complete required tasks should be kept to minimum.
4. The user should be insulated from unexpected or spurious system actions. This includes protection against being the cause of a system failure and implies that the system should also be robust and reliable.
5. The system should be able to adjust to different levels of expertise between users, and as users grow in competence.
6. The user should be made to feel in control of what is going on.
7. The system should behave in a logical and consistent manner, enabling the user to reason about what is going on and apply what has been learned.

Of course these points are rather general in nature. We now turn to a number of specific practical issues.

## Types of interface

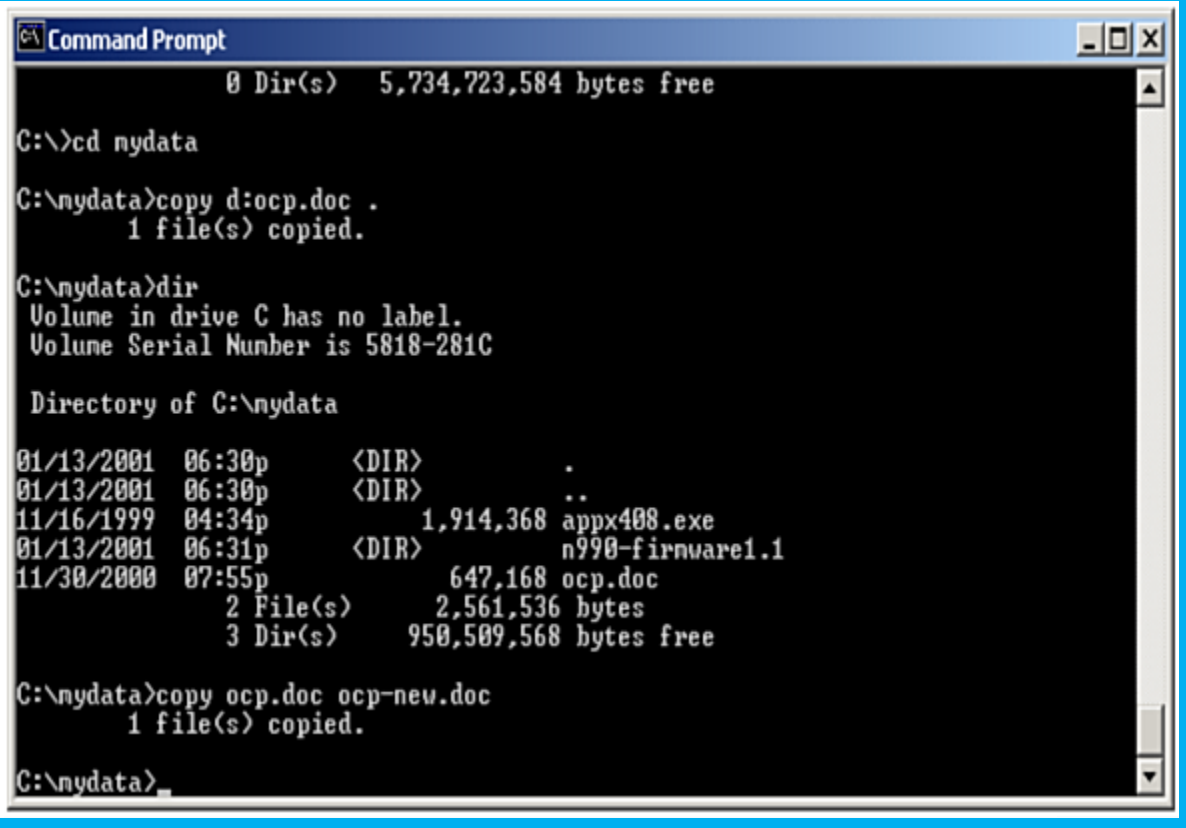
There are many different types of user interfaces available. They may be broadly classified as follows:

1. Command Driven Interfaces
2. Menu Driven Interfaces
3. Direct Manipulation Interfaces
4. User Interface Management System (UIMS)
5. Special Purpose Interfaces.

Note. In some situations two different kinds of interfaces may be combined, e.g. a menu interface with command options.

# Command driven interfaces

One of the long-established methods by which user can interact with the computer is by the use of commands. Commands enable the user quickly and simply to instruct the computer what to do. However they require the user to already have a knowledge of what commands are available, what they do and the rules governing how they should be typed, so they are more suited to experienced users than the end-user is a technical person, such as a computer operator or programmer, or where the end-user continually works with the same program and therefore can gain mastery of the commands.



## Advantages of command driven interface

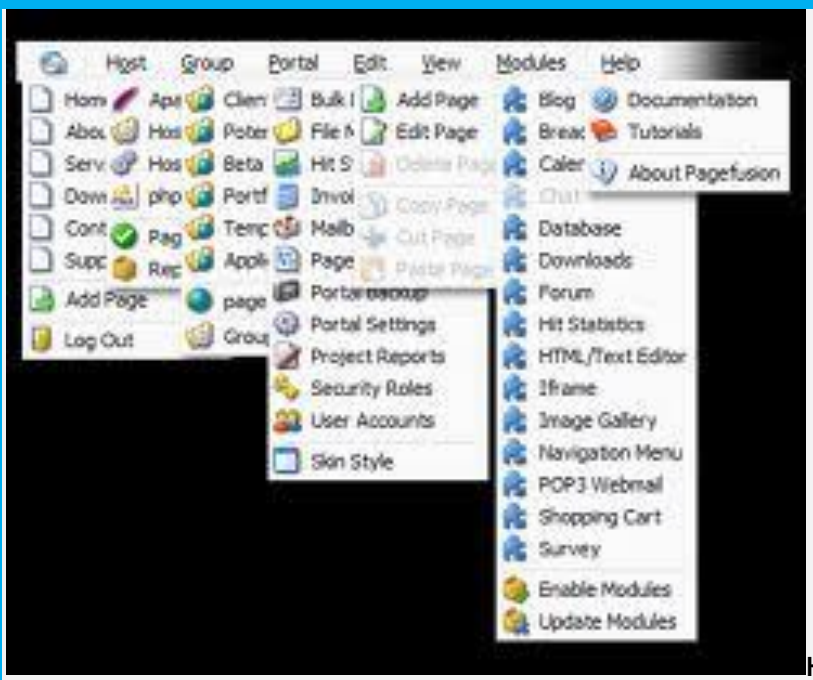
- Faster to use once you have learnt the commands
- For computer programmer command driven interfaces are cheaper to implement.

## Disadvantages of command driven interface

- It is sometimes difficult to remember all the commands, therefore users have to constantly refer to the software user manual
- Restrict the user to using only the keyboard as the interfacing devices, while with other interfaces a wide variety of input devices can be used.
- Commands must be entered at a special location on the screen and in a set format.

## Menu-driven interfaces

Menus provide another popular form of user interface. There are many different alternative forms of menu. The simplest menus provide the user with a number of options and a simple means of selecting between them. The user is presented with a choice and therefore does not have to remember any commands. The interface is therefore suitable for beginners and infrequent users. All the user has to do is to make a choice. A special type of menu called a **pop-up menu**, an additional submenu pops up as a selection is made.




**Help** is normally made available to the user of a menu-driven system by means of screens of information that can temporarily be called up and displayed on the screen during normal activities. It is best if the help information displayed is as specific as possible the user's current activity. Help screens are normally activated by a special key. Some keyboards even have a key labelled "HELP". Similar facilities are often available in command-driven systems and are invoked by typing a command such as "HELP".

**Pull-down menus** are a special type of menu used in windowing and were briefly introduced. Some variations on the same idea are **pop-up menus** and below an item on the screen in order to elicit a choice from the user.

## Advantages of menu driven interfaces

- The user is presented with a list of option to choose from, they don't need to remember commands
- Free from typing errors, because user does not have to type commands.
- A wide variety of input devices can be used to interface with a menu.

## Disadvantages of menu driven interface

- Several steps required to issue a command.
- Once user has learned the menu system it is bothersome to have to wait on the package to present the questions before commands can be entered.

# Graphical User Interface

A Graphical User Interface (GUI, commonly pronounced “guey”) is an HCI based upon a graphical display. GUIs are most commonly found on workstations or PCs fitted with graphics adapters able to support high-resolution graphics. A GUI is a variation of the menu-driven system of selecting commands with the use of the mouse. This system popularised by the Apple Macintosh uses a graphical user interface. This consists of icons and “pop-up” and “drop-down” menus. **A mouse is used to click on an icon to execute some operation or select options from a pop-up or drop-down menu.**


# Advantages of GUIs

- User friendliness results in less anxiety on the part of the user.
- Icons/symbols easier to recognise and provide the user with a context.
- Fewer command error.
- Reduce typing.

# Disadvantages of GUIs

- May consume more screen space
- For programmers the design of Graphical User Interface is more complex
- Clicking an icon can produce unexpected results because of a lack of icon standard
- Increase use of computer memory can lead to slower processing.