I.T. TAKES OFF
SEARCC '94

New IT Order - Opportunities for Developing Countries

SEARCC '94 is an annual regional event organised by the South East Asia Regional Computer Confederation. The Computer Society of Pakistan is honoured to host this prestigious event at Karachi on 27-30 November, 1994.

The SEARCC Conference offers IT professionals the opportunity to share information and experience, while keeping delegates abreast of the latest developments in IT and their applications in our fast developing region.

The SEARCC Sponsored Exhibition emphasizes the developing nature of IT and presents IT applications as solutions to different business problems. The latest innovations in technology, products, and services in the region will be displayed.

The SEARCC International Software Competition aims to foster the development of computer competence among the youth in the region.

Theme

The theme of the XIII Conference of South East Asia Regional Computer Confederation is:

"New IT Order - Opportunities for Developing Countries."

The 1994 conference is particularly relevant to the region, with a focus on the fundamental role of IT in development and its application to everyday tasks in developing countries. Over 800 delegates including about 200 foreign delegates representing IT professionals, users, academics and business leaders are expected to participate in the conference.

For registration or further information, please contact:

SEARCC '94 Conference Secretariat:
C/o. Computer Society of Pakistan
5, Sassi Arcade, 3rd Floor,
Main Clifton Road, Karachi, Pakistan
Phone: (92-21) 571 030 Fax: (92-21) 571 030.
Role of CSI

Dear Members,

The role of CSI in the present context, including the steps which are needed to improve the overall image of CSI was discussed in the recently held ExecCom meeting in Bombay. Members who are desirous of expressing their views on the subject are requested to kindly forward their suggestions to the Convener-

Dr. S. Sririvasan
Vice President, Region III
NAL, Post Box 1779
Bangalore - 560 017.
Tel.: (0) 526 3410 (R) 5260017.

Satish K. Khosla
Hon. Secy. CSI.

csi - 94

Theme: Information Technology for Growth and Prosperity

21st to 24th November 1994 - Calcutta

In order to ensure that CSI-94 Delegates and Special invitees are able to attend SEARC '94 scheduled to be held in Karachi, Pakistan from 27th November 1994, CSI-94 has been prompted. The Convention and the 24th November 1994. The Pre-Convention Tutorials would be held on 19th and 20th November 1994. CSI-94 would be grateful to receive suggestions from Members of CSI and well-wishers of CSI for improving the form and content of the Convention and the Exhibition.

I wrote to all the Members of the ExecCom and the Chairman of the Chapters of CSI soliciting their suggestions on how the Indian and Foreign, for specially invited lecturers/presentations, etc., and nominating Members from the Chapters for actively participating in the Event. Some responses have already been received and are being gratefully acknowledged. We are looking forward to responses from all the others.

The Registration Form and the Exhibition Brochure would be published shortly.

Santanu Chatterjee
Chairman, Organising Committee, CSI-94

CSI Elections

It has come to the notice of the ExecCom that some members have been using the Newsletters, letterheads etc. of the Society and canvassing either directly or indirectly on behalf of certain candidates seeking election to the CSI National body. ExecCom has taken a serious view of this matter and will contemplate appropriate action on erring members to maintain the true spirit of CSI Constitution. ExecCom requests members to abstain from canvassing on behalf of candidates seeking election to the National Body, so that the elections held are just, fair and impartial.

Satish K. Khosla
Hon. Secy. CSI.

From the Desk of the President

Dear Friends,

In the first week of April 1994 I visited Hyderabad for a day. This visit provided me with an opportunity to discuss the arrangements for the Southern Regional Convention (SRC-94) to be held at Hyderabad from 28th to 30th June 1994. The Hyderabad Chapter is planning for this event systematically and judging from their preparations in hand, I am sure SRC-94 would be a well organised event.

Later during the month I had an opportunity of reviewing the plans for CSI-94 which will be held at Calcutta in November this year. Mr. Santanu Chatterjee, Chairman, Organising Committee and Mr. N.K. Roy, Chairman, Exhibition Committee have headed these Committees earlier also during the CSI Convention at Calcutta in 1990. The organisation of CSI-94 is thus in experienced hands. Prof. D. Ghosh Dastidar, Chairman, Programme Committee, is also keen to ensure that the technical content of CSI-94 should be of a high order. In view of this, I am confident that our Annual Convention this year would be fully successful in every way.

I also participated in COMNET-94 which was held at Patna on 23-24 April 1994 with the theme “Data Communication in Public Services.” COMNET-94 was inaugurated on 23 April 1994 by the Governor of Bihar, Dr. A.R. Kidwai. The keynote address on this occasion was delivered by the well known IT expert, Dr. Utpal K Banerjee. The entire activity was well planned and I therefore like to congratulate Prof. U.K. Singh and the Managing Committee of the Patna Chapter for the successful conduct of the event.

During COMNET-94, I also discussed our proposal regarding the setting up of a CSI Centre for Handicapped at Patna. There was very encouraging response for this proposal. Both for the accommodation as well as funds for the procurement of the equipment. I feel therefore that we should take advantage of this favourable climate to set up the proposed Centre at Patna, based on the application of IT. at the earliest possible.

We were recently approached by the Indian Federation Against Software Theft (INFAS) to assist them in their campaign against software piracy. INFAS has also sought the assistance of the CSI in the stocktaking and distribution of freeware and shareware as and when such software is available in the country.

The CSI has been active all along in campaigning against the harmful practice of software piracy. In view of this, we have readily agreed to join hands with INFAS for the creation of public opinion against the use of unlicensed software. We have also drawn up a Memorandum of Understanding to specify the steps to be taken by us to reinforce the efforts of INFAS for the curtailment of software piracy in India.

S. V. S. Chowdhry
President

May 1994
ISO 9000 - Software Perspective

Software development is a complex process requiring careful integration of diverse disciplines, technical activities, project management etc. Most software is produced by the cooperative effort of many designers and programmers working over a period of many years. The resulting product cannot be fully understood by any one person. No matter how elegant the methods used to test the final product, how complete the documentation, how structured the methodology, the development plan, the project reviews, the walkthroughs, the database management, the configuration control, no matter how advanced the tools and techniques - all will come to nothing and the project will fail if the quality management system is not effective. Quality standards can only be achieved by implementing effective quality management system. Quality is built into software products through the management and technical procedures which are defined and implemented to ensure quality, schedule and budget compliance.

Throughout the history of software engineering, software improvement has been the most important goal. A number of methodologies have been developed for this purpose. Examples are requirements definition, defect prevention, defect detection, and defect removal technologies. State of the art software technology does not yet present a well established and widely accepted description scheme for assessing the quality of software product. Much work has been done since about 1975 by a number of individuals to define a software quality framework. Models by McCaul, Ibtihem, the US Air Force, and others have been proposed in the last few years. While these models have been useful, they also caused confusion because of the many quality aspects offered. However, today it is difficult for a user of computing equipment to choose correctly or compare the quality of software. Thus, the need for a standard model has been arising.

ISO 9000/1 IS 14000 is intended to provide a common means for establishing an effective quality management system which is related to software, which, together with procedures for the specification and evaluation, allows development of software in a controlled manner. Quality should result in creation of software in the most cost effective way, having due regard to whole life cycle of the product, and should result in a high degree of confidence that the software will meet the operational requirements.

The development and acquisition of computerized systems may be characterized by a recognized combination of two major components - hardware and software. The successful integration of these two major components is essential for compliance with overall user requirements. Essential to this successful integration is the application of a disciplined approach to management provided by a quality system.

It should be noted that ISO 9000 IS 14000 only defines the essential features of a quality system and does not attempt to prescribe how the system will be implemented. It is left to the user to establish appropriate procedures to their own specific environment and organization to achieve the requirements of the ISO 9000 quality management system. This standard establishes requirements for elements of a quality management system to be designed, the software will meet the requirements of a contract, purchase order or other agreements.

To establish a software quality system which meets the documentation of ISO 9000 IS 14000, identification, and quality and specific responsibility and authority for their fulfillment and accomplishment is required. Quality assurance, quality control and inspection functions are coordinated in the same organization or established and coordinated between manager.

To develop a software quality system that meets the requirements of IS 9000 IS 14000, identify the organization and functions which include those for quality and specific responsibility and authority for their fulfillment and accomplishment. Quality assurance, quality control and inspection functions are coordinated in the same organization or established and coordinated between manager.

An effective system for quality management, planned and developed in conjunction with other functions, should be documented. Requirements should be met by the establishment and implementation of procedures and the specific purpose of ensuring that only software conforming to contractual requirements is delivered. In pursuance of these requirements, the system should be chosen in those which are internally published and documented, or from those which are external or project specific. Due regard should be given to the developer's scale of operations, the contract requirements, the application, implementation, and run-time environments.

The developer is responsible for ensuring that all items purchased conform to the contractual requirements. The developer does not necessarily mean that they are to be developed according to this standard. For example, commercial software bought to support development, or even for inclusion as part of the deliverable software, may have been developed to a different or unspecified standard. The contract should specify the circumstances under which such software is to be.

In order to acquire or develop good software, evaluation is the key to success. The required importance of each software characteristic varies with the mission or objectives of the system. Therefore, the software should be evaluated to determine whether the software product meets the requirements of the system for each quality characteristic of the software.

Evaluation methods and techniques support tools are the essential parts of the evaluation technology. In order to develop good software, quality requirement should be specified, the software quality assurance process should be planned, implemented and controlled, and both intermediate products and end products should be evaluated. To achieve scientific software testing, the quality attributes of the software should be measured using validated metrics or measures.

One of the most vital decisions that a developer should take is the time at which code is to be brought under configuration control. General consensus seems to be that items of tested code should be brought under configuration control immediately that they are signed-off as completed, tested, and documented, or released for further use. In the case of documentation, it is suggested that once the customer has received a deliverable of document it ceases to be a draft, it should be placed under formal configuration control.

There is need to detect and correct not only non-conforming software, but also the faults in the development procedures and quality system that allowed this to occur. It is recognized that these errors are not limited only to errors in the software development, particularly special or unusual requirements. All deliverables and project dependencies should be documented in plans. The contract may require the plans to be subject to inspection, audit, and approval prior to implementation.

Planning is essential to ensure the control of quality. Planning should encompass all significant activities to be undertaken during the software development, particularly special or unusual requirements. All deliverables and project dependencies should be documented in plans. The contract may require the plans to be subject to inspection, audit, and approval prior to implementation.

The planning activity continues through the development process, and has to be timely and provide for review and assessment of all development processes, schedules and activities. The developer should be able to demonstrate that software quality activities are planned as part of the overall plan for a project, and that these activities cover all of the quality requirements of the contract.

The appropriate programming and user documentation standards and practices should be used. The documentation should be of the same quality and written in the same style as the rest of the product. The documentation should be reviewed for accuracy and completeness.

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A. S. Ramakrishna

May 1994

CSI Communications
Copy Protection of Software

Under DOS

Mansoorul Haque* Vipul Lall**

The effort spent in the development of software is notified by piracy. Merely obtaining a copyright on the software is not enough. It is therefore important to devise methods of protecting our software against illegal copying. This article attempts at enumerating some methods of copy protection software.

There are two levels of methods one may adopt, as outlined here.

1. **DOS level protection.**

   Such schemes rely on defeating the DOS "COPY" command. DOS will not copy two types of files.
   - Any file marked as HIDDEN, as with the two hidden files, viz IMBIBO.COM and IMBODS.COM, normally found on system disks.
   - A file with a space in its filename. However, higher level languages like C, PASCAL, BASIC can create, open and write to such files.

   We may use either of the above methods and create a special file containing a copyright notice or password or user-ID number on the disk. This software can read this special file at startup and check for the password. If someone does copy files with:

   COPY * A:

   and tries to read the software on his computer, the special file which DOS did not copy won't be there and the software will not run.

   However, this method is easily defeated by the "DISKCOPY" utility, which duplicates all sectors of a disk.

2. **Modifying the disk format.**

   This method relies on a "Key disk" which has been specially created with a non-duplicatable method. This "key disk" is given with every legally purchased copy of the software. The software should, at startup, ask the user to insert the key disk into drive A and verify the disk for the special format and then proceed.

   Further, everyone will be able to copy the software, but only those owning the special disk will be able to run the software. We shall look at ways of creating a special disk after we briefly examine the disk working.

   The drive has a recording and playback head which can record up and down the slot in the disk packet. The head moves laterally into a step within the slot by programming the step motor to move by the steps. The head therefore traces a circular path on the disk, somewhat like those on music records. Each such circle is called a TRACK or CYLINDER. Each TRACK is further subdivided into SECTORS. Each sector is capable of holding 512 bytes. The number of tracks and sectors per track depends upon the disk format, e.g. 48 TPI or 360 kb floppy disk has 40 tracks with 9 sectors/tracks.

   Now, the disks used in the PC family are SOFT SECTORED disks. What this means that the division of the hard sectors and tracks is done by software. In the case of DOS, the FORMAT program does this. Since there can be various disk formats:

   1. The track number of the sector.
   2. The number of sectors.
   3. The head number (floppy disks have 2 heads, numbered 0 and 1).
   4. The size of the sector (0=128 bytes, 1=256).

   To read or write a particular sector, the head is moved to the index hole, a sequential search to find the required sector is found.

   The drive is controlled by a special chip called the Floppy Disk Controller. The host CPU programmes the FDC (under software). However, the program is there, the FDC executes it. The drive is soft sectored by the RCM which does this task admirably.

   Output System) and comes with every personal computer. There are routines in the BIOS to read, write, format and verify a track or sector.

   To create a special disk, we can format a track in such a manner that DOS cannot read the track. This would make the floppy programme fail.

   Tracks can be formatted in all sorts of ways. We may, for example, leave out certain fields from the sector headers. However, special software (like PC-TOOLS) is available which can copy such tracks. So, we must look for methods of beating such software at their own game. This is the purpose of this article.

   Basically speaking, there are two ways of doing this:

   1. **The "extra sector" method.**

      The outer tracks on the disk are longer than those at the center of the disk. Therefore, we may format an outer track to hold an extra 512 byte sector, the existence of which is known only to us. However, some of the cheaper floppy drives may have problems while reading the crowded extra sector.

   2. **The "interleave sectors" method.**

      The FORMAT program formats a disk with sector numbers running consecutively. That is sector 1 is immediately followed by sector 2 etc. This means that if you have just read sector 1 and try to read sector 2, sector 2 would have just passed from under the head and the FDC has to wait for one full revolution of the disk. We may format a track with the sector numbers interleaved, in the sectors may appear as:

   1, 3, 5, 7, 9, 2, 4, 6, 8

   With such a disk, if we try to read sector 2 immediately after reading sector 1, the FDC will have to scan only 4 sectors before reaching sector 2. It will reach sector 3 after a gap of 4 sectors and so on. Therefore, reads on a track with sectors interleaved will be much faster. Our software may check for a timing difference on a particular track. Furthermore, floppy etc. will be able to copy all the sectors, but will not interleave sectors in the copy so made. Perfect for our purpose!

   Shown below are two programmes in the C language. The first one, called "PROTECT C" reformats track 35 side 1 to interleave sectors using BIOS serve number 5. While a detailed list of the other BIOS services is beyond our scope here, they are:

   1. Read Disk. This forces all into a known state and reset the FDC after an error.
   2. Get disk status, which is preserved by the BIOS after each call.
   3. Read disk sectors. All the sectors must be on the same side and on track.
   4. Verify disk sectors. All the sectors must be on the same track. The data is not verified, only that the sector is found and there is no CRC error (CRC is a method of verifying data. The FDC automatically does this check and reports any errors while reading or verifying sectors. Whenever there is a CRC error, DOS prompts us with:

   **Data error writing drive A.**

   Abut, Retry of Fail? DOS also calls this service after write to disk, if we set "VERIFY ON".

5. **Format a track.** Since the formatting is done one track at a time, we cannot format individual sectors. The Cylinder, Head, Sector and Record size values to put in the sector headers should be in a byte array and passed to the BIOS. The Cylinder and head values are needed since the head is selected and made to seek mechanically, but they are put into the sector header for safety.

   **PROTECT.c**  This program will format track 32 side 1 to interleaved sectors.

   main
   include <stdio.h>
   include <bios.h>
   define DRIVE 0 /* Work with drive A*/
   define TRACK 32 /* and track 32 */
   define HEAD 1 /* head 1 */
   define FORMAT 5 /* BIOS format track command*/
   define VERIFY 4 /* BIOS verify track command*/
   define RESET 0 /* BIOS reset disk command */
   * Structure to hold the CHNR values. Note that these are BYTE type.
   struct T_INFO
     chnr; cy, /* Cylinder (Track) */
     head, Head [0-1]*
     snum, /* Sector (0-9) */
     rec, /* sector size 0=128, 1=256, 2=512, */
     
     struct T_INFO chnr [9];
     char interleave [9] = [1,3,5,7,2,4,6,8,9];
   } Disk Err;
   * Common code for both PROTECT C and CHECK.C
   struct err_info
     unsigned short ununread; 
     /* Error number as reported by BIOS */
     char msg [] = "message for error !";
   } Disk Err;
   msg[0] = SUCCESS; /* The disk was successfully formatted */
   msg[30] = \"Bad Command\"; /* Error: Command not found \"
   msg[62] = \"Write protect error\"

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Cont'd from Page 9.

the attainment of quality be properly maintained and catalogued for future reference. These records should include minutes of the reviews, quality system audit reports, test reports and change control documentation.

Software is subject to continual change in its life even after development, implementation and during use, both to rectify problems (referred to as "maintenance") and to provide additional features or capabilities (referred to as "enhancements"). These changes to a delivered system may be requested by a customer or may arise from reviews of this system by the developer. In any case, it is important that appropriate quality management procedures are applied throughout the change process and that such procedures are not of a lesser standard than those that would be applied during the development process.

It is important that the quality system be subjected to continual review and assessment of its appropriateness and efficiency. In this context, quality is the developer's management responsibility. To attain required quality, management has to specify its objectives, establish plans and procedures to accomplish them, assign duties, delegate authority, set-up adequate methods and standards of performance and evaluate results objectively. In order to ensure that these requirements for quality continue to be met, the developer's management should periodically and systematically conduct formal reviews.

The internal quality audit should be a planned, purposeful and comprehensive examination of management objectives, assignment of duties, delegation of responsibilities and methods of operation. Audits also serve as a check on management controls at all levels. They are also designed to uncover potential problems and to eliminate waste or unnecessary loss. The audit should assess the actual operation of the system by reviewing work in progress, by checking documentation and records, and by evaluating the understanding of, and compliance with the quality requirements by the management and workforce. Records of the audit then provide objective evidence of the effectiveness of the quality system.

The requirement for management to conduct an audit should not be interpreted to mean that top management has to conduct the audit personally. Although this may be the case in a small organization, in general this task will delegate. It is important that the audit personnel are independent from the work being audited. In some cases the delegation to an outsider professional and unbiased agency, not subject to internal pressure, could be a more suitable arrangement.

ISO 9001 / IS 14001 is the quality system model appropriate for the software industry. It emphasizes the requirements under 20 elements enumerated in the standard. However, ISO 9001 / IS 14001 being generic in nature requires to be understood in the context of software industry. Guidance in this respect has been provided by another standard, namely, ISO 9000-3 / IS 14000 (Part 3), by correlating the 20 elements of ISO 9001 / IS 14001 to the activities in the software industry.

Aneesur Haque is working with National Information Centre (SID) at Delhi. Vishal Lal is a freelance software developer and is the author of computer books.

May 1994

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May 1994

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Computerisation of Union List of Serials
A Case Study of Sharing and Networking

P. K. Varma*, G. L. Narayanan*

There has been tremendous increase in literature output world over on account of increase in industrial & research activities as well as social interaction. Serials are quite important as primary source of current information.

There are more than 140,000 serials in print out of which 3600 are on-line and 900 on CD-ROM as on date covering almost all the discipline of human knowledge. Out of which more than 12,000 titles of periodicals are being received by 350 libraries in India.

There are 26 libraries in all the units of BHEL. They subscribe to 1069 titles of periodicals. A good number of them are dupilicated in most of the libraries.

The quantity and cost of periodicals has increased so much that libraries cannot be self sufficient. Also demand of user has increased. Further space of libraries has been shrinking besides budget of each libraries. Thus concept of resource sharing creep in. Resource sharing aim at extending the resources and services of the member libraries. This way libraries never remain isolated to meet the demand of their users by having channel of communication among themselves. Also interdisciplinary nature of subjects make it necessary to have bibliographic access to all resources by sharing the national and international information. Thus, there is reliance on wide range of periodicals to satisfy the information needs of various libraries. Resource sharing is the cry of the day and it is becoming popular library mechanism of linking patrons with resources of a library. Thus library services have become utility services.

Exponential information growth, increasing cost, technological advancement in information transfer and increasing emphasis on avoidance of wastages has necessitated the need of computerization of Union List of Current Serials of BHEL Libraries/TTDNDCs for reducing all round cost, eliminating duplication and facilitating maximum accessibility. The Union list of Current Serials is a location tool to help in resource sharing to find out availability of periodicals in a library. The compilation of Union List of Current Serials of BHEL libraries is an important activity to provide the information for knowing the subscription of each library so that availability of particular periodicals can be known in a particular library and to help the rationalization of periodicals. Since 1990, subscription list of Delhi based divisions was being compiled. In 1995, Union Subscription list of Serial of all BHEL was completed.

The libraries were compiled for making wider resources available to all disciplines of Sciences, Engineering, Humanities and Social Sciences received at respective libraries. These have been classified into three categories viz. technical, general and recreational periodicals. Accordingly the list was generated through computer.

Compilation of list manually was a difficult task. Data was collected from all the libraries and fed into computer. To generate libraries, Libraries and title and the list of all libraries, three different programme in Fox Base were developed.

Structure of main file consists of three fields viz

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Type</th>
<th>Field Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>C</td>
<td>70</td>
</tr>
<tr>
<td>Centre Code</td>
<td>C</td>
<td>03</td>
</tr>
<tr>
<td>Subject Code</td>
<td>C</td>
<td>03</td>
</tr>
</tbody>
</table>

and structure of Centre file consists of following fields:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Type</th>
<th>Field width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>C</td>
<td>30</td>
</tr>
<tr>
<td>City</td>
<td>C</td>
<td>20</td>
</tr>
<tr>
<td>Unit</td>
<td>C</td>
<td>30</td>
</tr>
<tr>
<td>City</td>
<td>C</td>
<td>45</td>
</tr>
<tr>
<td>City</td>
<td>C</td>
<td>50</td>
</tr>
<tr>
<td>Pin</td>
<td>C</td>
<td>15</td>
</tr>
<tr>
<td>Centre code</td>
<td>C</td>
<td>07</td>
</tr>
</tbody>
</table>

To generate main subscription list in alphabetic order, file is first indexed on title and centre code key and on centre code & type code and secondly on record id and year and then on centre code and year and finally on title. The file is in alphabetical order of title and figured in reverse chronological order of date and for each centre code.

Then, to generate list under each centre, relation between these two titles is established and centre code and then complete unit is printed. The same process is repeated till all the centre code.

Through this programme, list of all centres along with all relevant data such as name of the centre, name of the unit, address, city and pin are printed.

Though, this programme was developed for union list but list of each individual library can also be generated modifying second programme.

This way, in compilation of Union Subscription list, manual activity has been conserved to generate these two products. Duplication effort of each centre has been reduced and this data is available on machine readable form so that any deletion and addition and generation of subsequent list has become easy.

As data is available in machine readable form, on line availability of any title can be known in a particular centre through BHELNET, a communication network known as RABIN (Rapid Area Business Message Network). BHELNET has linked all the manufacturing plants, service units and most of the site. This communication network facilitates message and file transfers. Most of the locations have been connected to their PC based systems on the network node but a few locations have been connected with Unix based Minis in Local Area Network environment.

Modern data processing and communication technology has offered a new dimension in resource sharing by networking information centres/library. At present few centres have computerised operation. It is planned to network all the centres for effective resource sharing. A beginning in this direction has already been made. Bibliographic data formats have been standardised for communication of information of bibliographic records and it may soon become possible to work in network environment to satisfy the users information requirements by offering huge resources available with BHEL libraries. It is expected that centres and fix the requisite information from distant location.

Technical information Centres of Delhi and Hyderabad units are also participating in DELNET and HYULNET of Delhi and Hyderabad libraries networking and resource sharing programmes, and BHEL's Libraries/TGs serials data is available on NUCCL data base also. Now it can be predicted that networking and resource sharing programmes of Indian libraries will be able to offer wide resources to its users.
Diskette Copy Protection -
A Practical Approach

Prof. Mohammad Atique

1.0 Introduction:
Copy protection involves the direct use of the logical structure of the disk itself, including the Boot Sector, File Allocation Table, and Root Directories. All diskette copy protection schemes involve some type of unconventional diskette input/output.

1.1 Disk's Logical Structure:
Regardless of the disk you use, all DOS disks are logically formatted in the same way. Disk's logical structure is basically divided into three parts viz. Boot Record, FAT & Root Directory.

1.1.1 Boot Record:
The boot record contains instructions to help the system load the DOS programs from disk into memory. It also contains some key parameters for the disk, beginning with the eleventh byte. These parameters are part of the Boot Parameter Block (BPB) used by DOS to control any disk type device.

1.1.2 File Allocation Table (FAT):
FAT is the DOS's map of how space is utilized in the data area of a disk. The purpose of FAT is to allocate disk space for files. DOS contains two copies of FAT, the second one, perhaps, a backup of the first.

1.1.3 The Root Directory:
The root directory is the parent directory and it may have any number of child directories called subdirectories. It contains a series of 32 byte directory entries. Each directory entry contains the name of a file, a subdirectory or disk volume label. The directory entry contains important information such as the file's size, its location on disk, and the date it was most recently modified.

2.0 The Approach:
The method involves reformating the disk with an odd track number 99 (1.2 Mb diskette contains 90 tracks). This method is incompatible to DISKCOPY.

2.1 How to Format a disk with track no. 99:

Turbo C 2.0 provides a function called bsdisk() which can be used for disk (0 using BIOS) interrupt 13h. Function 09h of this function provides the facility to format one track of a floppy disk. This function plays the lead role in the process of formatting a command, drive, track number, side number, number of sectors, and sector numbers. Apart from this function of the same interrupt have to be used:

2.2 The Algorithm:

Every sector on a floppy disk has four descriptive bytes associated with it as shown in figure 1.0. These four bytes are to be formatted by creating a table of four bytes and the address of this table has to be passed to the bios(). When a disk track is formatted, the four byte groups are written to the diskette four bytes of data associated with a sector on the disk are identified individual sectors during the read, write and verify

<table>
<thead>
<tr>
<th>Track</th>
<th>Side</th>
<th>Sector</th>
<th>Format Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder</td>
<td>Head</td>
<td>Retry</td>
<td>Number</td>
</tr>
</tbody>
</table>

3.0 Conclusion:
There are many ways to approach diskette copy protection. This paper discusses a practical approach of diskette copy protection. The method involves reformating the disk with an odd track number 99 (1.2 Mb diskette contains 80 tracks). The important feature of this technique is that it is incompatible to DISKCOPY.

Advertiser's Index:
SEARCC '94, Karachi
INFOSEC '94, Bangalore
1. Multimedia + Communications = Hype?

The onset of information has caused man to explore device ownership, faster and more efficient methods for processing, presenting and transmitting information. This has been possible through the tremendous advances in the field of integrated circuits, fibre optic communication systems and optical signal processing to name a few.

Our style of living, of communicating and working has been deeply affected by the invention of the digital wonderland "the computer". But even greater revolutionary changes are on the horizon, as attempts are being made to integrate computers and communications technology, which might make air, road and sea travel for business meetings, seminars and conferences, superfluous. The harbinger of this revolution is the proposed integrated services digital network (ISDN / Broadband ISDN), popularly referred to as multimedia communication networks. This is an architecture of a proposed digital communications network that allows a host of new services to be offered to users, thus increasing the level of productivity to unheard-of levels.

Since this concept is still nascent and not conceptualized as yet, it may be worthwhile to understand the technology behind the three basic constituents, namely Multimedia, Computers and Communications.

2. Multimedia

The word Multimedia pops up quite frequently in information technology literature, however very few people really understand what this concept means and appreciate its relevance. For example many people would stumble when asked about the difference of different media (e.g. Television and multimedia). The differences are subtle but crucial, while television has audio superimposed on the video, and there is hardly any element of interactivity, multimedia attempts to harmonize integration of video, audio, text and graphics, for greater impact and interaction, that is implicit in the presentation. The important feature of multimedia is the presentation mode that makes the multimedia concept extremely powerful, no longer is the user dependent on the whim of the presenter of the information. The user has the control over the information flow sequence. The user’s view is free to change the order of flow of the presentation. It’s like having the option to not listen to the whole news show but selecting only desirable portions. As such the definition of Multimedia is rather simple. A crude but apt definition of Multimedia as a rich digital brew of video, voice, text, graphics and computers for enhanced man-machine interaction encompassing the auditory and visual senses, may be espoused.

Three key issues have to be tackled before true multimedia can see the light of day. They are extraordinary storage requirements, adequate processor computer power and synchronization of different media objects under real time constraints. The amount of storage consumed by a typical presentation is evident from the following calculations. Just one frame of broadcast quality video occupies half a megabyte of storage and at 30 frames an hour, a 30 second presentation requires close to 600 MB placing a great strain on storage devices.

To circumvent this problem most multimedia product manufacturers use the quicksolutions of using a window of requirement. In order to reduce the storage space required a data compression algorithms are employed but they place a strain on the processors, making them sweat and leading discrete cosine transform (DCT) and to transform a single byte by multiplications. So for a MPEG (video compression) 352 by 240 pixel block we have 1200 by 9 by blocks thereby requiring 9000 additions and 1274 240 pixel block we have 1200 by 9 by blocks thereby requiring 9000 additions and 1274

Figure 1. Typical application environment

Figure 2. Multimedia

Figure 3. MMT Hardware

issues like quantized throughput, bundled delay etc have to be tackled in such networks, making them quite different from present day data networks. Also, the range of services to be provided is way beyond what is offered by current networks. The services are categorized by using criteria as uncosting, multicasting, broadcasting, level of interaction etc. Currently there are three forms of communication facilities envisaged, namely Bearer services, Teleservices and Supplementary services. Bearer services provide the means to convey audio, video and computer data between end users in real time. Teleservices are composed of telephony, telex, videotex and message handling services (E-Mail). Supplementary services encompasses those services that may be used in conjunction with one or more bearer services. It cannot be used on its own, e.g. reverse charging, display of caller’s number and name on the callee’s telephone instrument.

4. Multimedia Terminals

The user is linked to the multimedia communications network through the Multimedia Terminal (MMT). Figure 1 depicts a typical application environment and associated equipment that is to be supported by the new generation networks interfaced with the user by MMT’s. Figure 4 depicts a Multimedia Terminal.

4.1 Hardware

The MMT is a stand-alone computer with the capability to handle video and audio information in addition to its usual functions. Figure 2 depicts a MMT in a network communicate with each other as well as

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other equipment like Telephones, Fax and Telephone Answering Machines etc. To facilitate such interaction, the MMT is equipped with specialized hardware and software. Figure 2 shows the various components that make a MMT. It is equipped with a camera, built-in CD-ROM, a multimedia set amongst other peripherals like MODEMs, FDDIs, etc. Figure 3 shows the block schematic of the parts that are required for a terminal. The expansions in a PC are normally made by adding cards in the slot available on the motherboard, however greater performance may be expected if all the expansions in a PC are integrated with the motherboard itself.

Transmission of audio-visual signals and data handled by the digital line adapter housed inside the Multimedia set, which looks like a telephone with numeric keypad but no display or function keys. Figure 4 shows the internal organisation of the MMT line adapter (LA). The LA is independently powered to enable its functioning even with the PC switched off. Full data and audio transmission is provided by Line 1, while Line 2 provides only data transmission facilities. The system is operated by the microcontroller which exchanges signals with the PC through the PC bus using the digital telephone interface. Data is accumulated by the multiplexer and sent using the concentration highway (CHI). The CHI bus is a serial bus with 64 Kbits/bandwidth. The PC on/off switching is performed using the PC Active and Activate PC signal lines.

4.2 Software

Figure 5 shows the software structure used in MMT's. There are several layers of software modules, to enable an efficient and service independent implementation in keeping with software engineering principles. At the lowest level are the device drivers that communicate directly with the respective hardware to provide device independence to the upper layers. SPI (Service Provider Interface) a device driver, is an application independent interface for adaptation to different telecommunication systems, while NOIS is the corresponding interface for LAN's. The software layer above the operating system handles the various different equipment.

5. Integrated Services Digital Networks (ISDN)

The integrated services digital network (ISDN) is a proposed worldwide public communications network that would deliver a wide variety of services including video, audio, graphics and data on the same network. To realise such global connectivity it is essential to lay down standards for hardware equipment and protocols to enable the intercommunication between equipment of different makes and types. This is being currently done under the aegis of the ISO, IEEE and CCITT. The telecommunications environment as a result of ISDN is shown in figure 6.

The ISDN is an attempt to provide a support for a wide variety of diverse services having voice and non-voice applications on the same network utilizing the present network and phased conversion of current systems. The facilities would be provided at a basic access rate of 64 Kbits while primary rates of 1.544 Mbits (AT&T T1 standard) and 2.048 Mbits (European standard) would also be supported. Facilities like E-mail, Voice-mail, Facsimile, Telex, Videoconferencing and Videotelephony would be provided. These services would enable a host of new transactions on the network affecting a large part of industry especially the services sector. Figure 7 illustrates the conceptual framework of ISDN. It is a far cry from today's environment where we need separate mediums for data transfer, fax card for facsimile and connection to dedicated networks for e-mail, whereas the ISDN should provide an integrated environment enabling access to all services, from one connection. Box 1 gives a summary of the proposed services. The ISDN, being a single standard would in reality be an interconnection of several networks within national boundaries, but as far as the user is concerned it would be a single, uniform accessible worldwide unit.

The introduction of ISDN services would increase efficiency and conserve precious resources like fuel and paper. The effect of such services would be felt in offices, homes and to a great extent revolutionize the services sector like banking, hotel bookings, airline services etc. Services like E-mail, V-mail for insurance would improve office productivity substantially as it has been found that upto 70% of business telephone calls don't reach the recipient in the first try, this has been called the 'telephone tag'.

Telephone tag is when Mr. A calls Mr. B, who is away from his desk, some time later B returns A's call to find he's out or busy on another line; then A must return B's return to his call, and so on. The problem is that the caller and the called must be at the same time, what if we had a 'message leaving service', which is electronic voice mail is all about. In the banking industry, bank-by-phone services would be extensive with telephone access to bank accounts, electronic funds transfer, rapid cheque clearance... the list is endless. The security and privacy of such transactions would be guaranteed. The callers voice would be matched with that stored in the bank's computer making impersonation quite difficult. Crank and unwanted telephone calls would be a thing of the past, as the ISDN telephone instrument would display the number and name of the caller at the time of ringing of the bell. The utility of the services that are to be provided by ISDN's may be appreciated from the following example. Suppose an outdoor patient, due to sudden onset of pain, rushes to get the doctor at the local hospital and calls the hospital switchboard, the call can be automatically forwarded to the concerned doctor as the identity of the caller is known and a simple run through the hospital's patient data base would identify.
The relevant doctor whose patient the caller is. In case the doctor is at home or anywhere in his car, the call can be forwarded as much as 5 Gbits. However, the B-ISDN is to be implemented at around 150 Mbit/s, the bit rate requirements can be reduced by using data compression algorithms like JPEG, MPEG etc. Figure 9 diagrammatically depicts bit rate requirements and duration of various services.

There are several techno-economic issues that have to be addressed before B-ISDN can become a reality. An expensive conversion to fibre optic cables will have to be made as the present copper infrastructure cannot handle such high bit rates (see Box 3), the predominantly analog telephone network will have to be converted into a digital one, computer architectures and storage devices would have to be geared up to handle such bit rates. Also, network design and operating issues like protocols, transport mode, quality of service etc. have to be decided upon.

The CCITT (Consultative Committee for International Telegraph and Telephony - the body entrusted with the task of laying standards for B-ISDN) has recommended the use of the asynchronous transfer mode (ATM) as the transport protocol. Thus, B-ISDN would be a high-speed packet switched network employing 53 byte fixed length cells (a cell is the unit of information to be ferried across the network).

Box 2 gives the details about ATM and some basic networking terms.

The B-ISDN would herald an information revolution that would have a profound impact on lifestyles of almost everyone. The substantial, having access to a B-ISDN terminal would enable a doctor to treat patients having rare or complicated diseases, to get advice from medical data bases in disparate places, on reception of medical data bases, in some obscure rural hinterland, like Moscow or Tokyo or elsewhere. Experts in the USA, who monitor video and multimedia traffic would be supported. Supervising a complicated heart transplant operation in New York, it may be possible to perform a tricky operation by remote control using teleoperation services, allowing possibilities are endless.

Media communications services may be established from the following information.

A 500 by 500 pixel image with 24 bit colour representation at 30 frames per second, would require nearly 170 Mbit/s. The transmission of an still image signal requires on the order of 10 kilo-bit/s, while a digital video transmission can require

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**ISDN / B-ISDN Services**

The integrated digital services network promises to provide the following services to transport objects:

1. **Video Telephony**
   - It is a facility allowing transfer of voice, moving images and video-scanned still cells and documents between users.

2. **Video Conferencing**
   - Conferencing facility permitting multipoint communications with transfer voice, moving images, video-scanned pictures, video documents.

3. **Visualdata**
   - A service providing an electronic mailbox for transfer of moving pictures and accompanying sound, similar to e-mail and voice-mail.

4. **Vidertext**
   - Interactive information retrieval and mailbox functions for text and graphics.

5. **Teletex**
   - User to user transfer of text, images drawings etc.

6. **Telecon**
   - High speed service for real-time control, telemetry and alarms

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However, the advent of such technology has its pitfalls too. The impact on society and our geo-political system should be understood, this is not just heresy as there are numerous examples which illustrate the potent and destructive power of information.

**Acknowledgements**

The author would like to record on figure that 3,4,5 and 6 have been taken from a paper titled "Multimedia Terminals: Advantages, Technology, Networking" by J. Damp et al, "Electrical Communications Internation" Fourth Quarter 1992. The author makes no claim to have designed or developed the shown architectures. All trademarks are acknowledged.

**Read More About It**

Decision Making in Business Management Using Fuzzy Logic

Bhavesh P. Davda*

I. Introduction:
The development of scientific techniques of business management has closely paralleled the development of computing and indeed artificial intelligence. The ability of the computer to process large amounts of information rapidly has been the chief driving force in this development. However, the suspicion with which even the simpler techniques have been regarded by management is real. Partially, it is justified by the indiscriminate overstatement that specialists have sometimes been prone to, but more importantly, it follows from the inability of techniques such as linear programming to handle judgement and intuition.

Behavioural science has evolved several theories as to how people reach decisions. Such descriptive theories usually conclude by stating that managers do not make decisions on a purely rational basis. To help managers improve their decision making power, a formative theory such as decision analysis is required. Decision analysis consists of three principal stages -

1. determine problem structure;
2. assess uncertainties and possible outcome states;
3. determine the best strategy for achieving a desirable outcome.

II. What is Fuzzy Logic?
One of the reasons for the computers' failure to accurately mimic human reasoning can be the use of a conventional and classical bivalent logic. In bivalent logic, every element has only two states either it occurs or it does not. Obviously, such a representation is inadequate for modeling the understanding of complex real-life situations as some events may not be partial fulfillment and yet be important enough. Fuzzy reasoning dealing to that is present in the knowledge used by human experts.

Fuzzy set theory was defined in its present form by Lotfi Zadeh, from the University of California, Berkeley, U.S.A. Zadeh defines a fuzzy set as a function from some ordinary set (X) into the interval [0,1]. Given sets X and Y [0,1], we may use the end with values in [0,1]. The assumption underlying fuzzy sets is to admit a step function, rather than a gradual change.

In non-fuzzy set theory, a characteristic function specifies which elements are members of the set, i.e., for which elements the statement X has a true value of 1. In fuzzy set theory, the grade of membership and the corresponding true value of the proposition X varies over any value in the closed interval of real numbers from 0 to 1.

III. Fuzzy Logic in Decision Making:
Much of the decision making in the real world takes place in an environment in which the goals, the constraints and the consequences of possible actions are not known precisely. To deal quantitatively with imprecision, we usually employ the concepts and techniques of probability theory and, more particularly, the tools provided by decision theory, control theory and information theory. In so doing, we are tacitly accepting the premise that the nature of the information - whatever its nature - can be equated with randomness. This is a questionable assumption.

There is a need for differentiation between randomness and fuzziness, with the latter being a major source of imprecision in many decision processes. By fuzziness, we mean a type of imprecision which is associated with fuzzy sets, that is, classes in which there is no sharp transition from membership to non-membership. For eg., the class of green objects is a fuzzy set.

If the set of objects characterized by such common adjectives are large, small, substantial, significant, important, simple, accurate, approximate, etc. Actually, in sharp contrast the notion of a class or a set in mathematics, the key to the classes in the real world are not crisp boundaries which separate those objects which belong to a class from those that do not. In this connection, it is important to note that, in the context between humans, fuzzy statement such as "A is several inches taller than B", "A is much taller than B", "Corporation X has a bright future", "The stockmarket will suffer a sharp decline", convey information which is consistent with fuzzy set theory.

In general for several goals and constraints, taking the minimum of all of them together defines the decision. Fuzzy sets have been applied to multi-criteria analysis also. A single-stage multi-criteria analysis, for example, to the problem of choosing a car or home appliance. It can identify the steps to be taken to answer them. It refers to the rules and the facts stored in the knowledge base (KB) regarding to the particular query/command; the rules in turn will fire the inference mechanism of the KB. The rules and facts in the KB are obtained from human experts and decision-makers. In addition, the KB can also have rules based on mathematical models, operations research techniques, statistical strategies, etc.

Fuzzy logic can be used in all the three components of a DSS. A human expert would often suggest his knowledge and experience. This form of knowledge is therefore fed to the computer system while designing the DSS.

The human expert and the knowledge base administrator (KBA) are responsible for maintaining the KB up to date and accurate.

Most commercially available expert systems use fuzzy logic in two ways, to represent the knowledge of an expert in a given area and as a method to handle uncertain information in the KB to arrive at reasonable conclusions. REALVEIL is such a popular expert system shell which can handle fuzzy logic.

IV. Fuzzy Decision Support System (DSS):
A decision support system (DSS) is an interactive computer system that assists a user in decision making. A fuzzy DSS will normally have the framework shown in Fig. 1.

The user interacts with the system through an interface which accepts queries and/or commands from the user and responds to the user. The interface passes on the queries/commands to the problem-solving system (PSS), which identifies the steps to be taken to answer them. It refers to the rules and the facts stored in the knowledge base (KB) regarding to the particular query/command; the rules in turn will fire the inference mechanism of the KB. The rules and facts in the KB are obtained from human experts and decision-makers. In addition, the KB can also have rules based on mathematical models, operations research techniques, statistical strategies, etc.

Table 1 in the APPENDIX shows data from an income statement and balance sheet for a firm over a period of four quarters in a common size format, i.e., all figures are expressed as a fraction of total assets, liabilities are expressed as a fraction of total revenues, and income data are expressed as a fraction of net sales. This income statement and balance sheet data are followed by various standard financial ratios beginning with the ratio of total assets. These financial ratios are not input to the program but are calculated using the DSS language REALVEIL.

The knowledge base portion utilizes if-then' production rules in an English-like format. The rules have the format If-condition/situation IS TRUE THEN conclusion/response IS TRUE.

V. Implementation of a Fuzzy Logic based System-
The application dealt with here is an expert system which analyses the income statement and balance sheet of a company to provide diagnostic rules and recommendations for corrective management action in the areas of management, operations, profitability, sales, liquidity, gearing, coverage and specific expense.

In May 1994, the Knowledge Base Administrator (KBA) from CSI Communications Inc. introduced the new DSS system, which was used to handle the fuzzy logic.

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In order to write these rules in an English-like format, we need a vocabulary of words which we define using the theory of fuzzy sets. For each of the numeric variables in Table 1, we define three fuzzy variables: high, average, and low. For example, the first numeric variable in Table 1 is cash for which we define the three fuzzy variables: high, cash; average, cash; low, cash. Fig. 3 shows the membership curves for the fuzzy variables high, cash; average, cash; and low, cash. We see that this membership curve indicates that if cash on hand as a percentage of total assets is 15% or greater, then high, cash has a truth value of 1.0; if the percentage is 10% or less, then high, cash has a 0.0; and there is smooth transition of truth values from 0 to 1.0 for percentage values between 10% and 15%. Using a similar process, the fuzzy variables cash and low cash can be defined using given data. The associated membership curves are also shown in Fig. 3. These three fuzzy variables provide a vocabulary which can now be used to write rules dealing with cash on hand as a percentage of total assets.

**APPENDIX**

<table>
<thead>
<tr>
<th>Basis of</th>
<th>Income Statement and Balance Sheet Data of a Hypothetical Firm</th>
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<td>May 1994</td>
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</table>

**MODE:** policy liquidity

1. I policy to determine liquidity, able to meet  
2. Obligations on time  
3. If our is low, our than liquid, p1 is indicated  
4. If our is low, our than liquid, p3 is indicated  
5. If our is low, our than liquid, p4 is indicated  
6. If our is low, our than liquid, p5 is indicated  
7. If our is low, our than liquid, p6 is indicated  
8. If our is low, our than liquid, p7 is indicated  
9. If our is low, our than liquid, p8 is indicated  

**MODE:** policy operations

1. I policy to determine operational problems ability to  
2. Control inventory, accounts receivable, cost of goods  
3. Sold, operating expenses  
4. Net income, is high, sales indicated  
5. If sales are high, sales are indicated  
6. If sales are high, sales are indicated  
7. If sales are high, sales are indicated  
8. If sales are low, sales are indicated  
9. If sales are low, sales are indicated  

**Fig. 4 - Example Rules for Liquidity and Operations**

**LIQUIDITY**

Liquidity problems may exist. - ability to meet short term financial commitments, if no, diagnosis follows.  
Quick is decreasing, probably not enough cash or account receivable  
Confidence factor is: 100.00

**OPERATIONS**

Operational problems may exist. - inventory, accounts receivable, cost of sales, and operating expenses, if so, diagnosis follows.  
Cost sales/inventory low. Possibly problems in over stocking, obsolescence, and setting.  
Confidence factor is: 60.40

**SALES**

Sales problems may exist. Low sales volume generated from assets, if so, diagnosis follows.  
Sales/assets low. Ineffective use of fixed assets.  
Confidence factor is: 100.00

**Fig. 5 - Example Advice**

Conclusion:

The mathematical theory of fuzzy sets allows one to combine the ambiguity and uncertainty in the facts and evidence with the appropriateness of a rule to a given situation to determine the overall confidence level of a piece of advice or recommendation.  
A prototype for a fuzzy based expert system is discussed, which will help a manager to cope with the information explosion. In particular, data processing departments can produce volumes of data and reports which can inundate the corporate manager. The approach taken in the present system is intended to make this unnecessary.
CSI News

Apex Committee for CSI as 94 given below to oversee the overall preparations for the Convention:

a) All four Office-Bearers
b) Past President

c) Vice President (Region IV)
d) Chairman OCPCIECEC of 

5. Item 4 - Regional / Divisional Activities

The President referred the his visit to Guwahati on 16-17 December 1993, and he was greatly impressed with the interest displayed by the members of the Guwahati Chapter of the activities of the Society.

The President expressed his concern regarding the declining trend of membership in some of the Chapters and offered some suggestions.

6. Item 5 - Educational Activities

In the absence of Dr. R.K. Datta, Chairman E.A. Committee, the President initiated discussion regarding the proposal for a Seminar on Distributed Processing to be held at Indore on 12-13 April 1994.

Divisional

Division II

Mr. V.A. Sastri, Chairman Divisional II briefed the members regarding the importance of the field of computer education. It was decided to continue the discussion on this subject in the next meeting.

Division III

In the absence of Dr. Nirmal Jain, the President briefed the members about the role of computer in education. It was agreed that a seminar on computer education should be held in Lucknow in early 1994.

Division IV

In the absence of Mr. Satish Khosla, Chairman Division IV, the President briefed the members about the role of education in the field of computer science.

Division V

In the absence of Dr. U.K. Singh, the President briefed the members about the role of education in the field of computer science.

Division VI

As Dr P. Prathap, Chairman Division VI could not attend the meeting, the President referred to the Workshop on Graph Theory which was held at Baroda and stated that plans were being made to organize more workshops on similar lines in the near future.

Division VII

Dr. M. Chakravarty, Chairman, Division VII informed the members that the next Southern Regional Convention (SRC-94) will be held at Hyderabad in the last week of April 1994.

Division VIII

Mr. Subas Panji, Chairman Division VIII informed the members that the next Eastern Regional Convention (ERC-94) will be held at Jamshedpur on 10-11 March 1994, with the theme IT in Industrial Development.

Item 7 - Financial Matters

The proposed revised budget for the year 1993-94 was approved by the ExecCom. The ExecCom approved the allocation of funds for the various committees, with a balance of funds in the General Fund.

Item 8 - Nominations Committee

The President informed the members that the nomination committee was to be constituted to select the members of the Council. The nominations committee was constituted as follows:

Mr. H.N. Seshadri, Mr. R. Rangaraj, Mr. T. Ranganathan, Mr. V. Raghavan, Mr. R. Ramamurthy, and Mr. S. Mahalingam.

Item 9 - Constitutional Amendments

The Constitutional Committee, which met on 24-25 February 1994, approved the revised Constitution of the Society.

Division IX

The President informed the members that the meeting was adjourned.

Annexure

The minutes of the Third ExecCom meeting held at Bombay on 29th November 1993 were approved.

Territorial Jurisdiction of Chapters

The President requested the Honourable Secretary to update the records of the Chapters at the annual meeting in the next year.

Regional Vice President

The President informed the members that the next RVC meeting will be held at Calcutta on 23-24 November 1994.

Several suggestions were made for improving the technical programme as well as the quality of the publications. The President suggested that the ExecCom should set up an

Fourth ExecCom Meeting

The President informed the members that the next ExecCom meeting will be held at Bombay on 29th November 1993.

Item 1 - Confirmation of Minutes

The minutes of the Third ExecCom meeting held at Bombay on 2nd November 1993 were confirmed.

Item 2 - Points arising out of the earlier meeting

CSCI-91

The President requested the Honorary Treasurer to write a letter to Mr. S.K. Sharma, Chairman OCI, CSCI-94 for the early remittance of the outstanding surplus and closure of the CSCI-91 bank account.

CSCI-92

The Honorary Treasurer, Mr. L.K. Sawhney, informed that Mr. Satish Khosla, Mr. Nita Lal and Mr. S. Mahalingam for their active efforts for the settlement of the CSCI-92 account.

CSCI-93

The ExecCom reviewed the conduct of CSCI-93 which was held at Bombay in November 1993, and it was felt that there was considerable scope for improving the technical programme as well as the quality of the publications. The President suggested that the ExecCom should set up an

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Division VI

As Dr P. Prathap, Chairman, Division VI was unable to attend the meeting, the President referred to the Workshop on Graph Theory which was held at Baroda and stated that plans were being made to organize more workshops on similar lines in the near future.

Division VII

Dr. M. Chakravarty, Chairman, Division VII informed the members that the next Southern Regional Convention (SRC-94) would be held at Hyderabad in the last week of April 1994.

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The Constitutional Committee, which met on 24-25 February 1994, approved the revised Constitution of the Society.

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International Software Competition

It was decided that two teams would be selected by the ExecCom for this year to participate in the next International Software Competition.

SEARCC Activities

The President stated that SEARCC-94 would be held at Karachi, Pakistan in November 1994, and expected a good participation from India in SEARCC-94. The President also stated that SEARCC-95 would be held in India. In view of this, the President requested the members to forward their suggestions to him regarding the venue and likely organization for the preliminary planning for SEARCC-97.

Item 7 - Financial Matters

The proposed revised budget for the year 1993-94 was approved by the ExecCom. The ExecCom approved the allocation of funds for the various committees, with a balance of funds in the General Fund.

Item 8 - Nominations Committee

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Item 9 - Constitutional Amendments

The Constitutional Committee, which met on 24-25 February 1994, approved the revised Constitution of the Society.
Division VII and CSI Bangalore Chapter
First Announcement & Call for Papers
National Conference on Information Security - INFOSEC 94
August 26 - 27 1994, Bangalore

Papers and Contributions are invited on the following and related topics in the field of Information Security:
- Information Security Management
- Security Evaluation Techniques
- Network and Communications Security
- HRD for Security Management
- Security Standards
- Application Specific Security Issues

Four copies of complete manuscript along with an abstract, double spaced (not exceeding 8 pages) should be sent on or before June 17, 1994, to Chairman, Programme Committee.

The Conference will be preceded by three half-day tutorials on August 25 1994, on the following topics:
- Information Security Management
- EDI Security
- Network and Communication Security

For further details please contact:
Dr. C. R. Chakravarthy (Chairman Division VII, CSI)
Director - Scientific Analysis Group
DIRGC, Maruti House,
Delhi - 110 054.

Mr. Amar Nath Khan
(Chairman - Org. Committee)
Corporate Manager Edn. Services
Tata Essel (I) Ltd.
123, Richthford Road,
Bangalore - 560 025.

Mr. H. Krishna Murthy
(Chairman - Prog. Committee)
Supercomputer Edn. & Res. Centre
Indian Institute of Science
Bangalore - 560 012.

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13. Item 11 - Other Points

Membership with ACS
The ExecCom unanimously accorded its approval for the signing of the proposed document pertaining to the Reciprocal Membership Agreement with the Australian Computer Society (ACS).

CSI Awards
The President informed the members that a suggestion has been received stating that the annual Award for the Best Chapter Newsletter should be given henceforth regionwise instead of only one award on an all India basis. It was also proposed that we should institute new awards for the Best Contributed Papers which are presented during the various Regional Conventions. The institution of these awards was approved by the ExecCom.

The President also stated that the Publications Committee had proposed that an annual award in the form of a certificate may be instituted for the best Technical Paper which is published in the CSI Journal. Institution of this award was also unanimously approved by the ExecCom.

CSI-96 & CSI-97
The President stated that the venues for CSI-96 and CSI-97 should be decided at an early date so that the concerned Regions/Chapters may start advance planning for the conduct of these Conventions, and requested the members to communicate their views for the likely venues.

It was decided that the next ExecCom meeting will be held at Delhi in the last week of February, 1994.

The President thanked the Calculator Club for the excellent arrangements for the ExecCom meeting.

The meeting ended with a Vote of Thanks to the Chair.

Ms. Priyadara Pal
For GM & Executive Secretary.

IFIP Council Meeting - 27 Feb - 3 Mar 1994
The IFIP Executive Board, Technical Committee (TA) and Council meetings were attended by Maj Gen A. K. Bala, Subramanian, CSI GA Representative and IFIP Vice President.

Meetings of IFIP related committees as Developing Countries Support Committee, Publications, Marketing, Finance and the Activity Management Board were also held prior to the Council Meeting. Dr. P.P. Gupta, Chairman Programme Committee, IFIP Congress 96 also attended the IFIP Council, TA and DCSC meetings as its invitee.

The salient points of interest to India are outlined in this report.

IFIP Mission and future role
This was a major undercurrent in all the deliberations in the Council as highlighted by IFIP President A. Bala, Subramanian (Norway). The need for changes in line with the fast changing industrial environment, lead by high technology, economics, globalisation, customer orientation and continuous improvement all round are of immediate concern.

1. Challenges ahead
1.1 Some of the signs of concern as seen today are:
(a) IFIP's inadequate utility to membership societies (especially the well established national ones).
(b) IFIP Publications, though they have reached high volumes to claim world leadership in Information science, are under threat of becoming less accessible attributable by large groups of members in all member countries.
(c) The IFIP World Congresses were less attractive than specialised Conferences as on Computer Education, Human Computer Interaction etc.

2. Proposed actions
(a) Younger computer professionals are not attracted into the professional societies, thus creating a generation gap.
(b),' Younger computer professionals are not attracted into the professional societies, thus creating a generation gap.
(c) Losing expenses and inadequate resources for growth of activities into emerging areas.

1.2 The remedies for some of the above would seem to be:
(a) improve member society relationship with contact and communications and development of useful products for dissemination, enlarge membership to institutions (industry).
(b) enlarge operations of TC's and WG's to welcome younger professionals from industry to participate.
(c) adoption of new Congress formats attracting larger audiences.
(d) improve administration and financial management and control at HQ; a study of HQ functions, appointment of a Secretary General, and possibilities of economic alternate location (from Vienna to Geneva) are under consideration.

2. Technical Committee (TA) and Technical Committees (TC) and Working Groups (WG)

2.1 TC2 (Software Theory and Practice)
WG 2.3 organised a conference on current topics in Programming at the University, Macau in methodology at the University, Macau in methodology at January 1993. A Joint Working Group (WG 2.1, 2.2, 2.3) on Programming, concepts, methods and validation was held in Paris in July, 1994.

2.2 TC 3 (Education)
Two studies on "Informatics for Secondary Education" and "Information Technology in Distance Education" have been submitted to UNESCO. Books on "Guidelines for good Practice" are to be published for distribution to Developing Countries. The new members on TC3 from CSI is Dr. P.S. Grover.

2.3 TC 5 (Computer Applications in Technology)
The new WG 5.11 on Computers and Environment is being activated by Chairman Prof. Gaurav. An electronic blackboard is being organised. Volunteers from member countries (CSI) are invited for participation in the WG. Proposed WG 5.10, Computer Graphics and Virtual World is being set up. Dr. S.P. Mudra (NCST) is on the panel of founding members of the WG. It may be recalled that the proposal for the WG emanated at ICCS 93 at Bombay (February 1993).

2.4 TC 6 : (Communication Systems)
Networks 94 is scheduled to Madras 30 Dec - 2 Jan 95. Jointly sponsored by IFIP / CSI. Prof. S.V. Raghavan is the Chairman PC.

2.5 TC 7 : (System modelling and optimisation)
The 17th conference at Prague (10-14 July 95) and the 18th Conference Detroit (July 17) are currently on the schedule. Dr. K.V. Ramani (IM, Ahmedabad) has been admitted into WG 7.6 on optimisation based computer aided design and optimisation.

The new member on TC7 from India is Maj Gen P. K. Bajwa.

2.6 TC 8 : Information Systems
A new WG 8.6 on Software Technology Transfer is under consideration. A conference was organised at Pittsburgh (Oct 93) on the topic. Amongst participants were Prof. K. C. S. Savani (currently at Erasmus University, USA).

The new member on TC 8 from India is
Mr. Subhas Panig.

9.7. TC 9 (Computers and Society) Mr. Sanjukta Chatterjee is the new TC 9 member from India replacing Prof. S.C. Bhattacharya who "is continuing his excellent work as WG 9.4 Chairman." WG 9.4 brings out a Newsletter on "Information Technology in Developing Countries." The WG has also activated a network discussion group on outsourcing Software Development to DCs.

9.8. TC 10 (Computer Systems Technology) A seminar on "Systems Design and Development Tools" proposed by Prof. Delia Klos to be held in India is awaiting financial feasibility. Support sought from UNESCO has not had any response. Initiative from the CSCI is now awaited.

The new member from India on TC 10 is Commodore J. Anand.

9.9. TC 11 (Security) CPE SEC 56 is scheduled in South Africa. TC 11 proposes SEC 56 for India earlier than originally envisaged.

9.10. TC 12: (Artificial Intelligence) The TC WG 65's are still under development levels, as IFIP has been a late starter in the field.

9.11. TC 13: (Human Computer Interaction and HCI) A Workshop on "Education in HCI and HCI curriculum" was held by WG 13.1 during the INTERCHI '93 Conference (April 30). An educational Survey of 67 academic Programmes is being compiled. A workshop on "Methodology for User Centered System Design" was held in Austria (June 93).


WG 14.2 (Descriptive Complexity) is organizing meetings in July 94 on Inductive, Statistical and Visual Inference aspects of descriptive complexity.

WG 14.3 (Foundations of System Specifications) will bring out a State of the Art report (1994/95) and organize a Working Conference in 1996. A Working Group on Cellular Automata is under consideration for being set up. There is no representation from India on SIG 14. Any Volunteers?

9.13. SIG 15: Fractals and Chaos FRACTALS 95 Conference is planned to be held in Madrid at the CIAC International Centre for Research in Mathematics. There is no representation from India on SIG 15. Any Volunteers?

9.14. Publications IFIP has contacted Messrs. S. Bhandari and R. Chander, US as their Publisher for all books published commencing 1995. This is a sequel to Elsevier, the current publisher withdrawal from renewing their contract. Mr. S. Bhandari has active operations in India.

IV. IFIP History Prof. H. Zemanek, former President IFIP has taken on the task of bringing out a continuation volume to the book "A Quarter Century of IFIP" published in 1985.

V. IFIP Congress 96 Dr. PP Gupta proposed a number of sub-conferences on topics as Education, Productivity and Competitiveness, Services and Information Systems for the World Congress at Canterbury in 1996.

V.1 IFIP Congress 96 (29 Aug - 2 Sep 94 at Hamburg) The Congress is under five main tracks: Hardware and Software Technology, Applications, Impacts, Foundations, DCs, The issue sessions on the third and fourth days will be discussing nine issues listed below:

1. What should we build?
2. How much application knowledge should a technologist have?
3. When Virtual Reality becomes Real
4. Utopia or Chaos? How should we control Technology development?
5. How much is safely good?
6. Intellectual Elegance or Computer Power?
7. Who is in control? User or application system?
8. Is application development focused on real problems?
9. Is Technology Transfer the answer?

Prof. S.C. Bhattacharya from India is the Programme Committee member for the theme "DCs and the Champion for Issue 9.

Mal. Gen. A. Balasubramanian Cont. from Page 23

References:

Errata
Para 2, Line 8 of the President's Desk in CSCI Communications April 94 issue. Kindly read:
This Centre will be a major feature in our cap and would add a new dimension to our efforts for the extension of computerization to all parts of our country.

FROM CSI CHAPTERS

Bangalore

This Chapter arranged the following lectures for the benefit of the members of the Chapter:

1. "Practical Approach to MRP" by Mr. U.V. Mohan, Tata Consultancy India Ltd, Bangalore.
2. "Consultant's view point of ISO-9000" by Mr. David Hughes, GTI Ltd, U.K.
3. "Industrial Application of Neural Networks" by Prof. Poojini, University of Bremen, Germany.

In respect of taking Computers to Rural Areas, the chapter in association with the Rotary Club of Sagiri arranged one day seminar on Computer Awareness.

The talk on "A practical approach to MRP", brought out the issues of concern which often brings down the smooth implementation of an automated MRP. The aim is to unravel the technical bottlenecks which are often overlooked and to caution the need for a holistic approach by the entire organization and not by MIS or EDP function.

For a successful MRP, a reasonably accurate Master Production Schedule is very much essential, besides a well integrated material system in position. All the more better if the Material System is well integrated with Purchase, Manufacturing and Engineering. This is to be supported by Radio Master System, which is to be supported by Radio Material System, Human Resource (Skill requirements), etc. It is very important that MRP is run in specific date in a particular cyclic frequency and the essential Master Data (File) viz. Manufacturing Resources, Materials, Purchase Orders are up to date before the run, to derive accurate results. It is essential to remember that MRP run is done in 2 phases: 1) CDP giving the rough cut plan on resources and requirements (Machine, Man Power, and Materials) followed by 2) "mr/s run" giving pegged Material requirements, including Raw Materials.

It should be remembered that MRP run is an interactive process, and shall be done with human interventions and decision requirements at various stages to arrive at a practically implementable plan not by merely touching a key and running the job. Besides taking into account of non-working items, besides holding in terms of ordering, purchase contracts, part numbers, lifetimes, life cycle of machinery, etc.

On 19th February the Chapter distributed Certificates to the successful participants of the IFC Diary for Bank Employees:

Coiimbatore

It was long felt by the M.C. members, that the chapter be equipped with a Computer Centre to facilitate different Computers awareness workshops conducted by CSI, for different sections of different people in and around Coimbatore.

The idea slowly took shape and finally came to reality with the efforts of the members. Now the chapter has a well furnished computer lab with 10 terminals connected to a LAN (Version 2.2) with a 386 File Server. A small library is also set up at the chapter with 100 books.

The Computer Centre and the Library was inaugurated by Sri. P. Unnikrishnan on 17th January. Two monthly meetings were conducted in the month of March.

The first meeting was held on 1003.94. Dr. M.S. Krishnam, Chief Technical Officer, AMCONE Technologies, California, USA delivered a lecture on "Recent development in Computer Technology and Future prospects."

The second meeting was held on 2503.94. Mr. Gnanaharan, Anand, Manager, Sundaram Information Systems Ltd, Medas delivered a lecture on "Knowledge Based Systems". He highlighted how the knowledge based systems can save and utilize the companies expertise and how it can improve the productivity of the organisation.

Trivandrum

On 19th February the Chapter distributed Certificates to the successful participants of the IFC Diary for Bank Employees.
Student Branches

**Belgian**

A new CSI Student branch (Belgian city) was inaugurated at the University of Technology by Dr. R. Srivivasan, Regional Vice President (South) on 18th March '94. The function was presided over by Dr. K.V. Raman, Principal.

A second seminar was conducted by Dr. B. Silviera on 6th December, 1993. The speaker gave light upon the underlying principles in developing a software.

A quiz competition was held on 7th December, 1993 at Amrita Institute of Computer Technology. The quiz was based on Fundamentals of Computers, DSS, BASIC, Lotus 1-2-3 and Foxpro.

**Rajkot**

The Student branch and CSI Division (V) Education arranged a Regional Workshop on Computers in Science & Adult literacy at 13th & 14th February, 1994 at M.D. Science College, Porbandar. Large number of students participated in the workshop. There was a poster exhibition showing students' awareness in a lucid manner right from basic concepts to the current technological impact in the society. Simultaneously a library program was launched to provide adult literacy to literates using the software developed by the S.P. University, Valsibhor Vidyanagar (Ghatl). Prof. Zelevi from the computer centre of S.P. University demonstrated the software to the volunteer. Prof. D.M. Patel Provost Chancellor of Saurashtra University was the Chief Guest of the function and guest of honour was Shri Arjunbhai Modabadi. Syndicate Member of Saurashtra University and Managing trustee of Geetabhai Mahila College, Porbandar. The branch received a special recognition supported from Division (V) Chairman Prof. P. Trichy's his Colleagues.

**Ponnur**

The activities of the Student Branch was inaugurated by Dr. M. Thirumaran, Professor of Mathematics, Pondicherry College on 20.5.93. He gave a lecture on "Artificial Intelligence and the problems of Corrupt Corrupt". Three certificate courses were conducted by the Branch.

The first course was on Word Processing and Data Processing. The Second course was on DOS and Applications of Spreadsheets to Business problems. The third course was on BASIC and FORTRAN Programming.

Three Quiz competitions were also conducted during the period SEP 1993 - Dec 1994.

**Kearanappally**

A seminar was held on 26th November, 1993 by student branch. The guest on the occasion was Sri. Sankara (Sven Bonde), who is a Swedish Electronic Engineer in telecommunications and computer hardware. Sri. Sankara explained the various components of a personal computer system and the way they are assembled to form a complete PC. He introduced the 466 technology which is the most advanced PC system available in India today.

Another seminar was held on 29th November, 1993 on Requirements (South) on 18th March '94. The function was presided over by Dr. K.V. Raman, Principal.

Mr. V.A. Gopal and M.P. Rosasingh was selected for presentation at the convention.

The academic extravaganza SWAP '93 held at Jamal Mohammed College, Trichy was attended by 4 students.

Two papers had been selected for presentation at the UNEQUS '93 Convention. One of the paper titled "Picture Processing Using Broadcast Cube Multimputer" authored by Mr. V.A. Gopal and M.P. Rosasingh bagged the third prize.

The highlight of this year was DIEXTRA '94 an Inter Collegiate Students Contest which was held on 3-4 March '94.

The guests for the inaugural session were Major K. Srinivasan, Director, Alagadannan College of Engineering & Technology, and Mr. V. Vennapala, Hon., Secretary, CSI, Tiruchirapalli chapter, Director Dr. R. Advani and Chief Executive M. A. Subramanian.

There was a guest lecture by Mr. S. Gerald Feisal a Computer Engineer at the Computer support group, REC. Trichy, on Local Area Networks.

This event was not only a success but also an exciting experience for our students.

**Calcutta**

An All India Student Convention, BROADBAND '94, was organized by the Student branch on 12-13 March, 1994. The student's convention was a "Multimedia - Network Interaction". This is the third time that the students chapter is organizing a convention of this magnitude, the earlier ones being "92 and "93. There was also a Computer exhibition - Cum - Book fair arranged along with the convention. The event of the convention included paper presentation, software competition, panel discussion and a quiz competition.

On 15th March M. G. Wayanadavan, CEO, Electronics Technology Parks of Kerala inaugurated the Computer Exhibition - Cum - Book fair. The convention was officially inaugurated by the Hon. Speaker of the Kerala Legislative Assembly, Mr. P.P. Thirumurti. In his speech, Mr. Thirumurti spoke about the increased job potential by way of computerisation.

The paper contest was held on March 19, 1994. Papers were invited in five categories, (1) Parallel and Distributed Computing, (2) Multimedia, (3) Computer Vision, (4) Object oriented software design, and (5) Neural Networks. Altogether, there were 14 papers.

Broadband '94 attracted participation from all over the country, with students from as far as Pune and West Bengal. The Computer Exhibition - Cum - Bookfair attracted large public interest.
Book Reviews

The book is primarily for senior secondary students. It covers the entire CBSE syllabus with each topic well explained. It is a great aid for students preparing for the Board Examination. It also contains good collections of exercises on each topic. Even though the syllabus is vast, covering almost 4 to 5 different courses of software systems at graduate level, yet the authors have done remarkable work to cover these courses into one and have made it available in the form of a book.

The book will not only help the students of XII class but also be useful to those who want to migrate from other disciplines to Computer Science at any level. It covers Data structure, File Processing, Programming in Pascal, Overview of Operating Systems and MS-DOS, and Boolean Algebra in detail. So it serves as a guide to students who want to understand how to build a computer system and provides broad background of the field.

On the whole, the book is well written in a readable and understandable style with nice presentation. However, I would like to congratulate the authors for their efforts.

Dr. Saroj Kaushik
Assistant Professor
Dept. of Computer Science & Engineering
I.I.T. New Delhi - 110 016

Title of the Book: Principles of Computer Science (vol 1)
Authors: V. B. Aggarwal, Vidya Kulkarni & P.C. Bajaj
Publisher: Phitarab Publisher Publishing Co., Pvt. Ltd.

This book is designed with section layout on the left hand page and description on the right hand page which describes it reader the steps necessary to complete the task. The chapters in the book are in correspondence with the lotus 1-2-3 package of system. All the functions, options, and sub-menu available on the screen are explained in brief. Wherever necessary the key press sequence is also given.

The best way to present the information is through graphs. In this book altogether seven sections are devoted to giving explaining everything which can be used by the reader. Simple functions like moving around in worksheet to advance features like placing worksheets, data protection, access, to data, solver, back solver are also discussed. This book is ideal for tutorials and also can be used as a quick reference book. The contents are brief, and an individual can quickly learn the necessary information to be able to achieve the desired results. Using Lotus 1-2-3. One thing to be noted is that nothing is mentioned about the concept of worksheet. The book is fully product oriented.

Neerlanda Jain

Title of the Book: C Under Dos Test
Author: Dr. V. S. Mahadevan
Publisher: B F Publications
Price: Rs. 85/-

On the book 'C Under Dos Test' by Rika Panah, Amos Conservation, Life easier by offering 'instant' tests to test aspiring candidates. This book is unique in this aspect and fairly succeeds in meeting its objective. But there is one major facet. These questions experienced C programmers most of the questions would seem from juggling with the print functions to function pointers. There is 'C' language programmers would not need. Also the simple to complicated. The book itself can be divided into two parts: 'beginner' and 'expert sections,' thus making the life of the variables easy for the reader.

Can't the variables be better named? Looking at the imagination where the questions cover a wide range of topics in C, one would certainly be impressed that 'C' programmers lack

Satyajit Pandey

Title of the Book: The Integrated Services Digital Network
Author: John F. Trumayne
Publisher: Wiley Publishing Co. Ltd.

The book has altogether eight chapters. Although the book is meant for "from concept to application" of Integrated Services Digital Network (ISDN), it does not cover many aspects of ISDN. There is also a good coverage on N-ISDN (Narrowband ISDN), no sufficient material is there on today's most talked B-ISDN (Broadband ISDN).

The Ch-1 deals with the definition of ISDN as per CCITT Red Book, the users services of ISDN and historical review of different schemes for transferring voice and data. The Ch-2 describes the basic scheme of ISDN and also the differentiated services offered by packet switched networks. The objectives of ISDN are also mentioned in the chapter. It could have been better if the objectives were illustrated with typical needs of users. The pictorial illustration of "growth of switched and private services" is worth-mentioning.

Ch-2 mainly deals with the different networks including analog and digital networks which do exist before ISDN. The Ch-3 deals with development phases of digital networks in section 2-4 is lacking in the book. The concept of future ISDN networks of its own is also missing in this chapter.

The Ch-3 deals with intelligent terminals defined as ISDN tools. The concept on the ISDN terminal is well written. The more useful, illustration, and explanation to the terminal concepts could have been attractive. Because the ISDN structure is basically based on this concept. The chapter could have been illustrated with examples of terminals. The TA (Terminal adapter) for example could have been illustrated with a RA (Rate Adapter).

This is even not explained in the terminal design sub-section. The Ch-4 also touches the subjects like line coding. The interface structures and access capabilities are discussed well in this chapter. Why do we need two access BPA and PPA are not discussed in the chapter.

The Ch-5 and the Ch-6 respectively deal with "progress towards ISDN" and the "Technical Risks of the ISDN." The Ch-7 and the Ch-8 respectively discuss the integrating features and perspectives of ISDN. The chapters are well written and illustrative. But as a technological book, the modem day related techniques and aspects like A-ISDN and ATM switching etc. could have been included in the book. The operating maintenance and administrative aspects of ISDN is also not included.

The book may be used as a reference book by engineering graduate students of Electronics and Computer engineering disciplines for courses like Data/Communication Network and Computer Network.

Prof. T. C. Bhunia
Head of Dept. of Electronics & Communication Engg., North Eastern Regional Institute of Science & Technology, Itanagar,

Special Issue on Office - 2000

We invite articles focused on the recent & future trends in IT application & the manner in which they would revolutionize offices by the year - 2000.

Articles should explain trends, basic principles, applications and perhaps rough cost estimates of various office automation products, E-mail and other facilities and the potential impact of such products.

The issue should provide a vision as well as a handy guide to a user - manager.

Articles should be brand-independent, neatly typed / word processed and mailed so as to reach us by the 20th June '94.

Shri P. V. Rangarajan, Minister of Education handing over the award to Mr. R. S. Sreenivas.
Calendar of Coming Events

CSI's Calendar policy is to list open computer/IT meetings held on a non-profit basis. Educational Seminars, Courses not included. Send name of sponsoring organization, fees, chairperson's name and full address and one contact telephone no.

- Indicate new listing
- Indicates approved CSI sponsorship or co-operation.

June '94

International Conf. on Computer Systems and Education June 22 - 25, 1994 at Indian Institute of Science, Bangalore.

For details contact : N. Balakrishnan, SuperComputer Education & Research Centre, IISC, Bangalore - 560 012.

July '94

SIGIR '94 - 17th International Conf. on Research & Development in Information Retrieval. July 3-4, 1994 at Dublin City University, Glasnevin, Dublin, Ireland

August '94

13th IFIP World Computer Congress - to be held in Hamburg, Germany, August 28 - Sept. 2, 1994.

Contact address - IFIP '94 Conf. Secretariat, K. o. Congress Centrum Hamburg, P.O. Box 30 24 80, D-20308, Hamburg, Germany.

September '94


For details contact: Dr. W. Gratendorfer, Cio. Austrian Computer Society, Wollezeit 1/3 / A 1010 Vienna, Austria.


For details contact: HKICC '94, Unit D, 1st Fl, Luck fast Bldg., 1 Stone Nullah Lane, Wanchai, Hong Kong.

October '94

Singapore Informatics '94 - will take place from 13-16 October '94 at the Singapore World Trade Centre organised by Singapore Federation of the Computer Industry.

For details contact: Wilson Tan, Chairman, Singapore Informatics '94, Comm., NCB Bldg. 71 Science Park Drive, Singapore.

November '94

SEARCC '94 - New IT order - Opportunities for Developing Countries, November 27-30, 1994 at Karachi, Pakistan.

For details contact : SEARCC '94 Conference Secretariat, 5, Sasi Arcade, Main Clifton's Road, Karachi - 75600, Pakistan.

CSI'94 XXX Annual Convention of CSI from 21 - 24 November 1994 at Calcutta. Theme : IT for Growth & Prosperity

For details contact: Mr Santanu Chatterjee, CESC Ltd, Victoria House, Calcutta-700 001

December '94

  For details contact : Prof S.V. Raghavan, IIT Madras 600 036.

- COMAD '94 - VI International Conference on Management of Data. Division II and Bangalore Chapter on December 14-16, 1994 at Bangalore.

For details contact : Dr. V.A. Sastry, Infosys Technologies Ltd., K - 310, 1st Main, 9th Block, Koramangala, Bangalore-560 095.

  For details contact : Pronic Blenheim, 22-24 Rue du President, Wilson - F - 92532, Levallois Perret Cedex.

January '95

• First International Conf. - on STRQA (Software Testing Reliability & Quality Assurance) January 4-6, 1995, Hyatt Regency, New Delhi.
  For details contact : Prof. Bharat Madan, Head, Computer Services Centre, IIT, New Delhi - 110 006

February '95

• SARIT-95 - Sustainable Agriculture: Role of IT, Feb. 19-24, 1995 at Hyderabad, IFIP & CSI Event.
  For details contact : Dr. R.K. Datta, PHD, House, Opp. Asian Games Village, New Delhi - 110 016.

May '95

CAPE '95 - The Fifth International Conf. on Computer Applications in Production and Engg. by IFIPTC5, May 16-18, 1995 at Beijing.

For details contact : Secretary General, CAPE '95 C/o North China Institute of Computing Technology, P.O. Box 619 Branch 2, Beijing - 100 083, China.

September '96

VLDB '96 - 22nd International Conf. on Very Large Data Bases, Sept. 10-13, 1996 to be held in Bombay, India.

For details contact : Dr. P. Sadanandan, NCST, Visveswaraya Centre, Dr. B.R. Ambedkar Veedhi, Bangalore - 560 001.