

Chapter
1

INTRODUCTION

*Get on the
Fast Track!*



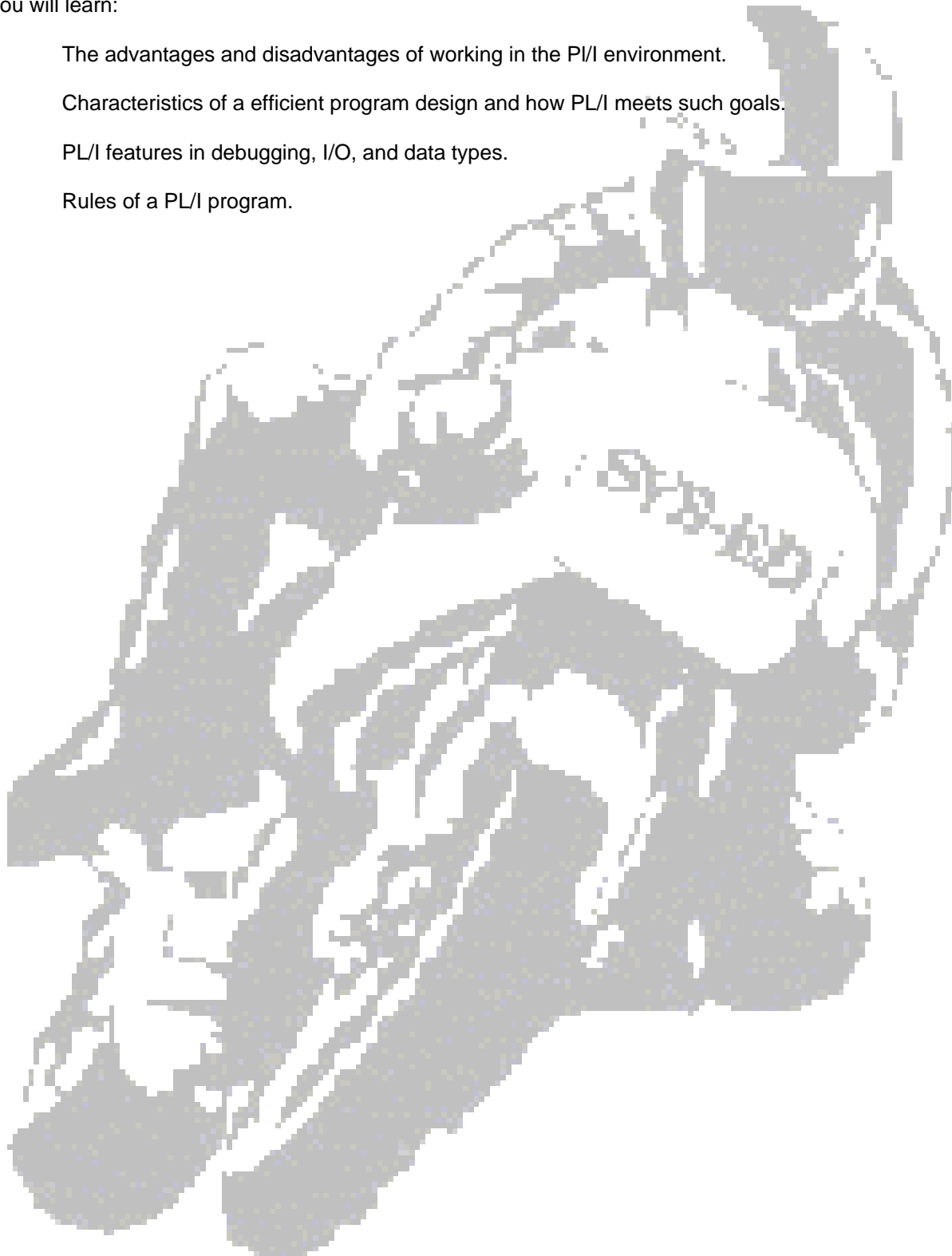
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**SYS-ED/
COMPUTER
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Objectives:

You will learn:

- C The advantages and disadvantages of working in the PL/I environment.
- C Characteristics of a efficient program design and how PL/I meets such goals.
- C PL/I features in debugging, I/O, and data types.
- C Rules of a PL/I program.



1 Advantages and Disadvantages

Advantages

- C Solves business and scientific problems.
- C Easy to learn basic programming.
- C Good character manipulation facilities.
- C Efficient code generation (IBM optimizing compiler).
- C Excellent program structure.
- C Easy to read and maintain.
- C Increased programmer control.
- C Good debugging features.
- C Optimizer and Checkout Compiler.

Disadvantages

- C Can be inefficient, if used improperly.
- C Difficult to learn all features.
- C Shortage of manpower.
- C Memory Hog.
- C Not portable.

2 Goals of a Good Program

The goals of efficient program design are:

- C Correctly solve the problem.
- C Reliable.
- C Easy to read and maintain.
- C Reusable.
- C Portable.

Characteristics of a Good Program

- C One entry point.
- C One exit point.
- C No dead code.
- C No infinite loops.

3 Features of PL/I

Modularity

- C Can structure programs through use of procedures.

Data Types

- C Has a variety of data types.
- C Has default attribute rules for incomplete data definitions.

Statements

- C Allows for free format of statements.
- C Expressions are formed using simple algebra notation.

Data Collections and Storage

- C Aggregates (arrays and structures) can be used.
- C Dynamic and programmer-controlled storage allocation is possible.

Input/Output

- C Simple stream-oriented I/O is available for convenient input of data, report production, and for debugging.
- C Record-oriented I/O is available for efficient file processing.

Debugging

- C Checkout compiler is available for interactive execution, tracing, and program amendment in an on-line environment.
- C Has facility for detection and handling of exceptional conditions (handling can also be programmer specified).

Miscellaneous

- C Subsets of language can be used.
- C Has its own built-in functions including a sort/merge facility.

4 Sample Program

```
/* GRADE-POINT AVERAGE CALCULATION */
GPA:

  PROCEDURE OPTIONS (MAIN) ;
    GET LIST (A,B,C,D,E) ;
    SUM = A + B + C + D + E;
    AVERAGE = SUM/5;
    PUT LIST ('MEAN IS',AVERAGE);

  END;
```

5 Special Characters

Character	Description
=	Equal
>	Greater Than
<	Less Than
>=	Greater Than or Equal
<=	Less Than or Equal
≠	Not Equal
¬<	Not Less Than
¬>	Not Greater Than
*	Or
&	And