



SYSTEM PROGRAMMING

UNIT - 1

BY

SAKHI BANDYOPADHYAY

INTRODUCTION

WHAT IS SYSTEM?

SYSTEM IS THE COLLECTION OF VARIOUS COMPONENTS

EX:- COLLEGE IS A SYSTEM

WHAT IS PROGRAMMING?

ART OF DESIGNING AND IMPLEMENTING THE PROGRAMS.

- **SYSTEM PROGRAM:-**

“THESE ARE PROGRAMS WHICH ARE REQUIRED FOR THE EFFECTIVE EXECUTION OF GENERAL USER PROGRAMS ON COMPUTER SYSTEM.”

- **SYSTEM PROGRAMMING:-**

“ IT IS AN ART OF DESIGNING AND IMPLEMENTING SYSTEM PROGRAMS.”

COMPONENTS OF SYSTEM PROGRAMMING

- INTERPRETER
- ASSEMBLER
- COMPILER
- MACROS AND MICROPROCESSORS
- FORMAL SYSTEMS
- DEBUGGER
- LINKERS
- OPERATING SYSTEM

- **INTERPRETER**

- IT IS THE LANGUAGE TRANSLATOR WHICH EXECUTE SOURCE PROGRAM LINE BY LINE WITH OUT TRANSLATING THEM INTO MACHINE LANGUAGE.

- TYPES OF INTERPRETER**

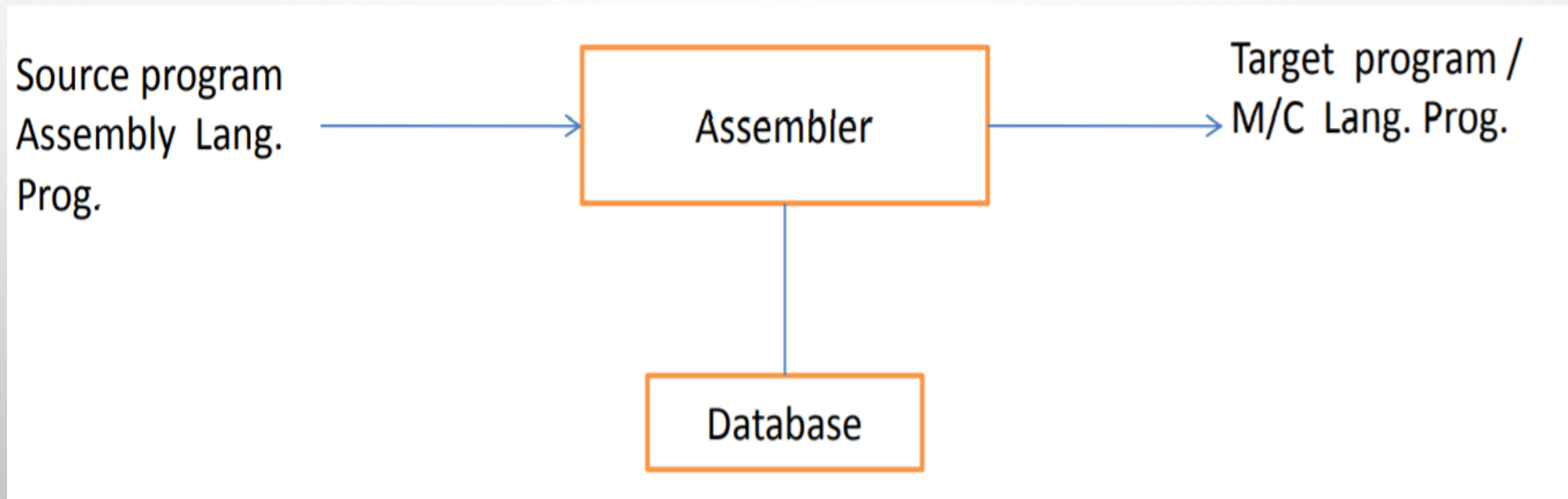
- PURE INTERPRETER

- IN THIS CASE NO PREPROCESSING IS REQUIRED ON SOURCE PROGRAM BEFORE AN INTERPRETATION STARTS.

- SOME PREPROCESSING IS REQUIRED ON SOURCE PROGRAM BEFORE AN INTERPRETATION STARTS.

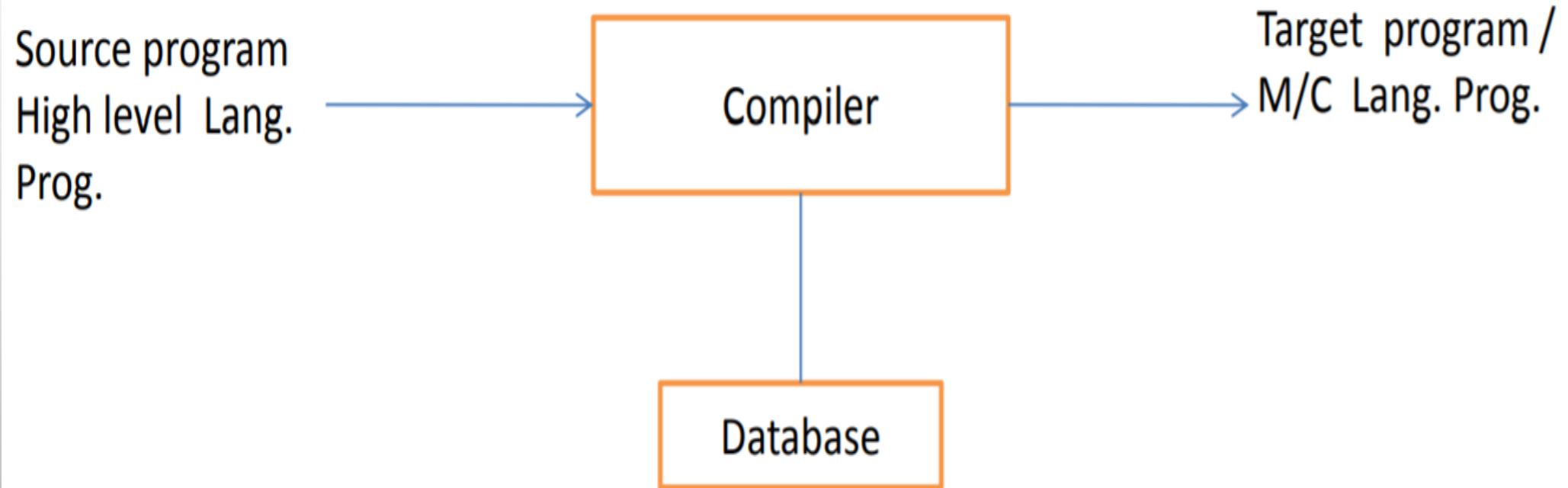
- **ASSEMBLER:-**

THESE ARE THE SYSTEM PROGRAMS WHICH WILL AUTOMATICALLY TRANSLATE THE ASSEMBLY LANGUAGE PROGRAM INTO THE MACHINE LANGUAGE PROGRAM



- **COMPLIER:-**

THESE ARE THE SYSTEM PROGRAMS WHICH WILL AUTOMATICALLY TRANSLATE THE HIGH LEVEL LANGUAGE PROGRAM IN TO THE MACHINE LANGUAGE PROGRAM



LOADER

- A LOADER IS SYSTEM PROGRAM THAT PLACE THE OBJECT PROGRAM INTO MAIN MEMORY AND PREPARES IT FOR EXECUTION.

- **BASIC FUNCTIONS OF LOADER**

- ALLOCATION

- LINKING

- RELOCATION

- LOADING

TYPES OF LOADER

- **COMPILE-AND-GO LOADER**
- **RELOCATING LOADER**
- **DIRECT LINKING LOADER**
- **ABSOLUTE LOADER**
- **GENERAL LOADER**
- **DYNAMIC LOADER**

MACRO & MACRO PROCESSOR

- **MACRO**

– MACRO IS A SINGLE LINE ABBREVIATION FOR A GROUP OF INSTRUCTION.

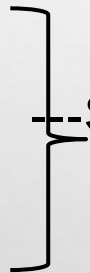
MACRO -----START OF DEFINITION

INCR -----MACRO NAME

A 1,DATA

A 2,DATA

A 3,DATA



-----SEQUENCE OF INSTRUCTIONS TOBE ABBREVIATED.

MEND ----- END OF DEFINITION

LINKING AND LINKER

- **LINKING**

- THE PROCESS OF MERGING MANY OBJECT MODULES TO FORM A SINGLE OBJECT PROGRAM IS CALLED AS LINKING.

- **LINKER**

- THE LINKER IS THE SOFTWARE PROGRAM WHICH BINDS MANY OBJECT MODULES TO MAKE A SINGLE OBJECTPROGRAM.

FORMAL SYSTEM

- A FORMAL SYSTEM IS AN UN INTERPRETED CALCULUS.

IT CONSISTS OF

- ALPHABETS
- A SET OF WORDS CALLED AXIOMS.
- FINITE SET OF RELATIONS CALLED RULES OF INFERENCE OR PRODUCTION RULES.
- EX BOOLEAN ALGEBRA.

General Machine Structure

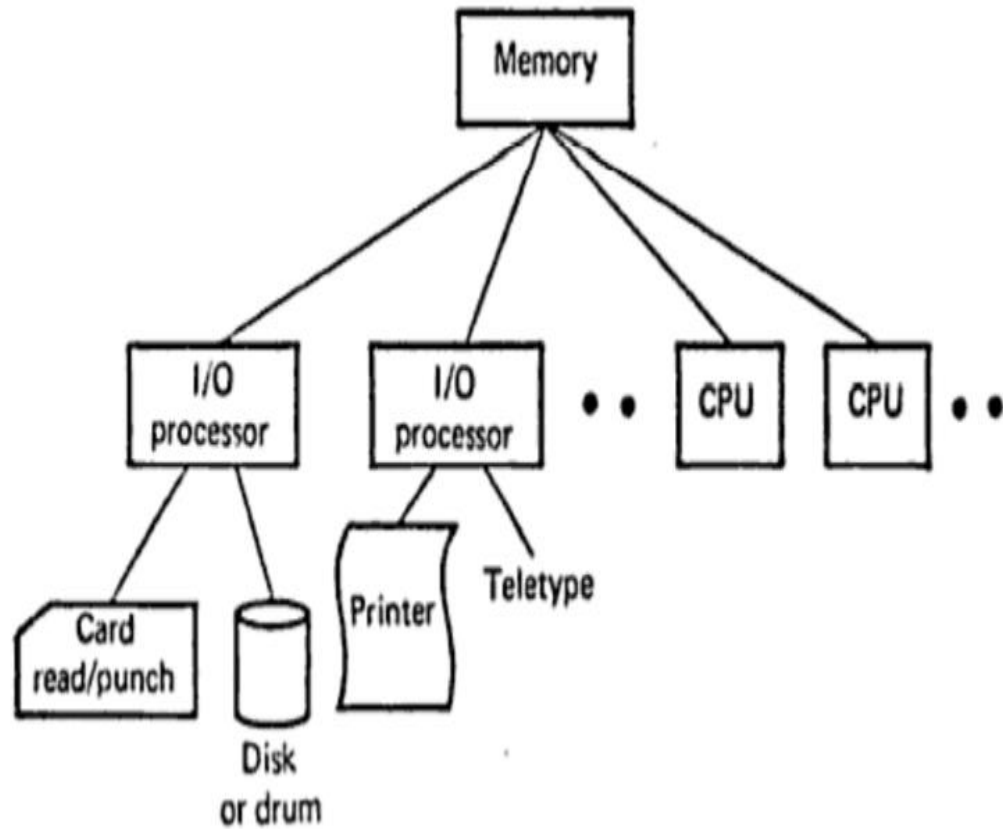
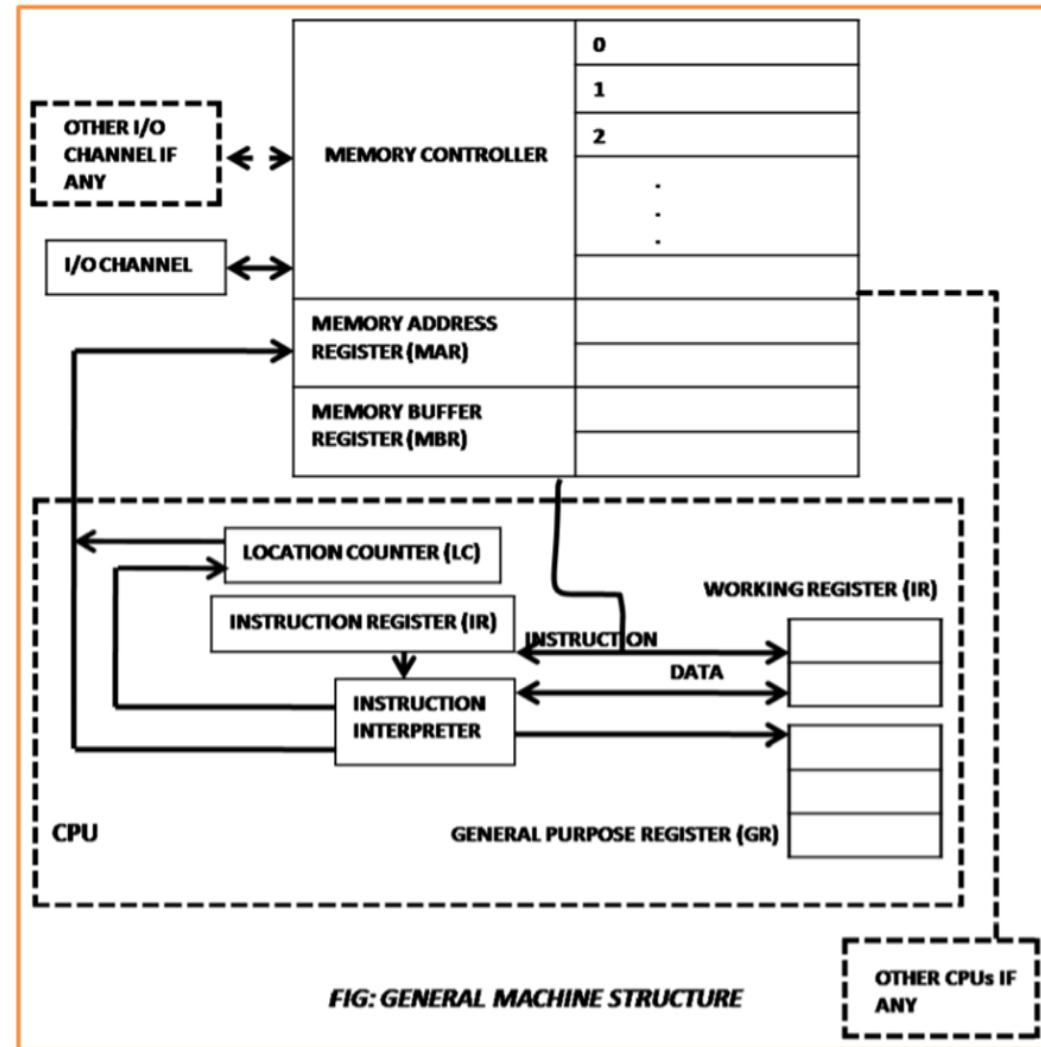


FIGURE 1.2 General hardware organization of a computer system



OPERATING SYSTEM

- IT IS THE COLLECTION OF SYSTEM PROGRAMS WHICH ACTS AS AN INTERFACE BETWEEN USER AND THE COMPUTER AND COMPUTER HARDWARE.
- THE PURPOSE OF AN OPERATING SYSTEM IS TO PROVIDE AN ENVIRONMENT IN WHICH A USER CAN EXECUTE PROGRAMS IN A CONVENIENT MANNER

FUNCTIONS OF OPERATING SYSTEM

- FILE HANDLING AND MANAGEMENT.
- STORAGE MANAGEMENT (MEMORY MANAGEMENT).
- DEVICE SCHEDULING AND MANAGEMENT.
- CPU SCHEDULING.
- INFORMATION MANAGEMENT.
- PROCESS CONTROL (MANAGEMENT).
- ERROR HANDLING
- PROTECTING ITSELF FROM USER & PROTECTING USER FROM OTHER USERS.

THANK YOU