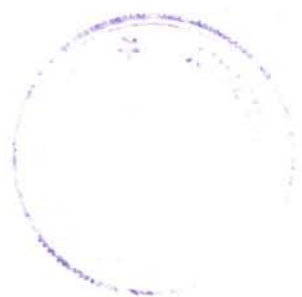


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## **PROJECT BRIEF**

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**PROJECT NAME:** Research Oriented Reading Material Supply System  
(RORMSS)

**PURPOSE:** PARTIAL FULFILLMENT OF THE  
REQUIREMENT FOR THE POST GRADUATE  
DIPLO IN COMPUTER SCIENCE

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**USER:** PASTIC, Islamabad.

**START DATE:** DECEMBER 1997.

**COMPLETION:** JUNE 1998.

**PACKAGE USED:** Microsoft Visual Basic, Version 5.

**OS USED:** WINDOWS 95

**SYSTEM USED:** IBM 80486 - DX2

**QUAID-I-AZAM UNIVERSITY**  
**COMPUTER CENTER**

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DATED:

1998

**FINAL APPROVAL**

This is to certify that we have read the thesis submitted by *Mohammed Saleem* and it is our judgement that this thesis is of sufficient standard to warrant its acceptance by the Computer Center Quaid-I-Azam University Islamabad for awarding the Post Graduate Diploma in Computer Sciences.

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....dedicated to

***MY PARENTS***

## ACKNOWLEDGEMENTS

The most profound gratitude is for my creator; to Him alone I owe the successful completion of the task assigned.

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*Mohammed Saleem*

***"Our problems are man-made, therefore they may be  
solved by man. And man can be as  
Big as he wants. No problem of human destiny  
Is beyond human beings".***

***JOHN F. KENNEDY***

***June 10, 1963.***

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# **Chapter No. 1**

## **Introduction To Organization**

## **1.1 PASTIC ( Pakistan Scientific and Technological Information Center )**

PASTIC a national information center is a unit of Pakistan Science Foundation. It has a National Center at Islamabad and five Sub-Centers at Karachi, Lahore, Peshawar, Faisalabad and Queta respectively. PASTIC is the premier organization in the field of scientific & technological information dissemination, serving majority of researchers in the country. PASTIC is considered as the information liaison because it is the National Focal Agency / Coordinating Body in Pakistan for the following Information Networks.

### **1. TIPS :UNDP (Union Nations Development Program)**

Technological Information Promotion sponsored by United Nations Development Program who collects and distributes information about product and stand technologies from and in the developing countries.

### **2. ASTNFO: UNESCO:**

Supports Regional Network for the Exchange of Information and Experience in Science & Technology in Asia and the Pacific.

### **3 UNEP/INFOTERRA:**

United Nations Environment Program Information Referral System for Sources of Environmental Information.

**4. CEHANET:**

Regional Environmental Health Information Network of the World Health Organization.

**5. ECO:**

Economic Cooperation Organization (Iran, Pakistan, and Turkey)

## **1.2 Main Functions of PASTIC**

The main functions of PASTIC cover the following objectives:

- To procure, process and disseminate scientific and technological information to the  
Researchers.
- To interact with regional and informational information agencies / networks.
- To develop inter-library cooperation and resource sharing at national level.
- To train information personnel in contemporary techniques and methods of Information handling .
- To develop and strengthen the National Science Reference Library.
- To provide bibliographic and translation service.
- To compile Directory of S&T Periodicals of Pakistan, Union Catalogue of S&T  
Serials and Bulletin of Technological Information.
- To publish an abstracting and indexing journal entitled “ Pakistan Science Abstracts”.

## **1.3 HISTORY:**

PASTIC has developed from the erstwhile PANSDOC. In 1957, Pakistan National Scientific and Technological Documentation Center, PANSDOC, was

established at Karachi with the assistance of UNESCO, under the administrative control of Pakistan Council of Scientific and Industrial Research. In 1964 a sub-center of PANDDOC was transferred to Pakistan Science Foundation (P.S.F) and was renamed Pakistan Scientific and Technological Information center (PASTIC). After its transfer to P.S.F., the scope and facilities were expanded.

## **1.4 SERVICES**

PASTIC offers a wide range of services to the scientific community of the country.

### **1.4.1. Document Supply Service:**

Copies of research and development documents, reports etc are supplied to scientists on request. For this purpose a search is made for the material in Pakistan and if the document is not available locally it is procured from abroad. This service is a highly subsidized service- to the extent of 80%.

### **1.4.2 Databases:**

Three databases have been developed as described below. Micro-Computers are used the purpose.

#### **DATABASE ON SERIAL HOLDINGS:**

This contains data about scientific periodicals available in the libraries of Pakistan currently it has information about 18 libraries. Serial lists of these libraries are available in printed form. The database also has information about serial holdings of another 82 Libraries.

### **DATABASE ON RESEARCH PUBLISHED IN PAKISTAN:**

It is a bibliographic database and currently has 6700 records reported in scientific periodicals published in Pakistan.

### **DATABASE ON PATENT INFORMATION:**

This database has 29000 records.

#### **1.4.3. Patent Information:**

PASTIC has a collection of foreign patents in hard copy or microform. The microform records are being computerized. These are 29000 patent records in machine-readable form (bibliographic information).

#### **1.4.4. Technology Information:**

It is a monthly publication reporting technology or processes developed in 42 Developing countries. The information is based on the database maintained by the Technological Information Promotion System – a project carried out by UNDP with the collaboration of forty two countries, namely, Brazil, china, Egypt, India, Kenya, Mexico, Pakistan, Philippines, Rome, Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela, Costa Rica, Cuba, Dominican Republic, EL Salvador, Guatemala, Honduras, Nicaragua, Panama, Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Rep, Bangladesh, Cambodia, Indonesia, Laos, Nepal, Thailand, Nigeria, Uganda and Zimbabwe. The publication was started in July 1987.

#### **1.4.5 Bibliography Service:**

Bibliographies with respect to specific topics are prepared and supplied to scientists on request. Search is made from the literature available in the

PASTIC library or libraries in that city. A Total of 822 bibliographies have been prepared and supplied. The charge for this service is nominal. PASTIC also undertakes off-line data base searching. This Service is not subsidized.

#### **1.4.6 Reprographic Facilities:**

The reprographic facilities of PASTIC are used not only for its own activities but are also available to other organizations on nominal charges. The facilities range from mimeographing, photocopying, micro filming to printing.

#### **1.4.7 National Science Reference Library:**

It is located at the National Center and has a collection of 4500 books, 900 titles of journals and a collection of documents and microforms. Its holdings are being computerized.

### **1.5 NEED FOR COMPUTERIZATION :**

As mentioned above PASTIC is focal point for many networks. The research work in different sectors and technologies is increasing Day by day. The demands for different material are also increasing. To handle and manage with that is major problem for management. In short there was a dire necessity of improving the function aspects of the Establishment, as its progress was effected due to modern management Techniques. In order to reduce the burden of work the management decided to form a database. By virtue of which, it would be possible to manage and provide readily available informative material in any sector and organization information that produce . The advantages desired from installing computer were in the following fields.

- Storage, retrieval of trade and technological information.



- Storage retrieval of product and organization information.
- Addition of sectors and countries etc.
- It was required to develop computer programs, which could help in improving the efficiency of the organization in the above mentioned disciplines.

## **Chapter N0.2**

### **Existing System**

## **2.1 INTRODUCTION:**

As described in first chapter PASTIC is focal agency for several information' Network. It receives information from several countries. To comprehend the functioning of the existing system, i.e., to manage and handle that amount of information, a detailed study of the daily routine work together with various packages of information was carried out. The present way of information keeping (hard copies of informative material) was observed, especially those fields where information is stored and should be readily available, were observed .The areas where improvements could be made , were identified.

## **2.2 INFORMATIVE MATERIAL SOURCE:**

Books, research papers, journals, articles etc can be demanded from any organization in the country or outside the country. Books are not always bought as a whole. Some pages can also be demanded.

### **2.3. INFORMATION STORAGE:**

PASTIC maintains a databases developed in FoxPro for DOS. Although it doesn't fulfill all the requirements yet it can be called as partially computerized system.

Following are the record lay out:

Field Name	Type	Length
Title-1	Character	70
Title-2	Character	70
City_Pub	Character	2
Frequency	Character	5
Organization	Character	10
Issue_no	Character	200
Serial_no	Character	10

As clear from the record layout, it doesn't meet the requirements.

### **2.4 EQUIPMENTS USED:**

In an effort to cope with the process of automation and modernization PASTIC is using modern equipment like.

#### **IMB RISC SYSTEM/ 6000:**

RISC system is the latest system introduced by the IMB. RISC for Reduced instruction Set Computer.

This is extremely powerful machine with capacity of 128 terminals attached with it. It has a speed of 27 MIPS. At present this machine is equipped with 8 MB RAM and 32Mb hard disk. The operating system installed is AIX version 3.1. AIX stands for advanced Interactive Executive who is UNIX based operating system.

**IBM PC AT:**

There are three AT (Advanced Technology) machines available at PASTIC . One of which is equipped with VDA resolution color monitor.

**BM COMPATIBLE 386:**

One 386 machine with 1 Mb RAMS.

**IBM LASER PRINTER:**

Two laser printers and line printers are used for documentation and printing purposes. The equipment is mostly used for text processing purpose and handing the different database available at PASTIC.

## **2.5 Material Supply Mechanism**

All the steps involved in the supply mechanism are manual. The only help taken from existing material Catalog build in FoxPro as mentioned above is, material is searched and then issued to the Requester. Steps involved are:

- Request is received from requester and material asked in the request is searched.
- If material is available invoice is sent to the requester. If material is not available, it is purchased from any organization and then invoice is sent.
- After the requester pays bill, material is supplied and letters is filed for future reference.
- Request is rejected if material is not available anywhere inside or outside the country.

## **2.6 Reports**

Two reports are generated. One gives bill information of requester and the other gives monthly, quarterly and yearly supply analysis.

## **2.7 PROBLEMS FACED BY THE ORGANIZATION:**

Inspire of the advantages of using the mechanical data processing the organization is faced with the following problems:

- Information received is stored manually in files.
- Retrieval of information is cumbersome and time-consuming processes, Because to search a particular abstract all fields are searched sequentially.
- Wastage of time and wastage of stationary is another short coming of this system.
- The computer IMB RISE System 6000 and other office equipment are not used to its full potential.

**Chapter No. 3**

**Proposed System**

### **3.1 INTRODUCTION**

Designing a Documentation system is mainly the process of outlining a scheme of interrelationships among the elements of the system in order to have current procedures conform to and satisfy established objectives.

The proposed system has been designed after doing the complete study of the existing system and has been suggested, keeping in mind, the demands of the organization. It is a computerized system in which electronic data processing methods are used to make the system more efficient, more economical and error free. New techniques and procedures have been adopted in the proposed system.

Every new system, whether manual or computerized, that replaces the previous system, brings about some changes. These changes may be in procedures, or in the documents etc .New documents are designed or existing ones are redesigned. Existing procedures are modified and new procedures are introduced.

This chapter includes the brief study of the computerized system, input and output designed for this particular system. It is hoped that this approach will meet nearly all the possible requirements of PASTIC. The



present system is being operated manually but it is not efficient and quick. Therefore, information is not available at the right time and delays are caused. The computerized system, which has been proposed, is quite comprehensive and it covers every aspect in detail. Computer programs are developed to convert the present system to a computerized one.

Proposed system was necessary because of the following reasons:

- Problems, which have not been identified before, were identified.
- Management believes that a new system could be designed so that it could be more cost effective.
- Let several different users access the same program or data at the same time.
- To facilitate information retrieval.

### **3.2. OBJECTIVES OF THE PROPOSED SYSTEM:**

Before designing any computer based system, it is important and helpful to establish the objectives that the computer based system should satisfy. The following are the objectives of the proposed system:

- The new system should be more efficient while considering the achievement of the organization.
- It should be an error free and accurate system so that correct and timely retrieval is possible.
- It should be acceptable to the organization's design standards and should provide a smooth flow of information from one step to the next.
- After the system has been implemented, it should be easily maintainable with respect to the continuous resources available and it should be technically feasible.

- It should be cost beneficial when compared with present system and so it satisfies the economic objective as well.
- Many user can access the system, simultaneously.
- Retrieval system is much faster.

In short, the objective of the proposed system is development of a feasible plan of reporting the establishment of a framework within which all interactions among activities, operations, and responsibility centers can take place according to the predetermined steps from the point of inception to the final result of reporting.

Considering the objectives, the main feature of the proposed system are discussed below:

**a) CODES**

Codes are designed to reduce the storage and the number of typing Strokes. To eliminate any error, codes would be small and easy.

**b) USER INTERFACE**

For better user interaction, the interaction - input screen would be well designed with moving bar options. Input screen would be designed in a manner that the field of the record is design in the same order as they are on the manual input form. Input screens are designed to keep data entry Simple and easy for the users and will accept in the same manner as it is done manually. Some input screens will also be used for data updating and queries.

**c) ON-LINE HELPS**

The system would be designed, so that it will provide full on- line help to user,

so a user can use such system very easily . A system should be completely user friendly with appropriate message given by the system on wrong input or one some other error.

**d) UPDATION**

Facilities would be provided to update the system, user many change any field any table or file having special privileges.

**e) DELETION**

Deletion facilities would be provided only to the authorized persons.. Only he responsible persons would delete those records , which would be unnecessary.

**f) CHECKS**

Various checks would be provided in the data entry, updating and deletion

Modules to insure appropriate actions. Checks would be provided to make sure that no duplicate record would enter in the database if any user will enter duplicate record, system will given an error message of duplicate entry. For example, checks are provided to almost all code entries of the database in capital letters and for duplicate code etc.. Etc. These checks would increase the consistency of data in the database.

**g) REPORT GENERATION**

One major purpose of establishing a database is to retrieve information quickly and efficiently. The user is not bothered with the internal working of the system. He is mainly concerned with output produced by the system. The proposed system will generate different reports

according to the user' s requirements. These reports will also be more helpful for the management of the organization.

### **3.3 CONSIDERATIONS TO ACHIEVE THE PROPOSE SYSTEM**

The following outline would be considered in order to achieve the system objectives

- Have a capability to retrieve information efficiently and with out loss of information.
- Have a capability to store information in optimally organized way.
- Have a capability to process the resulting reports in the desired way.
- Have a capability to provide absolute data management control to the user like updating, retrieval and deletion.
- Have restricted access to the database as it has significance with reference to the present-context.

In this course, the following aspects are to be taken care of:

- Authorized access to the database.
- Optimal compromise between security and efficiency.
- Entity integrity and referential integrity.
- No redundancy.
- Have all files in normalized form.

### **3.4 MODULAR APPROACH OF PROPOSED SYSTEM:**

The proposed system is designed in modules so that it facilitates modification and testing. Each program or module performs one major function and minor tasks related to the major function. It is supported because of the following reasons:

- It increases the readability of programs.
- It decreases the time needed to design, implement and maintain programs.
- It also increases the productivity of the program.

### **3.5 WHAT PROPOSED SYSTEM CAN DO?**

- It can add, and display information about the informative material of any type i.e. static information about the material.
- It satisfies various queries by which any record can be retrieved in more than one ways.
- It can store the static information about the user for reference.
- About request all necessary information are stored.
- The processing about request is stored.
- It can generate the invoice for requester.
- It can generate monthly, quarterly, sixmonthly and yearly reports.

### **3.6 THE PHASES OF THE PROPOSED SYSTEM**

The proposed system deals with the following three phases:

- a. The study phase.
- b. The design phase.
- c. The development phase.

#### **3.6.1 THE STUDY PHASE**

- a. Identify the problem
- b. Define the objectives of the proposed system.
- c. Study alternative solutions.
- d. Select and recommend most feasible system.

### **3.6.2 THE DESIGNE PHASE**

- a. Identify function to be performed and allocate them as manual equipment or computer program tasks.
- b. Perform input, output and file design.

### **3.6.3 THE DEVELOPMENT PHASE**

- a. Develop computer programs.
- b. Complete system and component test.

**Chapter No. 4**

**The System Design**

## **SYSTEM DESIGN**

### **4.1 Introduction**

The design of the computer system requires the enumeration and specification of

Distinctive steps in order to convert data information. In addition to this, the system designer must also keep in mind the structure of the system that helps user-making decision affecting future as well as current events. The steps undertaken in designing the proposed system are as follows:

- OUTPUT DESIGNING
- CODE DESIGNING
- INPUT DESIGNING
- DATABASE DESIGNING.



## **4.2 OUTPUT DESIGNING**

The major function of any system is to produce relevant timely information when needed. The output any system determines its competency, efficiency and reliability.

Thus output must be designed so it contain all types of anticipated information that may serve multi – purpose needs. The system developed for PASTIC/ is capable of generating many for different purpose. Sample of various queries is shown in appendix.

## **4.3 Database Design**

Physically data in an Access database is stored in tables that contain columns or fields, each field has its specific data type and length . The tables used in this system are as follows:

- Catalog
- PageInfo
- Author
- MatCode
- Requstr
- Request
- OnDemond

### **Catalog**

**TABLE NAME** : Catalog

**PRIMARY KEY** : BookID

**PURPOSE** :

This table keeps the specific information about each material, they contain.

**Record Layout:**

Field Name	Type	Length	Status	Description
BookID	Character	15	NotNull	Material IdentificationNumber
MatTitle	Character	30		Material Title
Edition	Character	10		Edition of Material
Vol	Character	3		Volume
For_Loc	Character	1		Foreign/Local
AvailPlace	Character	30		Availability Place
PubYear	Character	4		Publishing Year
Pg_Rate	Numeric	4		Price Per Page
MatCode	Character	3		MaterialCode

**Author**

TABLE NAME : Author

PRIMARY KEY :

PURPOSE :

This table keeps all the names of authors for each informative material.

**Record Layout:**

Field Name	Type	Length	Status	Description
BookID	Character	15	NotNull	Material IdentificationNumber
Author	Character	30		Author of material

**Page Information**

TABLE NAME : PageInfo

**PURPOSE :**

This table keeps the specific information about each material, they contain.

Field Name	Type	Length	Status	Description
BookID	Character	15	NotNull	Material IdentificationNumber
PageFrom	Numeric	8		Starting page
PageTo	Numeric	8		Ending page

### Material Code

**TABLE NAME :** MatCode

**PRIMARY KEY :** MatCode

**PURPOSE :**

This table keeps the codes of material for each informative material.

**Record Layout:**

Field Name	Type	Length	Status	Description
MatCode	Character	3	NotNull	Material type Identification
MatType	Character	30		Type of material

### Requester

**TABLE NAME :** Requstr

**PRIMARY KEY :** ReqID

**PURPOSE :**

This table keeps the specific information about each requester for reference.

**Record Layout:**

Field Name	Type	Length	Status	Description
UserID	Character	15	NotNull	User
Name	Character	30		Requester
Address1	Character	30		Requester
Address2	Character	30		Requester
City	Character	30		City of the
Country	Character	30		Country of the
Off_Tel	Character	15		Office
Res_Tel	Character	15		Tele(Res) of
Fax	Character	15		Fax NO:
Sex	Character	1		Male or

**Request**

**TABLE NAME** : Request

**PRIMARY KEY** : ReqID

**PURPOSE** :

This table keeps the specific information about each transaction or request.

---

**Record Layout:**

Field Name	Type	Length	Status	Description
ReqNo	Numeric	8	NotNull	Request No
UserID	Character	15		User identification NO:
ReqDate	Date			Request receiving date
BookID	Character	15		Material ID NO:
LetterDate	Date			Request letter date
PageFrom	Numeric	4		Starting page requested
PageTo	Numeric	4		Ending Page of request
Price	Currency			Total Dues
ReqStatus	Character	15		Status of request
PageRate	Single	2		Unit Price
Service	Single	2		Service charges
IssueDate	Date			Date of material sent

**Material on Demand**

**TABLE NAME** : OnDemand

**PRIMARY KEY** :

**PURPOSE** :

This table keeps the short record about the demanded material that is not available is on demand.

**Record Layout:**

Field Name	Type	Length	Status	Description
BookID	Character	15	NotNull	Material IdentificationNumber
Material Title	Character	30		Title of The Material

**Chapter No.5**

**The System Development**

## **The System Development**

### **5.1 Software Selection**

For the development of proposed system, windows environment was considered as the most suitable software platform because of its compatibility ease at DOS. Secondly the proposed system has several independent modules and scanning s/w had to be incorporated with the system. For these reasons windows Dynamic Data exchange facility was also kept in mind at time of its selection.

### **5.2 Windows Environment**

The window environment maintains the visual interface of a window program. It also keeps track of which code is running and what resources are needed for this code. As it is currently implemented, a window is a shell over the DOS operating system. Windows also provide a large library of functions to make developing windows program much simpler. All the

functions to create and manage the windows are available in the system, so a programmer doesn't have to develop these functions on his own. These libraries not only make the programming easier, but also make programs more consistent with each other so one has less to learn in order to learn a new program.

### **5.2.1 Shell Over DOS**

The window environment is a shell over the DOS operating system that provides the control and capability to run the multiple application in a graphical "windowed" user interface. A shell is a program that forms an interface between DOS and the user. It accepts user commands and performs the respective DOS commands. In windows multiple applications can run simultaneously, with each given one or more windows on the screen, to draw on and a piece of memory to run it. The Windows operating system manages the visual interface, allocates the memory to different programs, records, which program is running and provides access to disk drives

### **5.2.2 Memory and Screen Management**

Each running application appears in one or more windows on the screen, with the active application's in front. Applications also can have document windows within their program windows to contain documents. Each application must stay within their program windows to contain documents. Each application must stay in its assigned window and block of memory otherwise bad things can happen. In a 80286 machine any application that uses memory outside of its assigned area causes problems by destroying the other application in the area it used. In 80384 and later machines with windows running in enhanced mode the h/w prevents an application from



moving out of its assigned area by not allowing any memory accesses outside of that area.

### **5.2.3 Multi –Tasking**

In addition to managing memory, the windows Os manages tasks switching between multiple applications. In most of cases the application in foreground is using most of CPU time, however, the system and other applicatuiOn can also be run in the background when the foreground application is not busy.

The multi-tasking method used in windows is not primitive meaning it doesn't interrupt a running application to run an other.

### **5.2.4 Libraries of Windows Functions**

The windows Os contains a large library of functions available for any application to use. These are functions to create the visual environment such as:

- win and menus
- functions to manage memory
- functions to communicate with other Application
- functions to communicate with system resources such as printer and the disk drives
- GENERALL FUNCTIONS TO FACILITATE drawing pictures.

These functions are stored in dynamic link libraries, which are accessible by any running program. They are called dynamic link libraries because they don't have to be attached to a program to be

used but are dynamically linked to it a sneezed at run time. All these functions significantly reduced the amount of coding, a programmer must do by providing most of the standard functions in a ready to used format.

### **5.2.5 Device Independence**

One of the biggest headaches found when developing an Application on a DOS machine is the large number of different peripheral devices that, the programmer must be prepared to handle. It is not uncommon for an Application program to come with a hundred device drivers to handle all the different types of monitors and printers that could possibly be on the system. With Windows, the OS communicates with all the devices and provides a standard interface for all programs to use. Thus a windows programmer no longer has to worry about what monitor or printer is attached to a system.

#### Language Selection

One of the most difficult task in selecting a language, after system requirements are known, is to determine whether a particular software fits the requirements. Among the criteria that are applied during an evaluation of available languages are:

- General application area
- Algorithmic an computational complicity
- Environment in which software will execute
- Performance consideration
- Data structure complexity
- Knowledge of software development staff and
- availability of good computer

Microsoft Visual Basic was selected because of following reasons:

- It provides highly efficient and easy to use interface drawing capability.
- Visual Basic is both an interpreter and a compiler .
- Visual Basic powerful debugging environment enables the programmer to trace each proceeding step and examine intermediate data values procedure during processing
- applications developed in Visual Basic as stand-alone can be transported to a multi-user environment with very little change in code.
- Visual Basic provides extensive database handling facilities.

## **5.3 VISUAL BASIC: Language Approach**

### **5.3.1 Object Oriented Programming (OOP)**

It is the current development in programming methodology.

This method bundles code and data into somewhat autonomous objects.

The idea is: When an object is created to do something , one no loner has to know how it works, simply pass it messages. That way an object created in one program can be reused in another.

#### **Objects**

Not only does Visual Basic have objects but also the objects are real, touchable things like buttons and boxes. Other OOP languages create objects with some sort of commands that defines a block of code. Visual Basic makes it easier by making the objects a visible thing rather than a

coding abstraction. Platform of Visual Basic is a "Form" on which objects are made with the mouse.

### **Events**

Objects communicate with each other, with the system and with the program using "Events". Events are actions that an object might want to respond to.

### **Methods**

Objects are not simply bundled code blocks but a bundling of data and code that manipulate it. Every object contains code to manipulate its own data, known as "Method".

## **5.4 Software Development in Visual Basic**

For developing an app in Visual Basic following steps are observed:

- i) write design properties
- ii) the interface
- iii) set objects codes

These types of running modes are used in developing software process

- ✓ Design mode
- ✓ Interpreted running mode
- ✓ Compiled running mode

## **5.5 Software Developing Techniques**

### **5.5.1 Data Input**

Text/data input for the s/w was achieved by utilizing the text box control provided by VISUAL BASIC. It holds the text that the user can enter or change. Checks can be added to string entered in the text-change and text key-press event procedures. For example to limit a text box from taking the digits only the following code works well:

```
Text_keypress(keyascii As Integer)
```

```

If (keyAscii < 48 AND keyascii > 57) OR KeyAscii <> 8 then
    If KeyAscii <> 13 then
        SendKeys "{BS}"
    Endif
Endif

```

The procedure deletes the characters other than numeric digits.

In case of Backspace and Enter no action is taken. Numeric digit Ascii value is among 48 and 57. BackSpace Ascii value is 8 and Enter is detected through 13. SendKeys Procedure is VISUAL BASIC utility that sends key to the system as if pressed on the keyboard.

### 5.5.2 Data Storage Techniques

VISUAL BASIC 5.0 provides two types of data storage techniques:

#### **File**

In VISUAL BASIC file system sequential Random and Binary formats are provided

#### **Database**

Database engine used in VISUAL BASIC is capable to access database created in MicroSoft access, Paradox, FoxPro, Dbase and Oracle.

## 5.6 The Crystal Reports

Crystal reports is a powerful program program used for creating reports in the system, using the data from existing database. The program works by establishing connections with the database. Using these connections as conduits, Crystal Reports draws in the values from database fields, selected and used in report, either in the original form as part of a formula

that generates more sophisticated values. Crystal Reports for VISUAL BASIC is used to print reports from within VISUAL BASIC.

Crystal Reports works with all kinds of data:

- ✓ Numbers
- ✓ Currency
- ✓ Text
- ✓ Dates and
- ✓ Boolean fields

It has a wide range of built in tools that we can use to manipulate that data to fit our needs. Using these tools, we can:

- ✓ Make calculations and comparisons of data values.
- ✓ Calculate subtotals and grand total of field values
- ✓ Calculate group averages, count the records in a group and test for minimum and maximum values.
- ✓ Test for presence of specific values
- ✓ Present data only if certain conditions are met
- ✓ Evaluate logical relation ships between values
- ✓ Merge text with other text and
- ✓ Perform numerous other useful data related activities.

The data can be placed wherever we want it on the reports highlighted with special fonts and font sizes.

The report editor is invoked as we enter the report designer. The rep editor is divided into three sections

- i) Page Header
- ii) Details
- iii) Page footer

As we select the elements for our reports, we place them in whatever section of the report; we want them to appear. The elements that can be added to reports are:

- ✓ Text fields
- ✓ Database fields
- ✓ Totals
- ✓ Formulas involving database fields
- ✓ Summaries

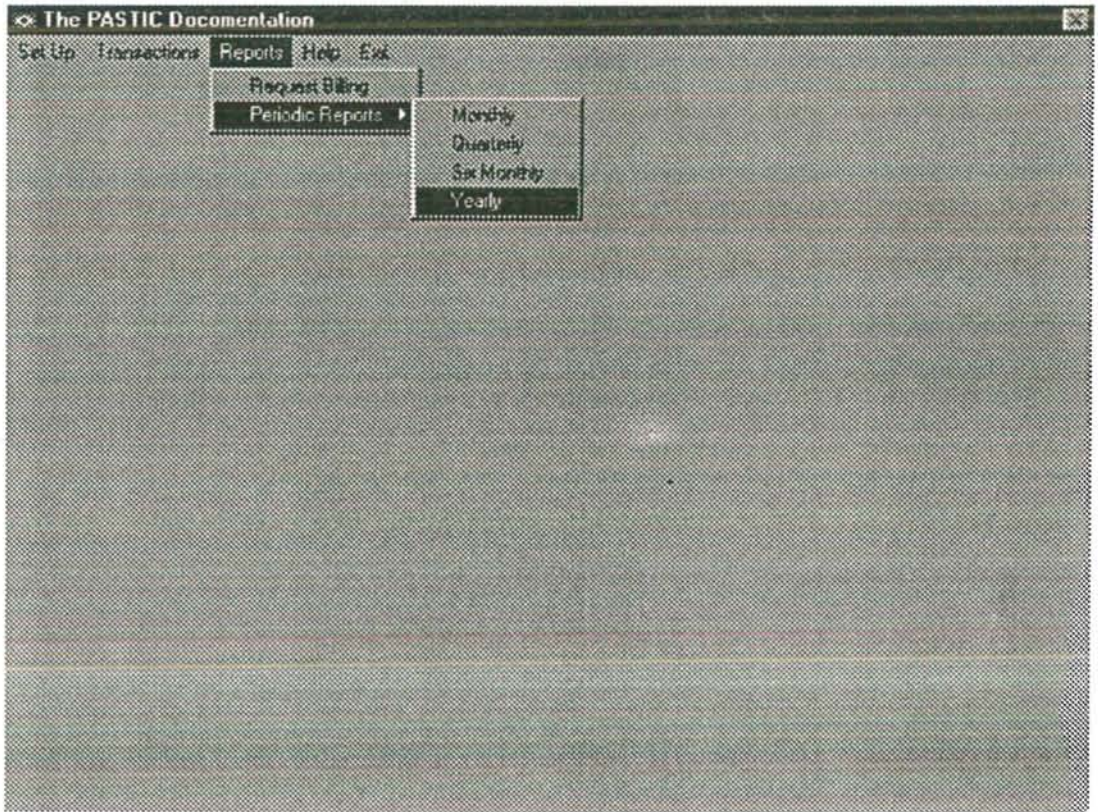
## **Chapter No.6**

### **User Guide**



## Main Menu

Main menu covers the following topics as shown in the fig 6.1



### 6.1 Setup

All type of static information is contained in setup menu.

#### 6.1.1 Catalog

This form stores the material information. All the fields are listed below with brief description. Fig 6.2

**Catalog**

BookID: 001      Material Code: BK

AvailPlace: PAK

MaterialTitle: VISUAL BASIC GUID

Edition: STH      Volume: 1      Publish Year: 1996

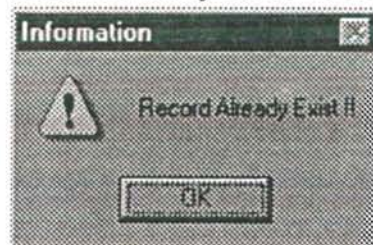
Foreign/Local: L      Quantity: 1      Page Rate: 1.5

Authors	
Author	
WILL TRAIN	<input checked="" type="checkbox"/>
STEVE BROWN	<input type="checkbox"/>
WILL BROWN	<input type="checkbox"/>
*	<input type="checkbox"/>

Page Information	
PageFrom	PageTo
1	100
200	250
*	

Add New    Edit    Locate    <<    <    >    >>    Delete    Close

- **BookID**  
This is a unique identification for catalogue. If User enters a new catalogue, it is checked for duplication and if already exists, message "Record already Exist" is displayed.



- **Material Title**  
Name of the material demanded by the Requester.
- **Edition:**  
Stores edition information of the material. It's a Character field.
- **Volume**  
Stores volume information of material. Again it's a Character field

- **Foreign/Local** If some material is not available in the local market, it is demanded from outside the country. It stores “F” for foreign and “L” for local.
- **Available Place**  
Availability place is stored for future reference.
- **Publish Year**  
The year in which material was published. It’s a four character field.
- **Page Rate**  
Unit price of a page.
- **Material Code**  
All types of material are stored in a separate table with two fields “Material Type” and “Material Code”. Here in catalogue “Material Code” is stored as a reference. It’s a three character code.
- **Page From**  
Some times material is not purchased as a whole. Instead some pages are purchased. This field allows to store starting page of material. One material can have different range of pages at a time. So grid is allowed to store more than one page ranges.
- **Page To**  
This field stores ending page of material.
- **Author**  
One material can have more than one Author. So Grid is allowed to store more than authors.
- **Add New**  
Use cannot input data unless he/she presses the <Add New> button. It clears the screen and shows empty record. As shown in Fig:6.1.1(a)

The screenshot shows a window titled "Catalog" with a form for editing a record. The form contains the following fields and sections:

- BookID:
- Material Code:
- AvailPlace:
- MaterialTitle:
- Edition:
- Volume:
- Publish Year:
- Foreign/Local:
- Quantity:
- Page Rate:

There are two table-like sections:

- Authors:** A table with one column labeled "Author" and one row containing a text input field with an asterisk icon.
- Page Information:** A table with two columns labeled "PageFrom" and "PageTo", and one row containing two text input fields with asterisk icons.

At the bottom of the window, there are two buttons: "Save" and "Cancel".

Fig:6.1.1(a)

- **Edit**

It helps to modify an existing record. The user is required to locate the record with the help of <Locate> button or move first "<<<", move last ">>>", move next ">" or move previous "<" buttons.

**Catalog**

BookID: 002      Material Code: BK

AvailPlace: PAK

MaterialTitle: PROGRAMER GUID

Edition: 5      Volume: 2      Publish Year: 1997

Foregn/Local: L      Quantity: 2      Page Rate: 1.5

Authors	
Author	
TARZON	
SHELLY	
WELL	
SHELL	
*	

Page Information	
PageFrom	PageTo
102	202
202	230
240	250
300	340
400	550
*	

Save      Cancel

The form displayed is shown in Fig:6.1.1(  
Fig:6.1.1(b))

- **Locate**  
Press locate button to browse and view more than one records at a time and select the required.
- **Move First (<<)**  
Displays the first record of the table.
- **Move Previous (<)**  
Displays previous of the current record if it exists.

- **Move Next (>)**  
Displays next record if it exists.
- **Move Last (>>)**  
Displays the last record of the table.
- **Delete**  
Deletes the current record. It asks the user to confirm deletion and deletes if user says “Yes” otherwise deletion is ignored.
- **Close**  
Close the current active form and brings the control back to the main menu.

### 6.1.2 Requester

- **UserID**  
This is a unique identification of Requester. If User enters a new UserID, it is checked for duplication and if already exists, message “Record already exist” is displayed.
- **Name**  
Name of the requester. It’s a 30 character field. All the names first, mid and last are to be stored here.
- **Address1**  
It’s a 30 character field. Part of the address is stored here.

The screenshot shows a window titled "Requester" with the following fields and values:

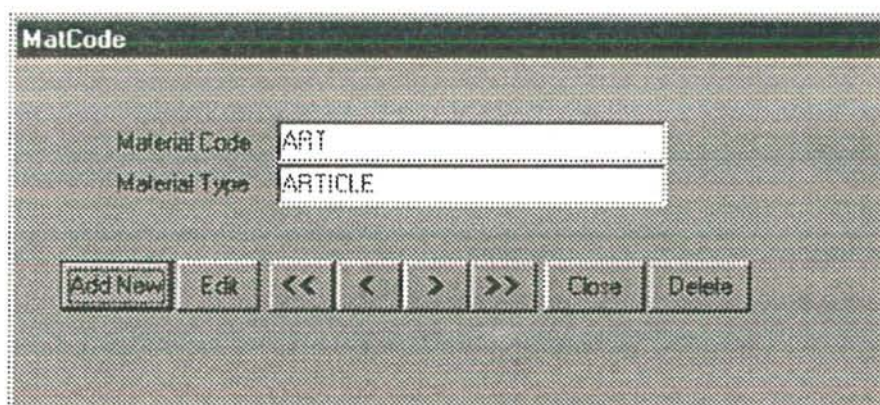
UserID	MN002		
Name	HINA TAJ		
Address1	H NO 546		
Address2	NAWAN SHAHIR		
City	MULTAN		
Country	PAK		
Tele NO (Off)	54376	Tele NO (Res)	67599
Fax	435768	Sex	F

At the bottom of the form, there are several buttons: "Add New", "Edit", a set of navigation arrows (two left-pointing, one right-pointing, and two right-pointing), "Locate", "Delete", and "Close". The right-pointing arrow button is highlighted with a dashed border.

- **Address2**  
Sometimes addresses are too long so to meet the requirement this extra address field is provided.
- **City**  
City of the requester.
- **Country**  
Country of the requester.
- **Tele (off)**  
It's a 15 character field, user is may add code and extension information also.
- **Tele (Res)**  
It's a 15 character field, user is may add code and extension information also.
- **Fax**  
It's a 15 character field, user is may add code and extension information also.
- **Sex**  
Sex information, one character field, "F" for female and "M" for male.

All the buttons work like in section 6.1.1.

### 6.1.3 Material Code



The screenshot shows a dialog box titled "MatCode". It has two text input fields. The first field is labeled "Material Code" and contains the text "ART". The second field is labeled "Material Type" and contains the text "ARTICLE". Below these fields is a horizontal row of buttons: "Add New", "Edit", "<<", "<", ">", ">>", "Close", and "Delete".

Fig: 6.1.3

- **Material Code**  
Here in catalogue “Material Code” is stored as a reference. It’s a three character code.
- **Material Type**  
Here is the complete name of the informative material type.

## 6.2 Transactions

### 6.2.1 Request

- **Request No**  
This is the unique identification for each requester and stored as a record reference.
- **Request Date**  
It’s the dat of request received.



Request			
RequestNO:	1		
UserID	MNG02	BookID	005
Request Date	10/6/98	LetterDate	6/5/98
Page From	20	PageTo	29
NO. Of Pages	10	PageRate	2
Service Dues	2	Price	20
Request Status	UNDERPROCESS	IssueDate	10/6/98

Fig:6.2.1

- **UserID**  
This is a unique identification of Requester.
- **BookID**  
It's the unique identification of the material, the requester demands.
- **Letter Date**  
Here is the date when the request letter was written.
- **Page From**  
Start of pages demanded by the requester.
- **Page To**  
End of the pages demanded.
- **Pages**  
Total NO: of pages demanded.
- **Price**  
The total dueses ,the requester has to pay.
- **Request Status**

This is the status of the request weather  
“processed”, “Underprocessed”, or “Rejected”.

- **Page Rate**  
The unit price for material.
- **Service**  
Service charges, if any.
- **Issue Date**  
Here is the date when the demand is fulfilled.

## 6.3 Reports

### 6.3.1 Request Billing

The bill i,e the dues to be submitted, is generated in this report.  
The all requests demanded by one requester in one date are billed  
in the same report.

### 6.3.2 Periodic Reports

These are the reports after each period which may be , Month , 4-  
Months, 6-Months, or A year. These have the contents:

- Requests from last quarter
- New requests
- Total Request
- Supplied: Local
- Supplied: Foreign
- Total Supplied
- Cancelled
- Unprocessed

#### 6.3.2.1 Monthly

This is periodic report after each month.

#### 6.3.2.2 Quarterly

This is periodic report after each 4-month.

#### 6.3.2.3 Six Monthly

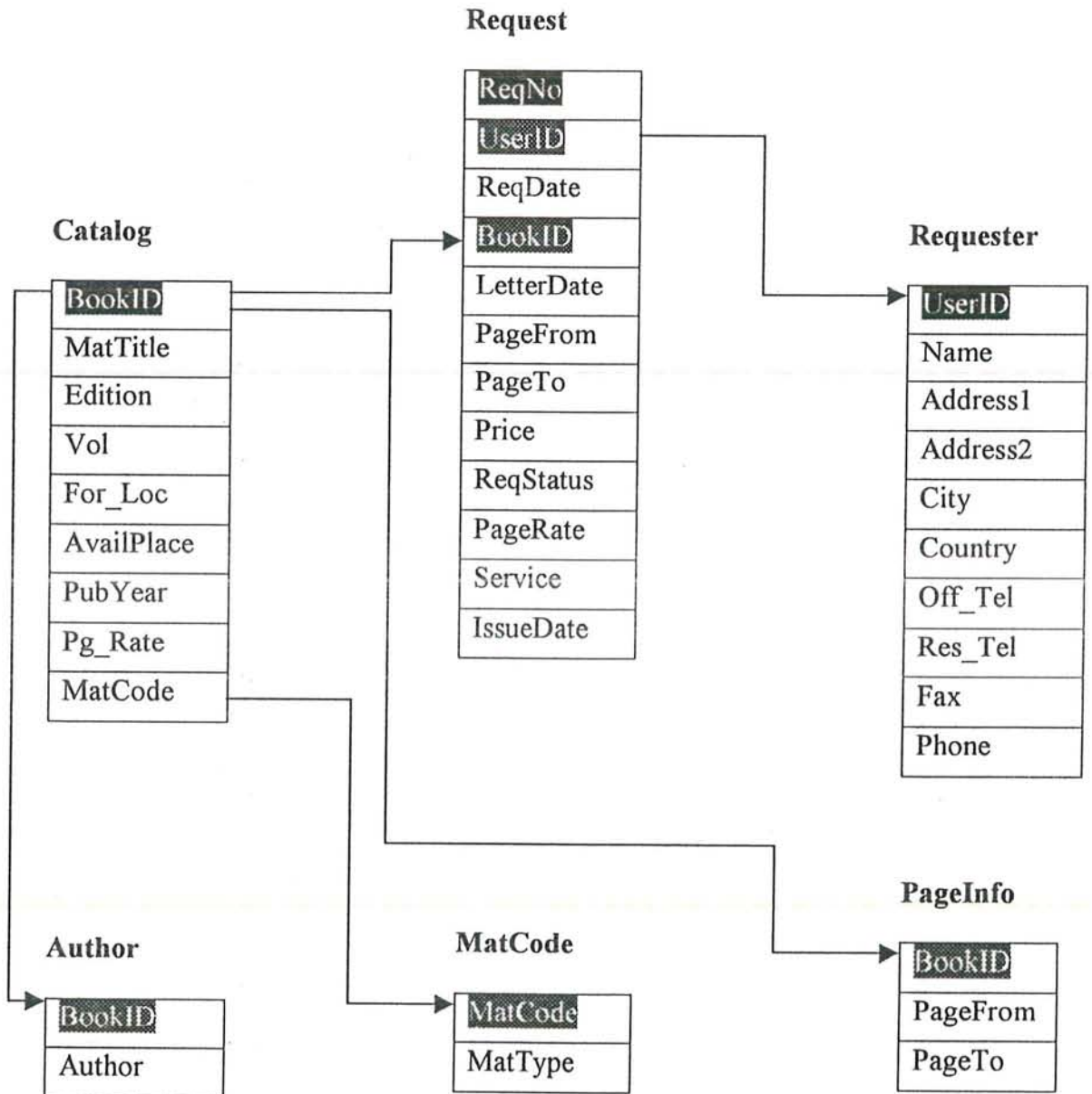
This is periodic report after each 6-month.

**6.3.2.4 Yearly**

This is periodic report after each Year.

## Beckman Diagram

## BACKMAN DIAGRAMS



Primary Key



Foreign Key



## Bibliography

## Bibliography

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