MODULE 10

DESIGNING OUTPUTS

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DESIGNING OUTPUTS

MOTIVATION

Presenting results of processing in an attractive and easily understood form is important as management requires these reports to initiate actions and thus the significance of outputs must be easily perceived. One must be aware of new output devices being introduced to use them appropriately, 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 that uses the world wide web.

LEARNING GOALS

At the end of this module you will know
• 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
LEARNING UNIT 1

Output Devices

1) HARD COPY DEVICES – PRINTERS

2) SOFT DEVICES - VIDEO DISPLAY DEVICES

3) MULTIMEDIA
    - TEXT
    - AUDIO - SPEECH SYNTHESISER
    - GRAPHICS
    - VIDEO
HARD COPY DEVICES

Printers used when there is large volume of data and several copies are normally needed

Types of printers

- Line Printers
  - Impact
  - Non-Impact

- Dot matrix character printers
  - Laser printer
  - Inkjet printer

PRINTER CHARACTERSTICS

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

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, etc

- FLOPPY DISK
  - Inexpensive
  - Easy to mail/transport
  - Low capacity – 1.4MB
  - Read/write
  - Contact recording – number of read/writes limited
- CDROM
- DVD ROM
- FLASH MEMORY (SEMI CONDUCTOR)

**FLOPPY DISK**

- 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

• 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 poor 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.

LEARNING UNIT 2

Objectives of output design

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

• 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

• 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

• OPERATIONAL MANAGEMENT
  - Regular periods
  - Periods depend on application
  - Example: Payroll monthly

LEARNING UNIT 3

Design of output reports

DESIGNING OF OPERATIONAL OUTPUT REPORTS

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

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

Report heading: INDIAN INSTITUTE OF SCIENCE - ACADEMIC ROLL LIST
Page heading

<table>
<thead>
<tr>
<th>Roll No</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>97101115</td>
<td>A.B.BHATTACHARYA</td>
</tr>
<tr>
<td>97101125</td>
<td>A K CHANDRA</td>
</tr>
</tbody>
</table>
PRINT CHART

Analyst to develop paper report format uses print chart. Languages are available to describe format of report and a report generation program creates report.
GENERAL PRINCIPLES OF DESIGNING REPORTS

1. Should be able to read from left to right, top to bottom
2. Easy to find important items such as keys
3. All pages numbered and has heading. Report date is essential
4. All columns should be labelled
5. Keep essential details only
6. Proper use of control footings
7. Page and report footing useful
8. Space for end of report signature if needed

LEARNING UNIT 4

Design of screens and graphics
DESIGN OF SCREENS

Screen display must be convenient for interactive use. Screen size is usually 80 cols per line and 24 lines per screen. Provision must be 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

<table>
<thead>
<tr>
<th>ROLL NO</th>
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<th>YEAR</th>
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</thead>
<tbody>
<tr>
<td>9501325</td>
<td>A.B. BHATTACHARYA</td>
<td>AEROSPACE</td>
<td>ME 1</td>
</tr>
<tr>
<td>9602415</td>
<td>A.P. DAS</td>
<td>CSA</td>
<td>Ph.D</td>
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<tr>
<td>9602325</td>
<td>P. GANAPATHY</td>
<td>EE</td>
<td>M.Sc</td>
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</table>

CLICK BUTTON AS REQUIRED

SCREEN FOR DETAILED STUDENT INFORMATION

<table>
<thead>
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<tr>
<td>9701425</td>
<td>G. HARI</td>
<td>MET</td>
<td>ME II</td>
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<tr>
<td>9702112</td>
<td>H. JAI SINGH</td>
<td>CIVIL</td>
<td>Ph.D</td>
</tr>
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</table>

DETAILS CONTINUE EXIT

BUISNESS 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

BAR CHART
**Bar Chart**

- Ages: 0, 20, 25, 30, 35, 40, 45, 50, 55, 60
- No of employees: 0, 20, 50, 100, 150, 200, 250, 300, 350

**Pie Chart**

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


2. There is a good coverage of this type in Kendall and Kendall “System Analysis and Design”, Pearson Education Asia, 2003, Chapter 15, pp.478-496.
