MODULE 10

DESIGNING OUTPUTS

Contents

10.1 Output Devices

10.2 Objectives of output design

10.3 Design of output reports

10.4 Design of screens and graphics
LEARNING GOALS

- Review characteristics of devices used to output information from computers
- Objectives of output design
- Design of reports
- Design of screens
- Role of graphics in output design
MOTIVATION

• Presenting results of processing in an attractive and easily understood form is important

• Management requires these reports to initiate actions and thus the significance of outputs must be easily perceived

• Must be aware of new output devices being introduced to use them appropriately

• Must also be aware of changes in output delivery with the emergence of systems such as intranets/internet.

• Must also cater to newer applications such as e-commerce which uses the world wide web.
OUTPUT DEVICES

• HARD COPY DEVICES - PRINTERS
• SOFT DEVICES - VIDEO DISPLAY DEVICES

• MULTIMEDIA
  • TEXT
  • AUDIO - SPEECH SYNTHESISER
  • GRAPHICS
  • VIDEO
HARD COPY DEVICES

- Printers used when:
  - there is large volume of data
  - several copies normally needed

- Types of printers
  - Impact
    - Dot matrix character printers
  - Non-Impact
    - Laser printer
    - Inkjet printer
LINE PRINTERS
- LARGE VOLUME OUTPUT
- FAST - ENTIRE LINE PRINTED
- MULTIPLE COPIES
- HIGH CAPITAL COST BUT LOW RUNNING COST

DOT MATRIX PRINTERS
- SLOW
- INEXPENSIVE (PER COPY COST)
- MULTIPLE COPIES WITH CARBON PAPER
- POOR GRAPHICS
PRINTER CHARACTERISTICS

INKJET PRINTERS
- CHARACTERS + GRAPHICS
- MULTICOLOUR
- CAPITAL COST LOW COMPARED TO LASER PRINTER
- RECURRING COST HIGH

LASER PRINTERS
- CHARACTERS + GRAPHICS
- MULTICOLOUR EXPENSIVE
- EXCELLENT QUALITY
- CAPITAL COST HIGH
- RECURRING COST LOWER THAN INKJET
SOFT COPY MEDIA

- Used to distribute manuals, massive reports, user documents, software

Alternatives

- FLOPPY DISK
- CDROM
- DVD ROM
- FLASH MEMORY
  (SEMI CONDUCTOR)
SOFT COPY MEDIA (CONTD)

- FLOPPY DISK
  - Inexpensive
  - Easy to mail/transport
  - Low capacity – 1.4MB
  - Read/write
  - Contact recording – number of read/writes limited
SOFT COPY MEDIA (CONT'D)

• **CDROM**
  - Inexpensive Medium
  - Read only cheaper/safer
  - High capacity – 600MB
  - Easy to transport/mail
  - Primarily used for Text/Graphics

• **DVDROM**
  - Read only cheaper/safer
  - Very high capacity – upto 8GB
  - Easy to transport
  - Useful for storing high quality video such as full length movies
SOFT COPY MEDIA (CONTD)

- **FLASH MEMORY**
  - Read/Write
  - Small size and weight
  - No moving parts thus very reliable
  - Needs USB port on PC
  - Size 128KB to 2GB
  - Low Power needs
  - Expensive
SPEECH OUTPUT DEVICES

• Audio such as beeps used for alerting users
• Device used is a speaker
  - Very small and inexpensive for beeps
  - Inexpensive for speech quality
• Useful when eyes are busy, for example, while driving, pilots etc.
• Pre-recorded speech is output in such cases
• Text-to-speech also useful for giving instructions where manuals cannot be read.
While designing output format and picking output devices the following should be taken into account

- The user group
- Proposed use
- Volume of output
- Periodicity of output
- Timely delivery when required
NATURE OF OUTPUT REPORTS

• TOP MANAGEMENT

- Summary highlighting important results

Graphical Output – Pie charts

- Bar charts

- Maps

Needed for strategic management
NATURE OF OUTPUT REPORTS

• MIDDLE MANAGEMENT

  - Exception reports
  - Reduced output volume
  - Needed for tactical management
• OPERATIONAL MANAGEMENT

- DETAILS NEEDED

For example

- Payroll
- Grade sheets
- Cheques
PERIODICITY OF OUTPUT REPORTS
(CONTD)

• TOP MANAGEMENT
  - Whenever there are any significant changes
  - Give option to ask for specific details
  - Periodic quarterly

• MIDDLE MANAGEMENT
  - Send daily exceptions
  - Provide summary on terminal with option to look at greater details on request
PERIODICITY OF OUTPUT REPORTS
(CONTD)

• OPERATIONAL MANAGEMENT
  - Regular periods
  - Periods depend on application
  - Example: Payroll monthly
Structure of a report - Headings

• Report heading

• Page heading - appears in each page

• Detailed heading for each column

• Set of records forming a logical group called control group and is given a control heading
DESIGNING OF OPERATIONAL OUTPUT REPORTS (Contd)

Structure of a report - Footings

• Labels used to describe information contained in a control group are called control footings.

• Labels printed at the end of each page of a report is called page footing.

• Label used to give the control information for the whole report is called final control footing.

• Label printed at the end of the entire report is called report footing.
**EXAMPLE OF TERMINOLOGY**

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<tr>
<td>97101115</td>
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<td>A.K.CHANDRA</td>
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<td>97201198</td>
<td>P.R.RAO</td>
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**TOTAL NO OF STUDENTS IN SEM 1/2000-2001 = 852**

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**TOTAL NO OF STUDENTS IN CHEMICAL ENGG.DEPT = 63**

**TOTAL NO OF STUDENTS IN SEM 1/2000-2001 = 852**
PRINT CHART

- Print chart used by analyst to develop paper report format

- Languages available to describe format of report and a report generation program creates report
GENERAL PRINCIPLES OF DESIGNING REPORTS

- Should be able to read left to right, top to bottom
- Easy to find important items such as keys
- All pages numbered and has heading. Report date essential
- All columns labelled
- Keep essential details only
- Proper use of control footings
- Page and report footing useful
- Space for end of report signature if needed
DESIGN OF SCREENS

• Screen display convenient for interactive use

• Screen size normally smaller than printer - usually 80 cols per line and 24 lines per screen

• Principle of layout similar
  – Primarily ease of reading

• Provision made at bottom of screen to continue, get details or exit

• Nowadays screens are designed with buttons which can be clicked using a mouse to get details, continue or exit from screen
### EXAMPLES OF SCREENS

#### SCREEN FOR GENERAL STUDENT INFORMATION

**INDIAN INSTITUTE OF SCIENCE**  
**STUDENT INFORMATION SYSTEM**

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<td>9702112</td>
<td>H.JAI SINGH</td>
<td>CIVIL</td>
<td>Ph.D</td>
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**CLICK BUTTON AS REQUIRED**

[DETAILS][CONTINUE][EXIT]
EXAMPLES OF SCREENS

SCREEN FOR DETAILED STUDENT INFORMATION

INDIAN INSTITUTE OF SCIENCE
STUDENT INFORMATION SYSTEM

05-05-2000

ROLL NO 9701425
NAME G.HARI
YEAR ME II
GUARDIAN P.GANESHAN
ADDRESS 41 OLIVER STREET
MYLAPORE
MADRAS 600 004

DETAILS RETURN
BUSINESS GRAPHICS

SHOWS INFORMATION IN PICTORIAL FORM WHICH IS EASY TO UNDERSTAND

USUAL PICTURES ARE

• BAR CHARTS - RELATIVE DISTRIBUTION EASY TO SEE
• PIE CHARTS - %USE OF RESOURCES EASY TO SEE
• X-Y GRAPHS - TRENDS EASY TO SEE
• MAPS - GEOGRAPHICAL DISTRIBUTION EASY TO SEE
USE OF GRAPH

Year

Total sales of textiles (in lakhs)

0 8 5 8 6 7 8 8 8 9 9 0

0 2 4 6 8 10 12 14 16 18 20

Textiles (in lakhs)
BAR CHART

No of employees

Age

0 20 25 30 35 40 45 50 55 60

0 50 100 150 200 250 300 350
PIE CHART

- Dividends: 15%
- Equipment: 10%
- Tax: 10%
- Interest payment: 15%
- Raw material: 20%
- Salaries: 20%
- R&D: 5%
- Misc: 15%