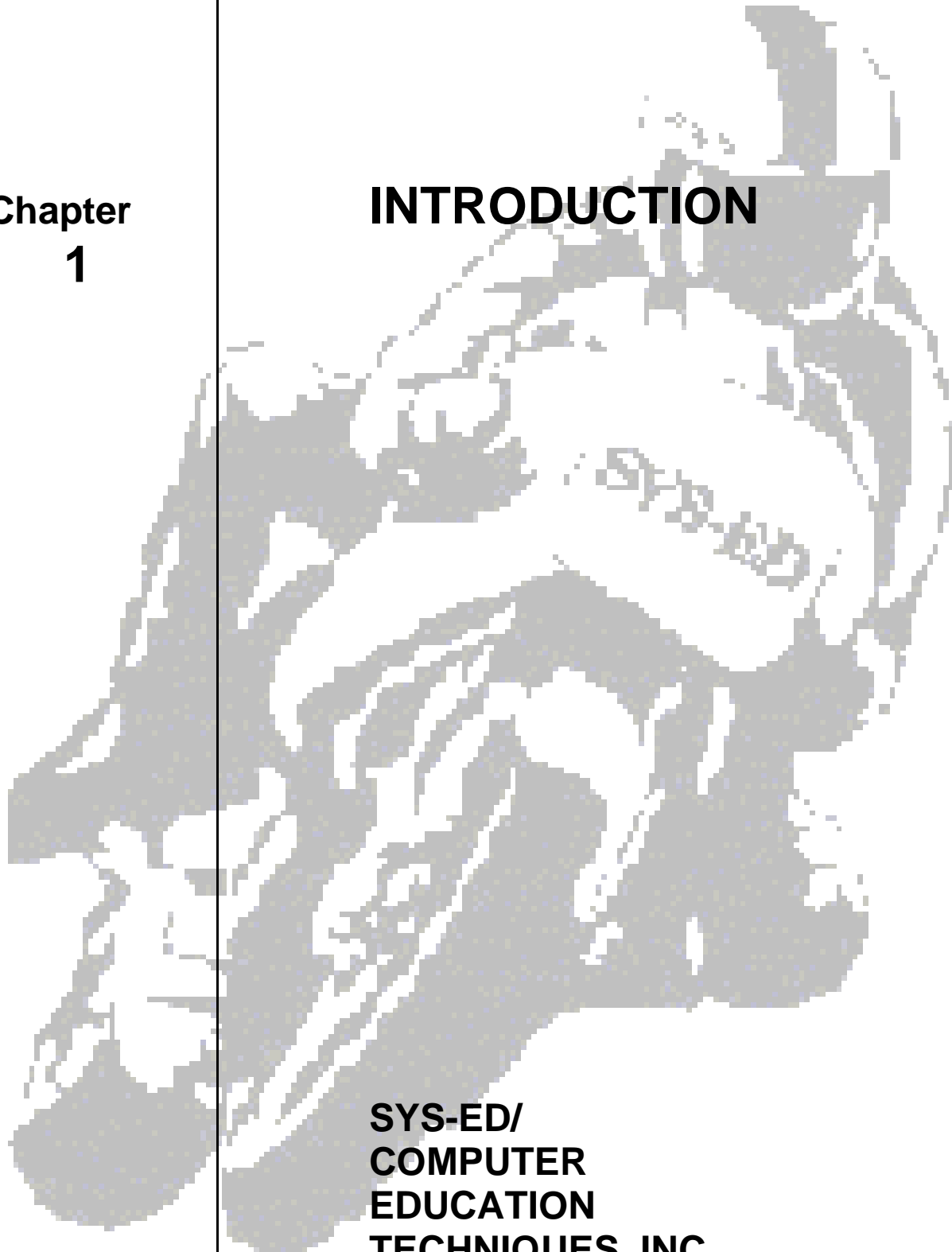


**Chapter
1**

INTRODUCTION



**SYS-ED/
COMPUTER
EDUCATION
TECHNIQUES, INC.**

Objectives

You will learn:

- C Traditional file organization versus database organization.
- C Components of IMS-DL/I: DBD: Database Descriptor Block, PSB: Program Specification Block, PCB: Program Communication Block, and ACB: Application Control Block.
- C DL/I concepts.
- C Application view.

1 What is a Database?

A database is a collection of data items.

IMS DB DL/I utilizes a hierarchical database structure.

The data is stored in normal operating system files.

A database management system (DBMS) is used to store the data, create and maintain interrelationships among the data and to retrieve the data.

1.1 Traditional File Organization vs. Database Organization

In a traditional file organization, the following considerations tend to make application design problematic:

- C Variable length records are cumbersome to work with.
- C Fixed length records contain wasted space and impact application changes.
- C New files cause data redundancy, thereby increasing the need for data maintenance.
- C Each application has its own files.
- C Sorting large files can be prohibitive in terms of expense and/or time.
- C Recovery attempts are non-standard, often ignored, and sometimes unsuccessful.
- C Lack of data integrity.
- C Changes in the layout of stored data requires that all programs be recompiled.

2 The Objectives of a Database Management System

- C To provide high-level programming language support.
- C To reduce data redundancy and increase data independence.
- C To reduce data maintenance.
- C To provide data integrity.
- C To provide data security.
- C To provide multiple indexing capabilities.
- C To reduce program maintenance.

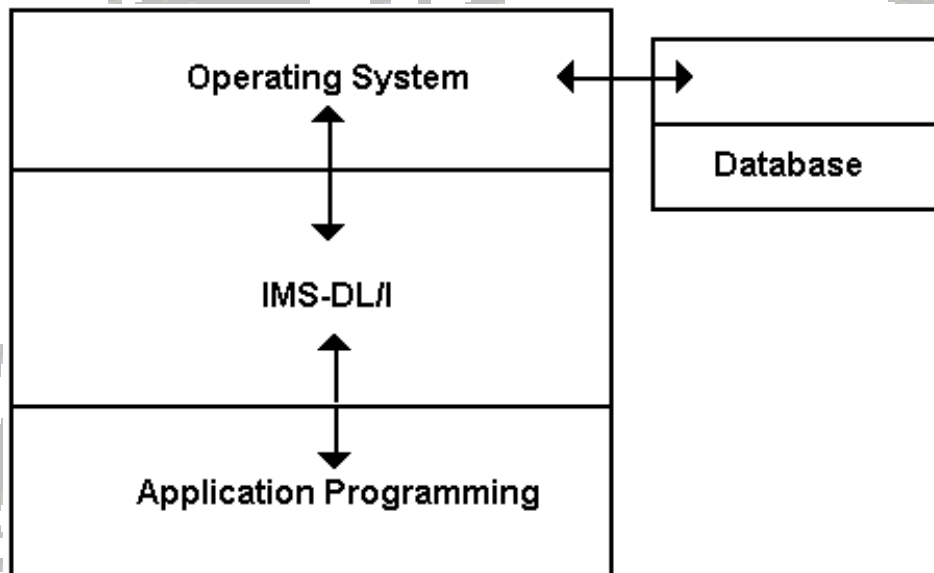
3 What is IMS DB DL/I?

The IMS DB DL/I software product is an interface between application database requests and the operating system access methods.

Its function is to provide a facility for an application program to access data without knowing the physical location or structure of the data.

IMS DB DL/I provides an application program with the following capabilities:

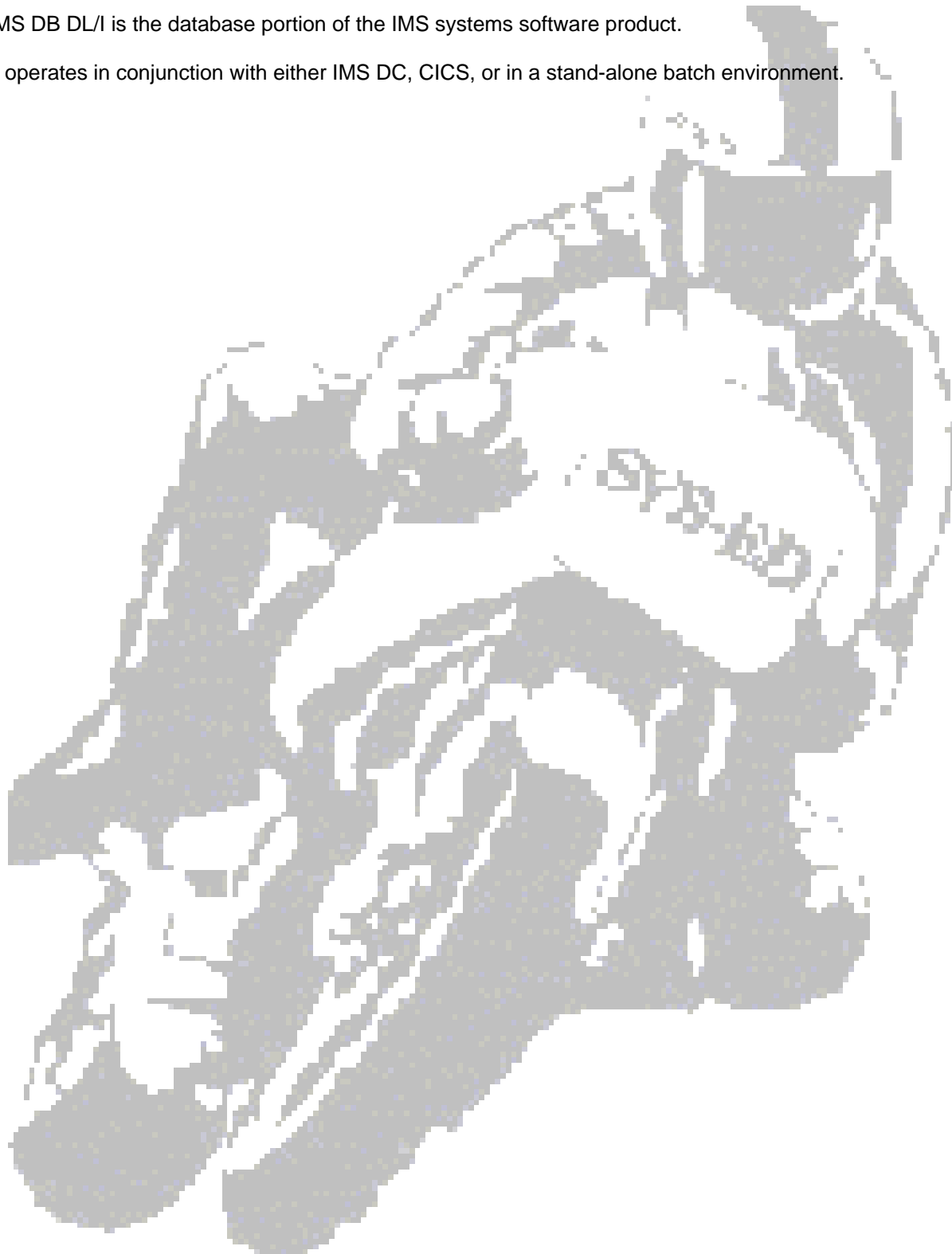
- C To load and update files.
- C To utilize pointers for efficient processing operations.
- C To retrieve/update specific segment types.
- C To monitor the status of programs.



3.1 IMS DB DL/I

IMS DB DL/I is the database portion of the IMS systems software product.

It operates in conjunction with either IMS DC, CICS, or in a stand-alone batch environment.



4 Components of IMS-DL/I

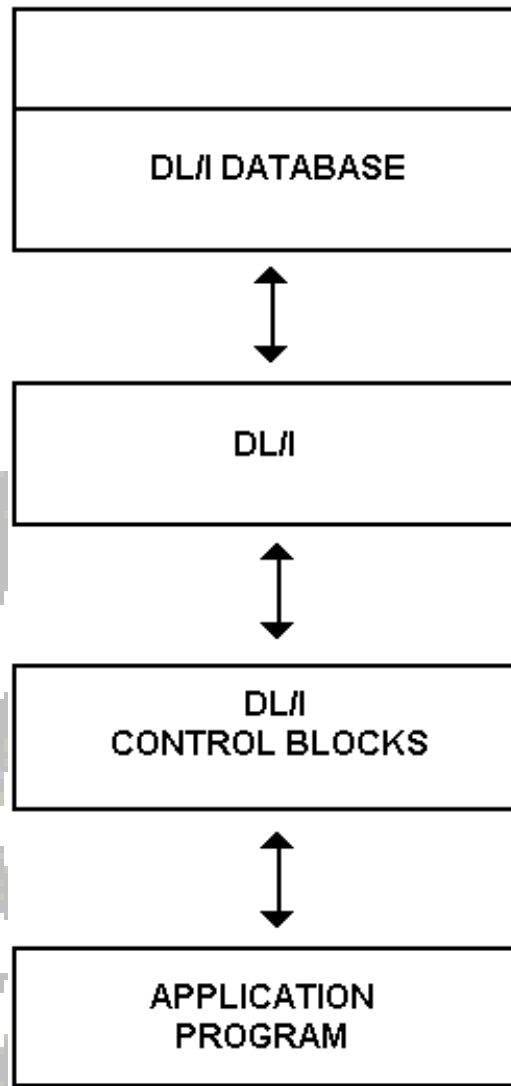
The IBM IMS DB DL/I software product consists of program modules, control blocks, and the physical database.

The physical database is implemented using VSAM or ISAM/OSAM.

There are two DL/I control blocks:

- C DBD: Data Base Descriptor Block
- C PSB: Program Specification Block

COMPONENTS OF IMS-DL/I



4.1 DBD: Database Descriptor Block

A Database Descriptor (DBD) is a control block that describes the physical structure of the database.

Its purpose is to allow data independence and isolate an application program from the physical implementation of the database.

A DBD specifies:

- C The name of the database and the hierarchical access method used.
- C The hierarchical structure of the database.
- C Segment type names.
- C Within each segment type, key and search fields are defined.
- C Optionally, all the fields that make up the segments.

4.2 PSB: Program Specification Block

A Program Specification Block (PSB) contains the Program Communication Block (PCB) to be used by an application.

- C Each program must have an associated PSB.
- C More than one program may use the same PSB.
- C Within the PSB, there is one or more Program Communication Block (PCB).
- C Up to 255 PCBs may be defined in a PSB.

4.3 PCB: Program Communication Block

A PCB defines the application program's view of the database and serves as the interface to DL/I during the processing of the data base.

The order of PCBs defined in the entry statement of the application program should be the same as the order of the PCBs defined in the associated PSB.

The PCB specifies:

- C The segments which the program may access.
- C The access path.
- C Processing options.

4.4 ACB: Application Control Block

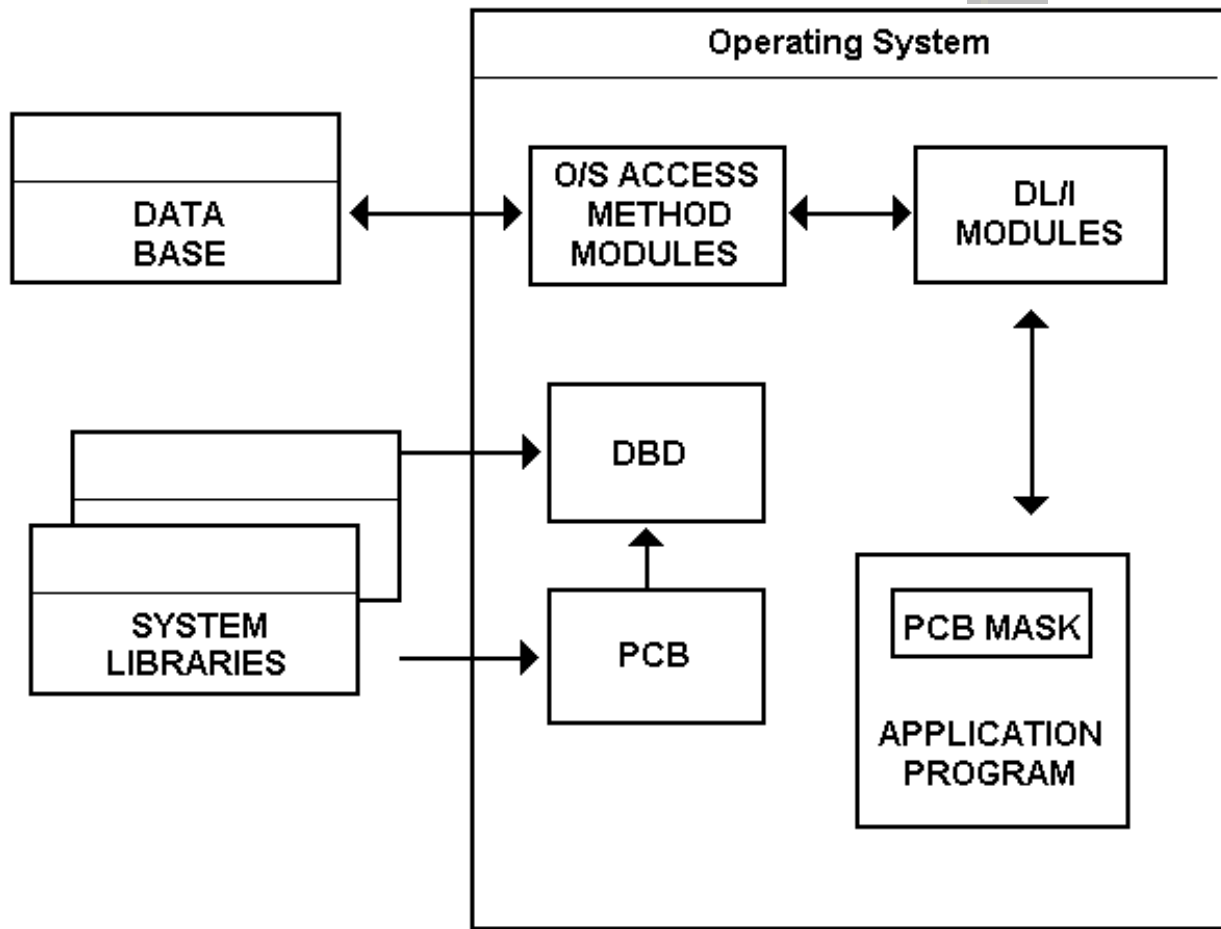
The ACB contains the information required for accessing the physical database.

The ACB is created from information contained in the DBD and PSB libraries.

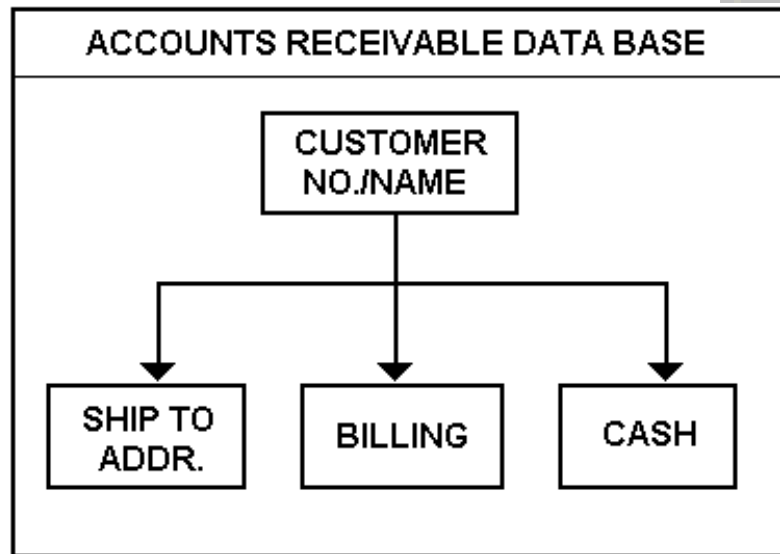
In a batch program, the ACB is created when the job is started.

For an on-line program initiated through either IMS DC or CICS, the ACB is created before the processing of the database. The on-line program then accesses the ACB library.

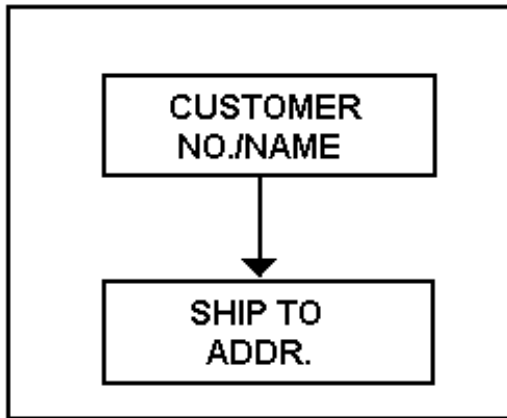
5 DL/I Overview



6 Application View



BILLING PSB1
AR - PCB



CASH RECEIPTS PSB2
AR - PCB

