Unit - I

Definition of User Interface

It is the part of a computer and its software that people can see, hear, touch, talk to, or otherwise understand or direct. It is a subset of a field of study called human-computer interaction (HCI).

HCI is the study, planning, and design of how people and computers work together so that a person's needs are satisfied in the most effective way.

The user interface has essentially two components: input and output.

→ Input is how a person communicates his or her needs or desires to the computer.

→ output is how the computer conveys the results of its computations and requirements to the user.

The importance of good design

With today's technology and tools, and our motivation to create really effective and usable interfaces and screens, why do we continue to produce systems that are inefficient and confusing or, at worst, just plain unusable? Is it because:

1. we don't care?

2. we don't possess common sense?

3. we don't have the time?

4. we still don't know what really makes good design?

can two designers create almost identical screen solutions, based on the same requirements, without the aid

of design guidelines or standards?

Poor design may even chase some people away from a system permanently. It can also lead to aggravation, frustration, and increased stress.

The Benefits of Good Design

Poor design leads to time costs for company

good screen design leads to

customer

- has a significant effect on performance.
- saves company's amount.
- lowered Training costs, because training time is reduced.
- Support line costs are lowered because fewer assist calls are necessary.
- benefited, improved service the customers receive.

general rule of thumb: every dollar invested in usability returns $10 to $100.

fixing a problem at
design — $1
after development — $10 to
product release — $190
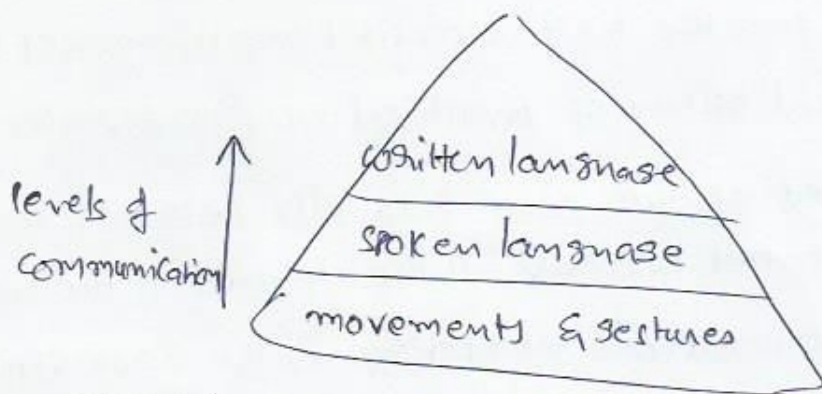
How many screens are used each day in our technological world?

How many screens are used each day in our organization? Thousands? millions? imagine the possible savings.

Impact of inefficient screen design on Processing Time

Additional seconds Required per screen in seconds	Additional Person – years required to Process 4.8 million screens Per year
1	.7
5	3.6
10	7.1
20	14.2

A Brief History of the Human-Computer Interface.

Finally, a pyramid diagram with an arrow labeled "levels of communication" pointing upward, with three layers from top to bottom: written language, spoken language, movements & gestures.

other human - computer interaction methods that utilize more general and easier-to-learn capabilities: voice and handwriting.

Introduction of the Graphical user interface

Finally, In the 1970s, another dialog alternative surfaced. Research at Xerox's Palo Alto Research Center provided an alternative to the typewriter, an interface using a form of human gesturing, the most basic of all human communication methods. the Xerox systems, Altus and STAR, introduced the mouse and Painting and selecting as the primary human-computer communication method.

Ivan Sutherland at the MIT is given credit for first introducing graphics with his sketch Pad Program in 1963. lines, circles, and points could be drawn on a screen using a light pen.

Xerox worked on developing handheld pointing devices in the 1960s and patented a mouse with wheels in 1970. In 1974, Xerox patented today's ball mouse, after a researcher was suddenly inspired to turn a track ball upside down.

Xerox was never able to market the STAR successfully, but Apple quickly picked up the concept and the macintosh, released in 1984, was the first successful mass-market system.

The chronological History of Graphical user Interfaces.

1973   Pioneered at the Xerox Palo Alto Research center.
        - First to pull together all the elements of the modern GUI.

1981   First commericial marketing as the Xerox STAR.
        - widely introduced Pointing, Selection, and mouse.

1983   Apple introduces the Lisa.
        - Features pull-down menus and menu bars.

1984   Apple introduces the Macintosh.
        - macintosh is the first successful mass-marketed System.

1985   microsoft Windows 1.0 released.
        Commodore introduces the Amiga 1000.   ↓ first personal computer released
                                                  by commodore

1987   X window System becomes widely available.
        IBM's System apply Architecture released.
            - Including Common user Access (CUA).
        IBM's Presentation manager Released.
            - Intended as graphics operating System replacement for Dos.
        Apple introduces the Macintosh II.
            - The first color macintosh.

1988   NeXT's NeXTStep released.
            - First to simulate 3D screen.

1989   Unix-based GUIS released.
            - Open Look by AT&T and Sun microsystems.
            - Innovative apperance to avoid legal challenges.
            - motif, for the open slw Foundation by DEC and Hewlett-Packard.
            - Appearance and behavior based on presentation manager.
        microsoft Windows 3.0 released.

1992   OS/2 workplace shell released.
        Microsoft windows 3.1 Released.

1993   Microsoft windows NT released.

1995   Microsoft windows 95 released.

1996   IBM releases OS/2 warp 4.

1997   Apple releases the Mac OS 8.

1998   Microsoft introduces windows 98.

1999   Apple releases Mac OS X server.
         — A Unix-based OS.

2000   Microsoft windows 2000 released.
        Microsoft windows ME released.

2001   Microsoft windows XP released.

The Blossoming of the world wide web (WWW)

The seeds of the Internet were planted in the early 1960s. J.C.R. Licklider of MIT proposed a global network of computers in 1962 and moved to the Defense Advanced Projects Research Agency (DARPA) to lead the development work.

→ In 1969 ARPANET.was brought online, connecting the computers at four major universities. One major goal of the internet was to provide a communications (comms) network that would still function if some of the sites were destroyed by a nuclear attack.

→ In 1974, Bolt, Beranek and Newman released Telenet, the first commercial version of ARPANET, and the public was exposed to how computers could be used in daily life.

→ In 1980s, the common language of all internet computers, TCP/IP, was created.

→ In 1982, the term internet was coined.

→ In 1990, ARPANET was decommissioned.

→ In 1991, Gopher, the first really friendly user interface, was developed at the university of minnesota.

Chronological history of the internet

1945	Hypertext concept presented by Vannear Bush.
1960	J.C.R. Licklider of MIT proposes a global network of computers.
1962	Design and development begins on n/w called ARPANET.
1969	ARPANET is brought online. — Connects computers at four major universities. — Additional universities and research institutions soon added to the n/w.
1973	ARPANET goes international.
1974	Bolt, Beranek and newman releases Telenet. — The first commercial version of ARPANET.
1976	University of Vermont's PROMIS released. — The first hypertext system released to the user community.
1982	The term internet is coined.
1983	TCP/IP architecture now universally adopted.
1988	Apple's Hypercard released. — Presents the hypertext idea to a wider audience. — The first Internet worm unleashed.

1989   Tim Berners-Lee and others at the European Laboratory for Particle physics (CERN) propose a new protocol for distributing information.
- Based upon hypertext.

1990   HTML created.
- In conjunction with Berners-Lees protocol. ARPANET is decommissioned.

1991   HTML code released on the internet by Tim Berners-Lee. which leads to hatch the World wide web (www). Gopher developed at the university of minnesota.
- First really friendly interface.

1992   Delphi released.
- First to provide commercial online internet access to Subscribers.

mosaic created by the national center for Supercomputing Applications (NCSA) at the university of Illinois.
- The first popular graphic-based hypertext browser.

1994   netscape Navigator version 1.0 released.
www consortium founded.
- To promote and develop web standards.

1995   microsoft internet Explorer versions 1.0 and 2.0 released.
AoL, compuserve, Prodigy, yahoo, and Lycos come online.
national science Foundation ends internet support.
HTML 2.0 approved as proposed web standard.
netscape Navigator version 2.0 & 3.0 released.
MS IE 3.0 released.
opera version 2.1 released.
- Browser for computers with small resources.
Netscape Navigator 4.0, MS IE 4.0, opera 3.0 released.
HTML 4.0 certified as proposed standard. MS IE 5.0, XHTML 1.0 rel

A Brief History of Screen Design

While developers have been designing screens since a cathode ray tube display was first attached to a computer, more widespread interest in the application of good design principles to screens did not begin to emerge until the early 1970s, when IBM introduced its 3270 cathode ray tube text-based terminal.

A 1970s Screen

```
TDX95210     THE CAR RENTAL COMPANY        10/11/76  10:25
   NAME                        TEL             RO
   _____       _____     _____

   PUD      RD         C          RT     MPD
   _____  _____   _____    _____  _____


   ENTRY ERROR XX4656289369.997
   command ==>
```

A 1980s Screen

```
                  The Car Rental Company

    Renter >>       Name:     _____
                    Telephone: ____ ___ ____

    Location >>     Office:   _____
                    Pick-upDate: ___ ___ ___
                    Return Date: ___ ___ ___

  Automobile >>     Class :   _____   (PR, ST, FU, MD, CO, SC)
                    Rate  :   _____
                 miles Per Day : _____
    The maximum allowed miles Per day is 150.
         Enter   F1=Help   F3= Exit    F12= Cancel
```

1970s screen usually consisted of many fields with very cryptic and often unintelligible captions. It was visually cluttered, and often possessed a command field that challenged the user to remember what had to be keyed into it. Ambiguous messages often required referral to a manual to interpret. Effectively using this kind of screen required a great deal of practice and patience. Most early screens were monochromatic, typically presenting green text on black backgrounds.

1980s screen
At the turn of the decade guidelines for text-based screen design were finally made widely available and many screens began to take on a much less cluttered look through concepts such as grouping and alignment of elements;
- user memory provided
- messages also became clearer.
- codes like QR, SC are introduced.

1990s and beyond screen

The Car Rental Company

Renter
- Name: [   ]
- Telephone: [ ] [ ] [ ]

Location
- Office: [   ]
- Pick-up date: [ ] [ ] [ ]
- Return date: [ ] [ ] [ ]

Automobile
- Class: [   ] [±]
- Rate: [   ] [↕]
- Miles per Day: [   ] [↕]

[OK] [Apply] [Cancel] [Help]

1990s Screen

The advent of graphics yielded another milestone in the evolution of screen design, as shown in previous page.

- borders were made available to visually enhance drawings.
- buttons
- menus
- font styles. (sizes &)
- line thicknesses
- colors.
- list boxes — drop-down boxes — spin boxes etc.