



User Interface Design

Characteristics of a user interface

- 1. Speed of learning:** A good user interface should be easy to learn and it should not require its users to memorize commands.
- 2. Attractiveness.** A good user interface should be attractive to use. In this respect, graphics-based user interfaces have a definite advantage over text-based interfaces.
- 3. Consistency.** The commands supported by a user interface should be consistent. Consistency facilitates speed of learning

Characteristics of a user interface

- 4. Feedback.** A good user interface must provide feedback to various user actions.
- 5. Error recovery (undo facility).** While issuing commands, even the expert users can commit errors. Therefore, a good user interface should allow a user to undo a mistake committed by him while using the interface.
- 6. User guidance and on-line help.** Users seek guidance and on-line help when they either forget a command or are unaware of some features of the software. Whenever users need guidance or seek help from the system, they should be provided with the appropriate guidance and help.

Characteristics of a user interface

7. Speed of use

8. Speed of recall

9. Error prevention

Graphical User Interface vs. Text-based User Interface

- In a GUI multiple windows with different information can simultaneously be displayed on the user screen. This is perhaps one of the biggest advantages of GUI over text-based interfaces.
- Iconic information representation and symbolic information manipulation is possible in a GUI

- A GUI usually supports command selection using an attractive and user-friendly menu selection system.
- In a GUI, a pointing device such as a mouse or a light pen can be used for issuing commands. The use of a pointing device increases the efficacy issue procedure.
- On the other hand, a text-based user interface can be implemented even on a cheap alphanumeric display terminal.
- Graphics terminals are usually much more expensive than alphanumeric terminals.

Types of user interfaces

● User interfaces can be classified into the following three categories:

1. Command language based interfaces
2. Menu-based interfaces
3. Direct manipulation interfaces

Command Language-based Interface

- is based on designing a command language which the user can use to issue the commands.
- The user is expected to frame the appropriate commands in the language and type them in appropriately whenever required.
- Command language-based interfaces allow fast interaction with the computer and simplify the input of complex commands.

Examples

```
Welcome to FreeDOS

CuteMouse v1.9.1 alpha 1 [FreeDOS]
Installed at PS/2 port
C:\>ver

FreeCom version 0.82 pl 3 XMS_Swap [Dec 10 2003 06:49:21]

C:\>dir
Volume in drive C is FREEDOS_C95
Volume Serial Number is 0E4F-19EB
Directory of C:\

FDOS                <DIR>    08-26-04  6:23p
AUTOEXEC  BAT           435    08-26-04  6:24p
BOOTSECT  BIN           512    08-26-04  6:23p
COMMAND   COM          93,963  08-26-04  6:24p
CONFIG    SYS            801    08-26-04  6:24p
FDOSBOOT  BIN           512    08-26-04  6:24p
KERNEL    SYS          45,815  04-17-04  9:19p
        6 file(s)             142,038 bytes
        1 dir(s)          1,064,517,632 bytes free

C:\>_
```

```

[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2) 56(84) bytes of data.
^C
--- text.pmtpa.wikimedia.org ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 540.528/540.528/540.528/0.000 ms
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 30 22:43 .
drwxr-xr-x. 23 root root 4096 Sep 14 20:42 ..
drwxr-xr-x.  2 root root 4096 May 14 00:15 account
drwxr-xr-x. 11 root root 4096 Jul 31 22:26 cache
drwxr-xr-x.  3 root root 4096 May 18 16:03 db
drwxr-xr-x.  3 root root 4096 May 18 16:03 empty
drwxr-xr-x.  2 root root 4096 May 18 16:03 games
drwxrwx--T.  2 root gdm  4096 Jun  2 18:39 gdm
drwxr-xr-x. 38 root root 4096 May 18 16:03 lib
drwxr-xr-x.  2 root root 4096 May 18 16:03 local
lrwxrwxrwx.  1 root root    11 May 14 00:12 lock -> ../run/lock
drwxr-xr-x. 14 root root 4096 Sep 14 20:42 log
lrwxrwxrwx.  1 root root    10 Jul 30 22:43 mail -> spool/mail
drwxr-xr-x.  2 root root 4096 May 18 16:03 nis
drwxr-xr-x.  2 root root 4096 May 18 16:03 opt
drwxr-xr-x.  2 root root 4096 May 18 16:03 preserve
drwxr-xr-x.  2 root root 4096 Jul  1 22:11 report
lrwxrwxrwx.  1 root root    6 May 14 00:12 run -> ../run
drwxr-xr-x. 14 root root 4096 May 18 16:03 spool
drwxrwxrwt.  4 root root 4096 Sep 12 23:50 tmp
drwxr-xr-x.  2 root root 4096 May 18 16:03 yp
[root@localhost var]# yum search wiki
Loaded plugins: langpacks, presto, refresh-packagekit, remove-with-leaves
rpmfusion-free-updates                               | 2.7 kB      00:00
rpmfusion-free-updates/primary_db                    | 206 kB      00:04
rpmfusion-nonfree-updates                             | 2.7 kB      00:00
updates/metalink                                     | 5.9 kB      00:00
updates                                               | 4.7 kB      00:00
updates/primary_db                                   73% [=====] | 62 kB/s | 2.6 MB      00:15 ETA

```

Menu-based Interface

- An important advantage of a menu-based interface over a command language-based interface is that a menu-based interface does not require the users to remember the exact syntax of the commands.
- A menu-based interface is based on recognition of the command names, rather than recollection.

Examples

Author(s)	<input type="text"/>	
Title	<input type="text"/>	<input type="text" value="match substring"/>
Year	<input type="text"/> - <input type="text"/>	<input type="text" value="match substring"/> <input type="text" value="match exact"/> <input type="text" value="match fuzzy"/>
Journal(s)	<input type="text"/>	
Keyword(s)	<input type="text"/>	
Format	<input type="checkbox"/> only online resources	
Sources	<input checked="" type="checkbox"/> Living Reviews in Relativity (12453 References)	
	<input type="checkbox"/> Living Reviews in Solar Physics (2687 References)	
Output	<input type="text" value="sort by year"/> and give me <input type="text" value="10 results per page"/>	
<input type="button" value="Search"/> <input type="button" value="Clear"/>		Help

Direct Manipulation Interfaces

- Direct manipulation interfaces present the interface to the user **in the form of visual models** (i.e. icons or objects).
- For this reason, direct manipulation interfaces are sometimes called as **iconic interface**.
- In this type of interface, the user issues commands by performing actions on the visual representations of the objects, e.g. pull an icon representing a file into an icon representing a trash box, for deleting the file.

Examples



Examples



*actual product may vary

Important advantages of iconic interfaces include the fact that the icons can be recognized by the users very easily, and that icons are **language-independent**.

Question

Which of the following is not a type of user interface?

- a. Command language based
- b. Menu based
- c. Efficiency based
- d. Direct manipulation based