

# Interfaces

# User Interface

The user interacts with a computer system through its user interface. The user gives input and receives responses from the computer.

A user interface also called a **human-computer interface (HCI)** consists of both hardware and software.

# Graphical User Interface(GUI)

Graphical User Interface uses:

**W**indows

**I**cons

**M**enus

**P**ointing device

GUI is called a 'WIMP' interface.

The windows explorer program uses multi-level menus. The desktop and taskbar has icons to represent various programs.



The principle of a GUI is to make using the system as simple as possible by hiding all the complicated steps.

For example, when the user clicks an icon to bring a piece of software onto the screen.

It involve only one action but in the background computer is executing complicated process involving a lot of instruction.

The user can switch from one task to another.

Advantages	Disadvantages
This type of user interface is easy to use, especially for a beginner	GUIs take up a much larger amount of hard disk space than other interfaces
It is easy to explore and find your way around the system using a WIMP/ GUI interface	They need significantly more memory (RAM) to run than other interface types
You do not have to learn complicated commands	They use more processing power than other types of interface
There are usually good help facilities provided with WIMP interfaces	They can be slow for experienced programmers to use. These people often find CLI interfaces faster to use

# Command Line Interface

The user needs :

- To know the commands

- To understand the commands

- To understand how material is stored in the computer system.

The computer system is very much open than in the other types of interface. A command line interface allows anyone with a knowledge of the commands access to the entire operating system.



# Command Line Interface

The use is presented with command line prompt.

The user must learn and then use the commands.

The traditional command-line interface on the PC was the early MS-DOS operating system from Microsoft.

Eg., `dir` – which displays the list of all the files & folders in the current folder.

Command Line interfaces have advantage that once the commands have been learnt an expert user can quickly use the computer system.

Advantages	Disadvantages
If the user knows the correct commands then this type of interface can be much faster than other types of interface	For someone who has never used a CLI, it can be very confusing
This type of interface needs much less memory (RAM) in order to use it than other user interfaces	Commands have to be typed precisely. If there is a spelling error the command will fail
This type of interface does not use as much CPU processing time as others	If you mis-type an instruction, it is often necessary to start from scratch again
A low resolution, cheaper monitor can be used with this type of interface	There are a large number of commands which need to be learned - in the case of Unix it can be hundreds

## Disadvantage

- Users have to learn and remember a command language.
- Users make errors in command.
- Not suitable for casual or inexperienced users

# Natural Language Interface

Natural language processing is the ability to communicate with computer system using natural language.

Eg., Carrying out a keyword search.

Consider a search for the text “Which city in England has the largest population outside London”.

A keyword search would only focus on “Population” and “London”

Ask.com use natural language processing for analysis of search engine text.



# NLP

An example of a natural language interface which makes use of written text is a 'chat bot'. This software mimics a conversation - you ask it questions and it will come back with a suitable comment for you.

<http://nlp-addiction.com/eliza/>

# NLP

Advantages	Disadvantages
The user does not need to be trained in how to use the interface	Reliability remains an issue - the interface can only respond to commands that have been programmed
Suitable for physically handicapped people	Not widely available as other forms of interface are often superior

# Form based Interface

Many applications are web-based and require the completion of a form for data capture. The shows the entry of the data for ordering online.

The form contain the usual 'widget' controls for data entry including:

- Text boxes
- Radio button
- Check boxes
- Drop Down lists



### NEW BOOK

Title	<input type="text"/>	ISBN	<input type="text"/>
Author	<input type="text"/>	Price	<input type="text"/>
Publisher	<input type="text"/>	Publication date	<input type="text"/>
Edition	<input type="text"/>	Number of copies	<input type="text"/>
Classification	<input type="text"/>	Loan status	<input type="text"/>
Date of purchase	<input type="text"/>	Order status	<input type="text"/>

Advantages	Disadvantages
Easy to program	Only limited options presented
Easy for user to see the options available	Visually impaired people might have trouble seeing the text or options
Data validation can be used on data entry forms	Not good for highly complex applications, for example, a tax form might have 20 pages of options that need to be completed
Fast to enter data or to make choices	
Little or no training required	
They don't need huge amounts of processing power or memory	

# Menu based Interface

The majority of windows-based applications software is menu-driven. That is the user is presented in various possible forms with the number of menu choices. Making a selection may result in a second or more set of choices being presented.

- A well designed menu interface is simple to use, you just follow the instructions and make your choices.
- User dont need to remember the command.
- Typing is minimal

Advantages	Disadvantages
Extremely easy to use	A poorly designed menu interface may be slow to use
There are no commands to learn or remember	It can be irritating if there are too many menu screens to work through - users get annoyed or bored if it takes too long
Step-by-step options are given so that the user doesn't have to remember anything	You often can't go to the exact place you want right at the start. You have to work your way through the menu screens even if you know where you want to get to.
Even if you don't know what to do, you can usually guess your way round the options	The menu can take up a large part of the screen so you have to keep flicking back and forwards between applications
Menu interfaces don't have to be visual, they can be spoken - good for telephones or for visually impaired people	If the menu is poorly designed it might be hard to read e.g. writing is too small for people with poor sight, colours might clash and be difficult to read, font style might be hard to read.

# Questions

1. Which user interface provides a series of step-by-step options from which the user can select their choice?
2. Which user interface requires a detailed knowledge of the commands?
3. Which interface provides the benefits of WYSIWYG?
4. Which of the following user interfaces uses the least amount of memory?

5. Which user interface makes use of switches?
6. Which user interface is most likely to be used at cash point?
7. Which user interface uses the most processing power?
8. Which user interface enables users to open applications by clicking on the shortcut icons on the desktop?

9. Which interface would probably be used to enter data into a database?
10. Which user interface requires detailed knowledge of the commands?
11. Which interface is otherwise known as a WIMP interface?

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