



Full Length Review Article

DOT MATRIX PRINTER - IS OUR IGNORANCE KILLING THE WORK-HORSE?

***Dr. Harith, A.K. and Dr. Malik, A.**

Department of Pathology, Base Hospital, Delhi Cantt, Delhi 10, India

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ABSTRACT

Dot Matrix printers have traditionally been considered as an old and useless printer. Due to the slow speed of printing they are being replaced by inkjet and laser printers everywhere. Sending output to the dot-matrix printer in DOS format results in the data being printed as text and results in a substantial improvement in the speed of printing. The article deals with how to use DOS printing and the potential areas in medical units where the dot-matrix printer can be judiciously used.

INTRODUCTION

Dot matrix printer, also known as Impact printer was amongst the first of the printing devices used to generate hard copies of data from the computer. The printer was significantly better than the Electronic Type-writer based on 'Daisy Wheel technology' and soon became the preferred choice of printing device worldwide. The only limitation to it was its inability to print graphics. Plotters, Inkjet printer and later Laser Printers soon replaced dot matrix printers as the instrument of choice for printing. The quality and speed of the printouts from these equipments, especially the laser printer is significantly more superior to the dotmatrix printer, and this has virtually pushed the dot-matrix to extinction.

The observation that dot-matrix printers are still being used for printing railway tickets and also for generating bank statements, and the fact that the dot-matrix printer data is very fast in these places sowed the seed that probably, we were not using the dot-matrix printer correctly. It is because of the lack of knowledge of how to use it properly, we are considering this rather robust work-horse as a useless equipment and prematurely are issuing its death certificate. Discussion with IT professionals and research on the internet revealed the basic mistake we were making and this article aims at sharing this information to the readers.

***Corresponding author: Dr. Harith,**
Department of Pathology, Base Hospital, Delhi Cantt, Delhi 10,
India.

Amongst the first word processor program in the computers was WordStar. Dotmatrix printers could easily print the output from this program. WordStar however has major limitations in the kind of fonts and special effects that could be used. Programs like MS Office Word that came subsequently brought a paradigm change in the way text and letters were printed. They gave a tremendous flexibility to the end-users in choosing various fonts and font size while printing data, and made the erstwhile word processors like WordStar obsolete. But the major change that MS Office brought along with it was that the data for print was being sent as a graphics output. While it brought about a significant improvement of the cosmetics of the data being printed, this affected the ability of the dot-matrix printer to print the data (Zable and Lee, 1997), earning it the name of a slow and poor quality printer.

Concept of Disk Operating System (DOS) Printing

When the data is printed in the form of text and not graphics, also known as 'DOS Printing' the dot-matrix printer can handle it very well and print it fast. The use of printers in banks and departmental stores is restricted to printing only text, and that too in a uniform way i.e no use of special fonts. In such a scenario, the dot-matrix printout is very productive, effective and economical.

How to activate DOS printing

Most of the computers have a parallel port also called the LPT port. It is a broad port with pins and connects to the dot matrix

printer. The LPT port supports DOS printing. Many of the modern dot matrix printers can be connected to the computer via the USB port; however it is important to note that USB ports do not support DOS printing. Data to be sent to the dot-matrix in DOS format is perceived as text and the Dot Matrix printer prints it effectively. One of the easiest way to print data in the DOS mode is to write the text in the program Notepad (found in all Window based computer in the Accessories menu) and then print the same using the DOS command Print "filename.txt". Another way, to do the same could be to use Visual Basic codes. The steps involved in DOS printing using Visual Basic codes include

a) Opening the LPT port for printing using the following code:
Open "lpt1" for output as #1

Then the data to be printed can be sent using the following line
Print #1, followed by the text with quotes e.g Print #1, "Hello World"

After all the data is printed out, the printer port needs to be closed using

Close #1. A typical VB code for the same is

```
Open "lpt1" for output as #1
print#1, "Hello world"
close #1
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Using Visual Basic codes is suitable when large amount of data needs to be printed out, especially data obtained from a database, for example the patients admission/discharge summary or laboratory reports.

ESC P codes: Printing special effects
(http://www.fidcal.com/printer_codes/, http://webpages.charter.net/dperr/links/esc_p2.htm)

DOS printing is traditionally considered to be a bland form of output without the ability to use special features like Bold or underlined or italics. However, there are a lot of codes that can be prefixed to the print command and help the end-user to get a cosmetically appealing output without compromising on the speed or economy of printout. Some examples are

Print#1, chr (27) & chr (69), text to print – prints all text beyond the point in bold characters

Print#1, chr (27) & chr (52), text to print – prints all text beyond the point in italics characters

Print#1, chr (27) & chr (45) & chr (49), text to print – underlines all text printed beyond the point.



Figure 1. Examples of dot-matrix printer output using Esc/P codes

Print#1, chr (27) & chr (14), text to print – prints all text beyond the point in double width

There are a large number of options that the end-user can use while printing any document. Fig 1 shows a Biochemistry report being generated in this hospital having some of the special effects.

Areas where the dos printing will be effective

Dot Matrix printers are not often seen in corporate sector hospitals, because cost of printing is included in the bill handed over to the patients, and in the corporate world, cosmetic appearance is a very important thing in the competitive world. However in our resource limited environment, there are many areas where the dot-matrix printers can be put to use effectively and result in substantial cut in cost of paper and toner ink. Another advantage of the dot-matrix printer is that it can take multiple copy printouts (2 to 3 copies) at the same sitting, unlike a laser printer which requires printing multiple copies of the same file. Some of the areas envisaged where dot matrix printers can suitably replace the laser printers include printing the admission / discharge report of the patient, the OPD visit slip, Investigation forms, laboratory reports, movement orders, leave certificates, requisition forms etc.

Most of the routine correspondence occurring in the hospital (the IONs and the Nil report) where the cosmetic look of the print is not as important as the content of the print are suitable areas where the dot-matrix printer can be put to good use. Draft copies of letters before final print too could be suitably made on Dot Matrix printer and the final print in laser printer. At out center, we have automated the process of generating biochemistry reports and managed to print the reports on a dot-matrix printer using Visual Basic coding and DOS printing. Approximately 4500 tests results of various analytes are being printed every day on the dot-matrix printer for a period over 3 years without the requirement of replacing the printer head. Also the net expenditure on the printer ribbons over the entire period has not been more than Rs 1000/-.

The turn-around time of printing a biochemistry of 10 test parameters including the patient related data is only 10 seconds, and this has made the concept of printing reports on demand feasible. Considering that the printing of a single paper on a laser printer is around Rs 1 per page, the expenditure on toner alone for printing such a large amount of data would be unthinkable (Barett).

Conclusion

The aim of this article to educate the general environment that Dot Matrix is not an obsolete printing device as is being considered. We need to re-look the way we print data on the dotmatrix printer to harness its potentials and use it effectively. We need to look at text editors like Notepad for printing routine letters where the cosmetic appearance is not paramount. The aim of this article is not to make software programers of doctors but to make them aware that there are ways in which the dotmatrix can be used productively, effectively and economically to the benefit of the organisation. The aim of the article is to also educate everyone that at the time of discussing with IT professionals for custom made solutions, they need to incorporate options for DOS printing as well as incorporate Esc P in reports being printed. Finally, the most important message of this article is that Dot Matrix printers are one of the most robust printing devices and they need to be giving a fresh lease of live by changing our thoughts on how to use it.

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