
Human Computer Interaction

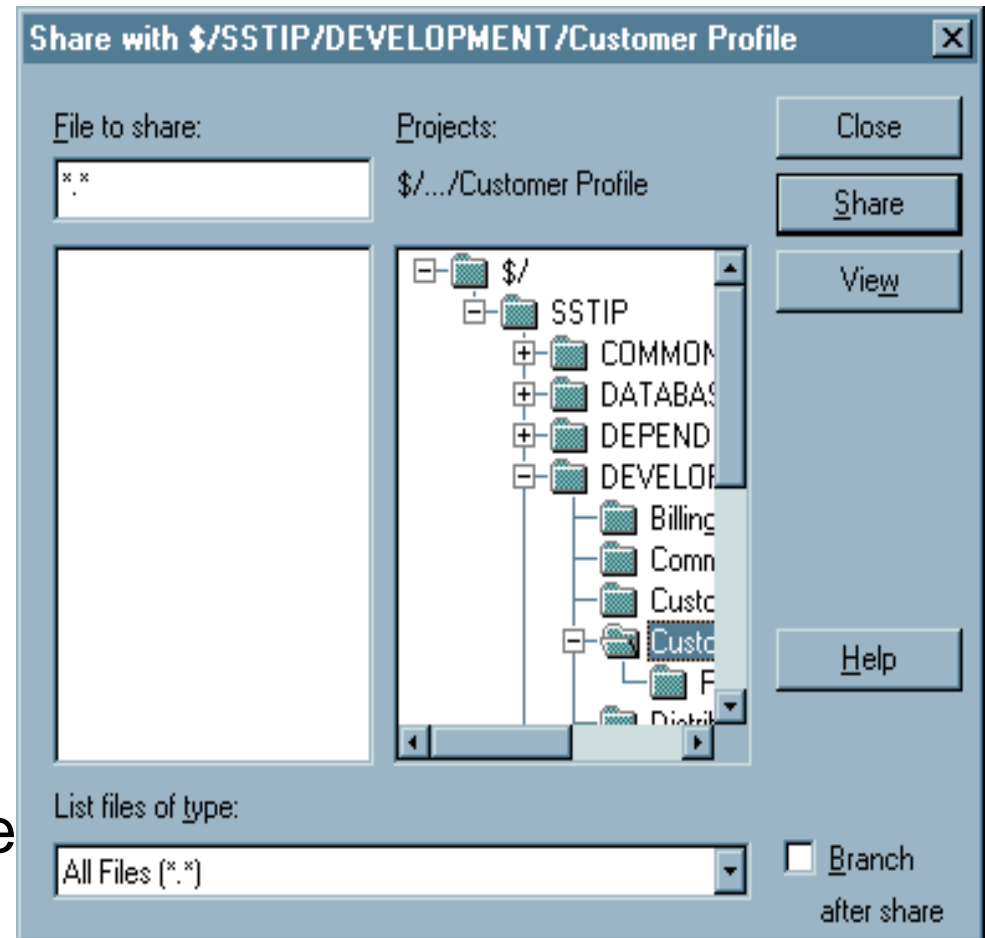
The Computer

Lecture # 4a

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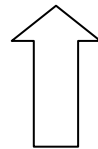
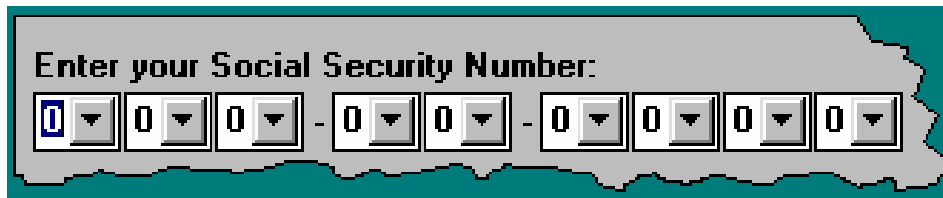
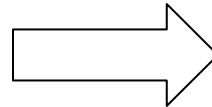
Today's Interface Hall of Shame

- User drills down through the directory tree
- Needs to use the mouse to scroll to the right to view the directories
- Doing so, the user loses information as to his or her relative position in the hierarchy



Today's Interface Hall of Shame

- May be the designer had not yet read the chapter on drop down controls



- Type or drop down lists?



Today's Interface Hall of Fame

- Use of animated control to keep the user informed that the program is still working
- The user can interrupt the search by selecting either the *Stop* or *New Search* buttons



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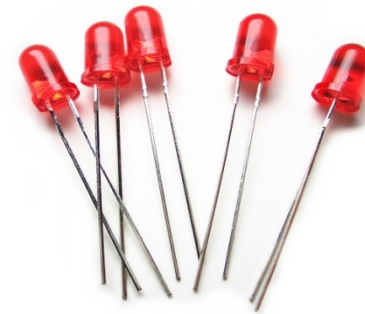
- Introduction
- Text Entry Devices
- Positioning, Pointing & Drawing
- Display Devices
- **Physical Controls, Sensors & Special Devices**
- Paper: Printing & Scanning

Physical Controls, Sensors & Special Devices

- Dedicated Displays
- Sound Output
- Touch, Feel & Smell
- Physical Control
- Environment & Bio-sensing

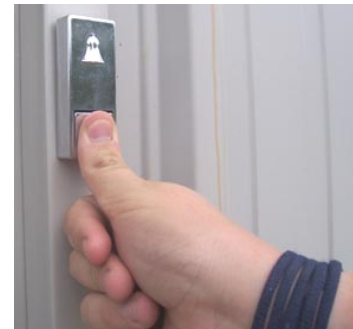
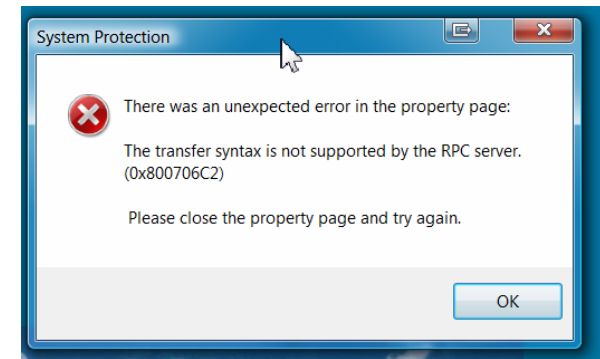
Dedicated Displays

- Process state and control
- Analogue Representation
 - Dial gauges
- Digital Displays
 - LEDs
- Head-up Displays
 - Presents the most important information
 - No need to look away from his or her usual viewpoint
 - Cockpits - Cars



Sound Output

- Beep, Buzz, Whistle ...
- Auditory Signals – Feedback in Interactive Systems
 - Door bell
- Indication of Error
- Confirmation of Action
 - Telephone key press



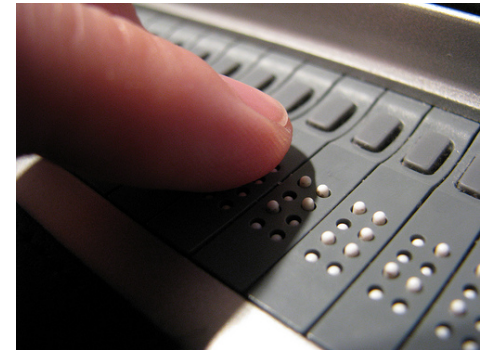
Touch, Feel & Smell

- Touch

- Haptic Devices - Take advantage of our sense of **touch** by applying forces/vibrations
- Games – Vibration of joystick/steering wheel
- Electronic Braille – Pins rise and fall

- Texture, Smell, Taste

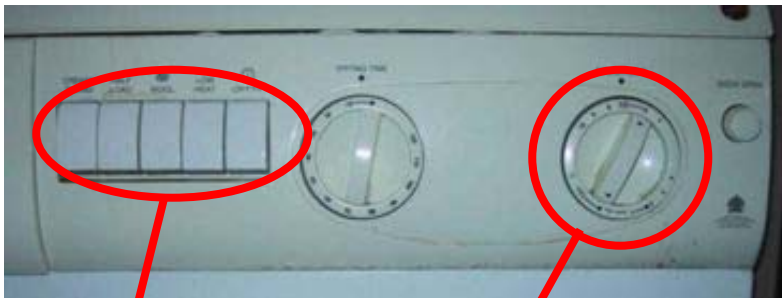
- Very limited technology



Physical Controls

- Specialized Controls
 - Consumer Products

Easy-clean
smooth buttons



Large buttons

Clear dials (Control+Display)



Environment & Bio-Sensing

- Sensors all around us



Paper: Printing & Scanning

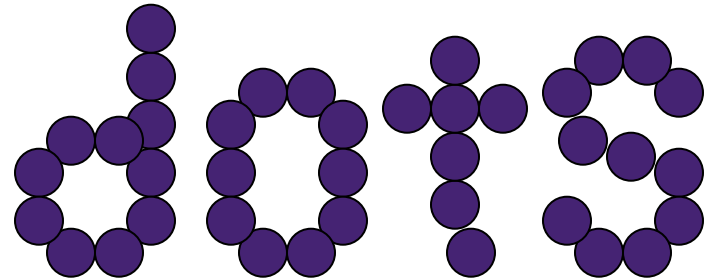
- Paperless Office
 - Produce, Dispatch and Read documents online
 - Complete paperless – No more a goal
 - Less-Paper Office
- Printing
 - Electronic Media – Paper
- Scanning
 - Paper – Electronic Media

Contents

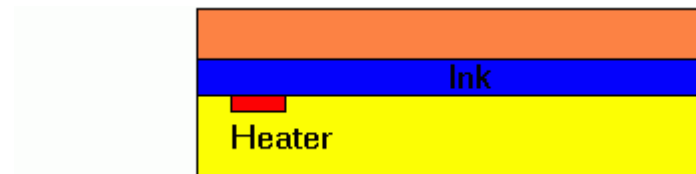
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Printing

- Image on the Paper – Series of Dots
- Types of Printers
 - Dot-matrix, Ink-jet, Laser jet
- Critical Features
 - Resolution - DPI
 - Speed – Pages/Characters per minute
 - Cost



Types of Printers



Fonts

- Font – The particular style of text

Courier font

Times Roman font

- Size of a font measured in points (1 pt about 1/72") (vaguely) related to its height

This is fourteen point

This is eighteen point

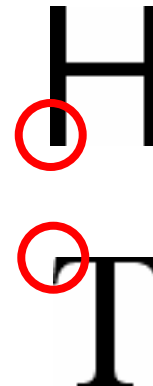
Fonts

■ Pitch

- Fixed-pitch – every character has the same width e.g. `Courier`
- Variable-pitched – some characters wider e.g. Times Roman – compare the ‘i’ and the “m”

■ Serif or Sans-serif

- Sans-serif – square-ended strokes e.g. Calibri
- Serif – with splayed ends (such as) e.g. Times Roman



Page Description Languages

- Pages very complex
 - Different fonts, bitmaps, lines, digitised photos, etc.
- Can convert it all into a bitmap and send to the printer
 - ... but often huge !
- Alternatively Use a page description language
 - Sends a *description* of the page
 - Instructions for curves, lines, text in different styles, etc.
 - Like a programming language for printing!
- PostScript is the most common

Scanners

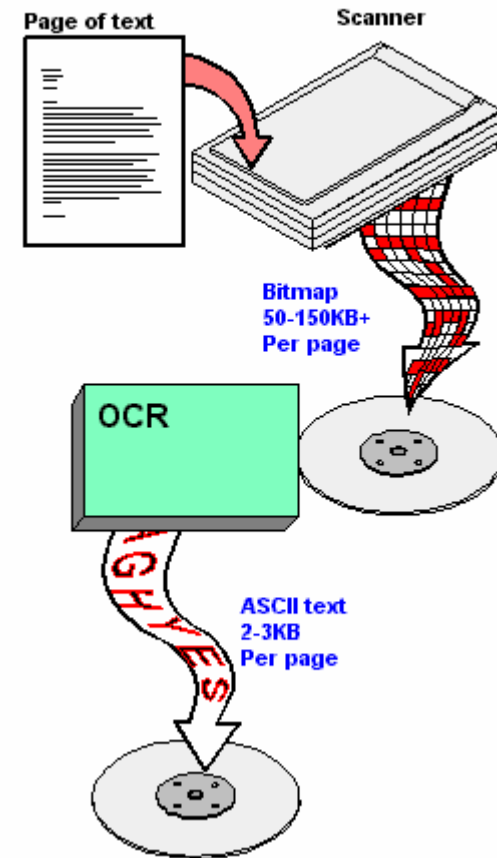
- Takes paper and converts it into a bitmap
- Two sorts of scanner
 - Flat-bed: Paper placed on a glass plate, whole page converted into bitmap
 - Hand-held: Scanner passed over paper, digitizing strip typically 3-4" wide
- Useful in Document storage and retrieval systems, doing away with paper storage



Scanners & OCR

- OCR – Optical Character Recognition
- OCR converts bitmap back into text
- More useful, Space Efficient
- Challenges
 - Font Variation
 - Text Segmentation

From Computer Desktop Encyclopedia
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References

- Chapter 2: Human Computer Interaction by Dix et al.
- User Interface Hall of Fame/Shame

