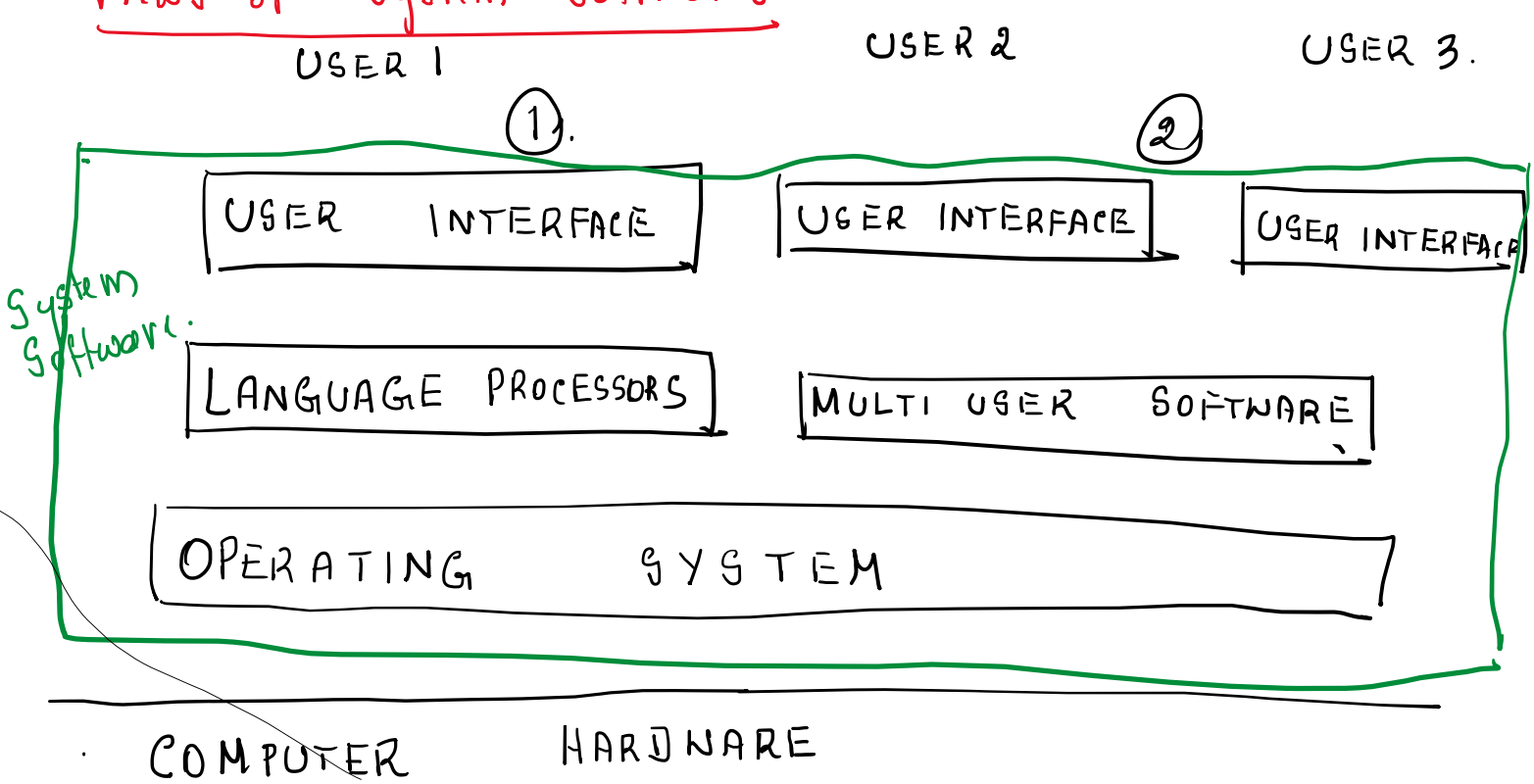
Views of System Softwares



USER CENTRIC VIEW.

→ Computational needs

HLL, → Compiler

Assembly language → Assembler

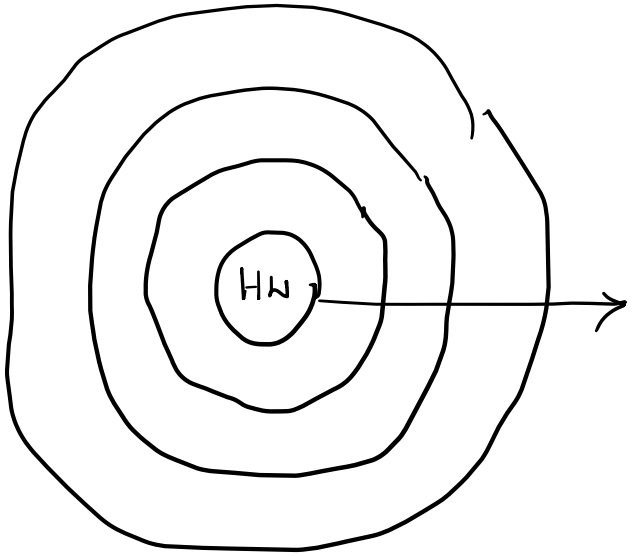
Loader, Linkers

Debugger.

Interpreter.

System centric view

- Efficient usage of computer system
  - Effective utilization.
- User convenience.
- Non-interference.



Historical move:

- Abstracting more and more inner details (Hw)
- Moving away from hard aspects of computing system → soft aspect

Initially: Person → familiar with HW aspects of a computing

Detailed. 0110 011100 010110 — ML

Operation Code. Opcode. — Operand1 — Operand2 — Data.

MACHINE CODE

0110 → ADD

0010 → SUB

0011 → MUL

⇓

Lesser Details

Next level

M/c Code

↓

Mnemonic code.

ADD	A	B.	— To remember
opcode.	Operand1	Operand.	
ADD	#A	B.	MNEMONIC CODE
SUB.	C	D	
MUL	E	F	3

ASSEMBLY LANGUAGE

⇓

Highest level

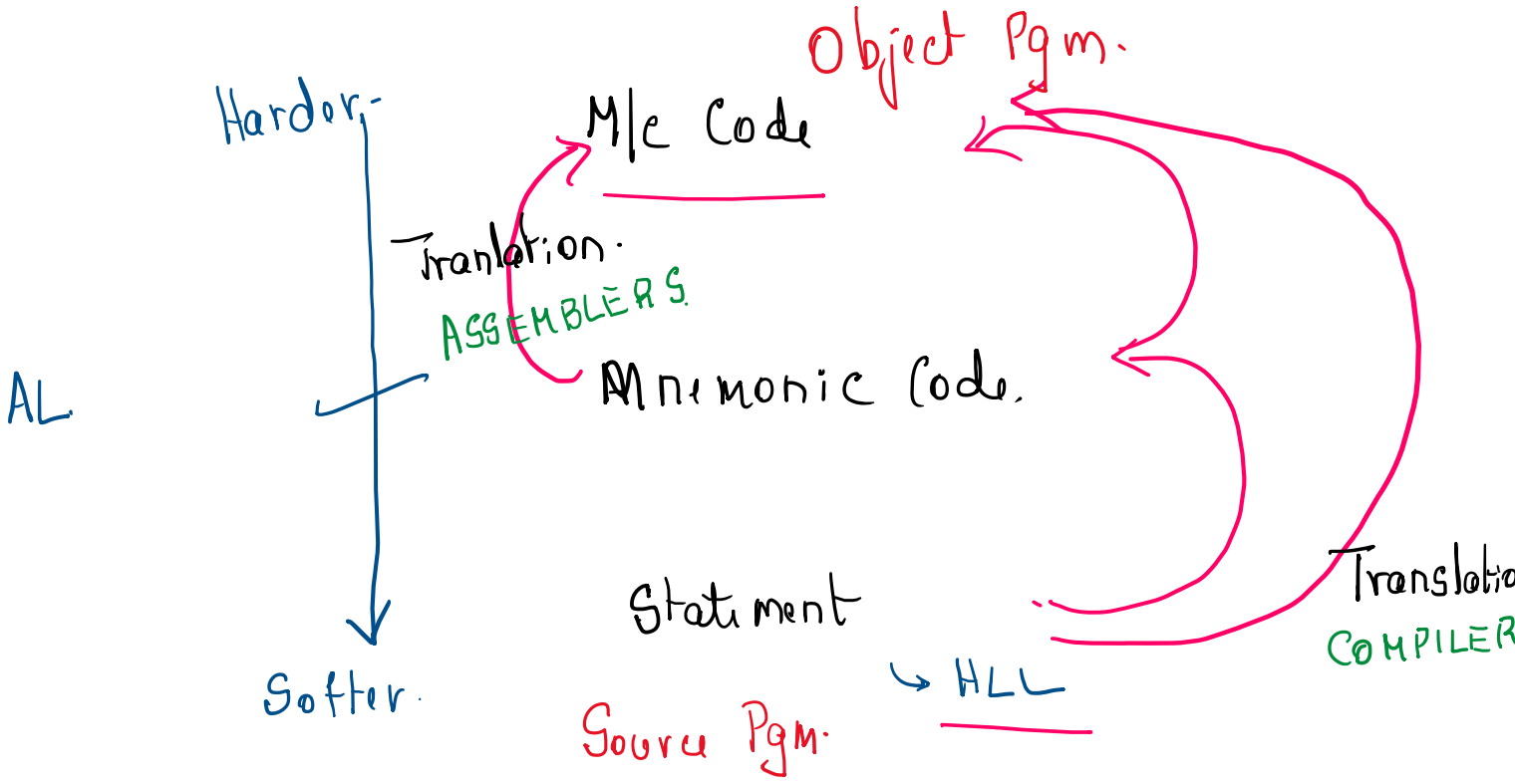
$C = A + B;$

$X = Y + Z - P;$

Mathematical Expression.

— Statement;

HLL

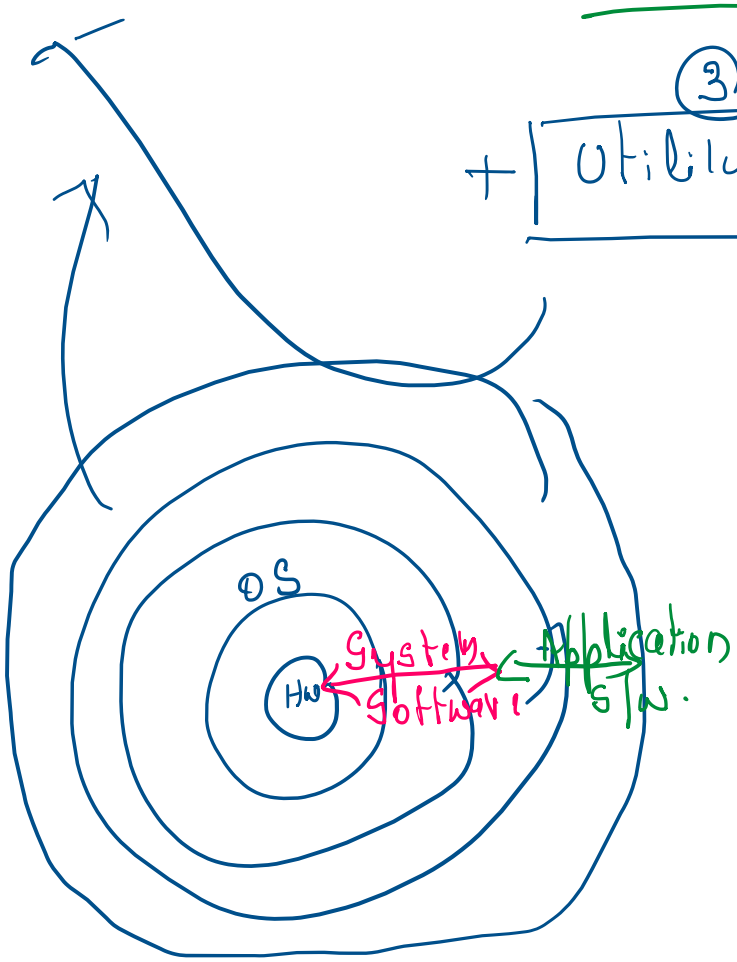


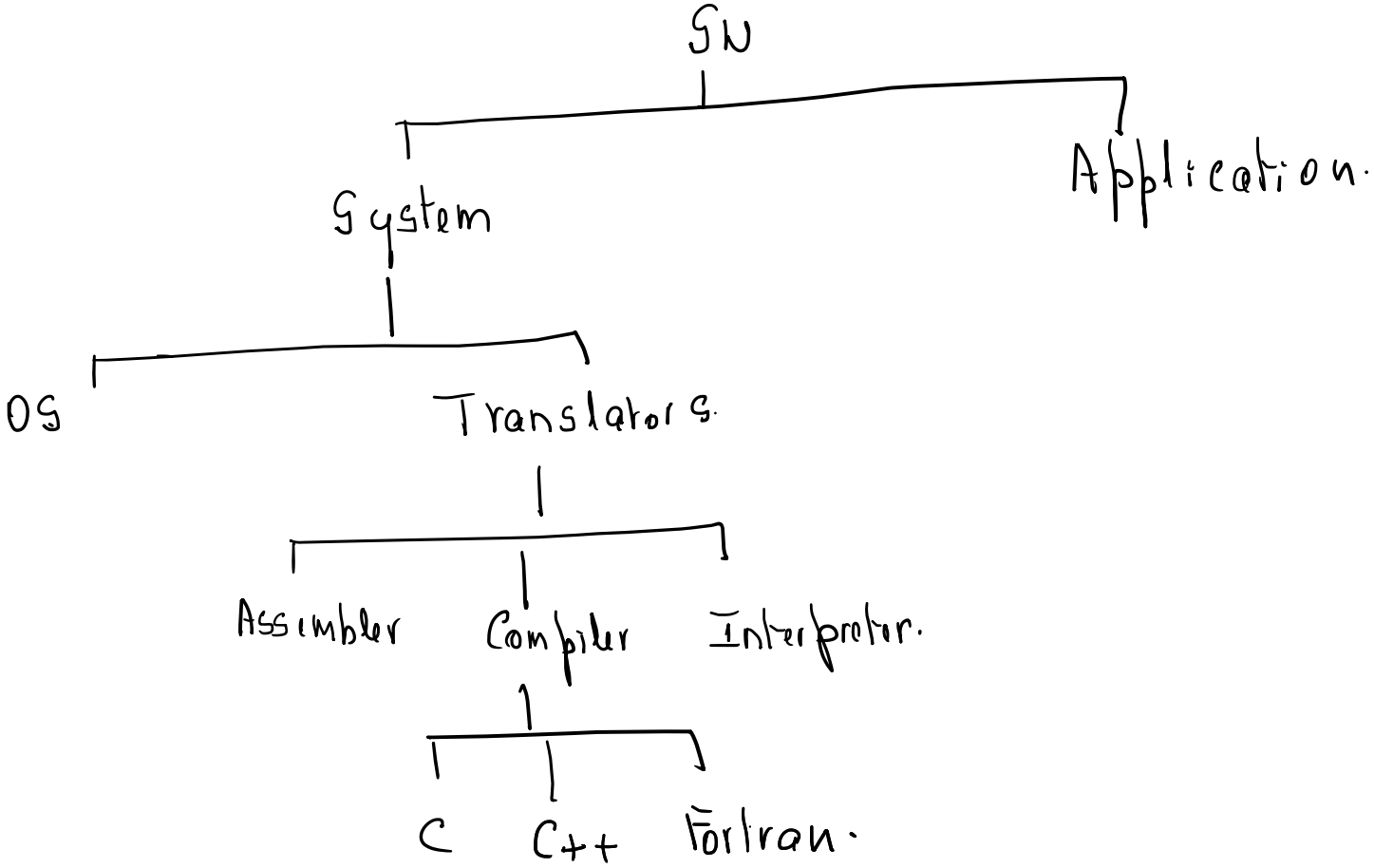
MACHINE → System

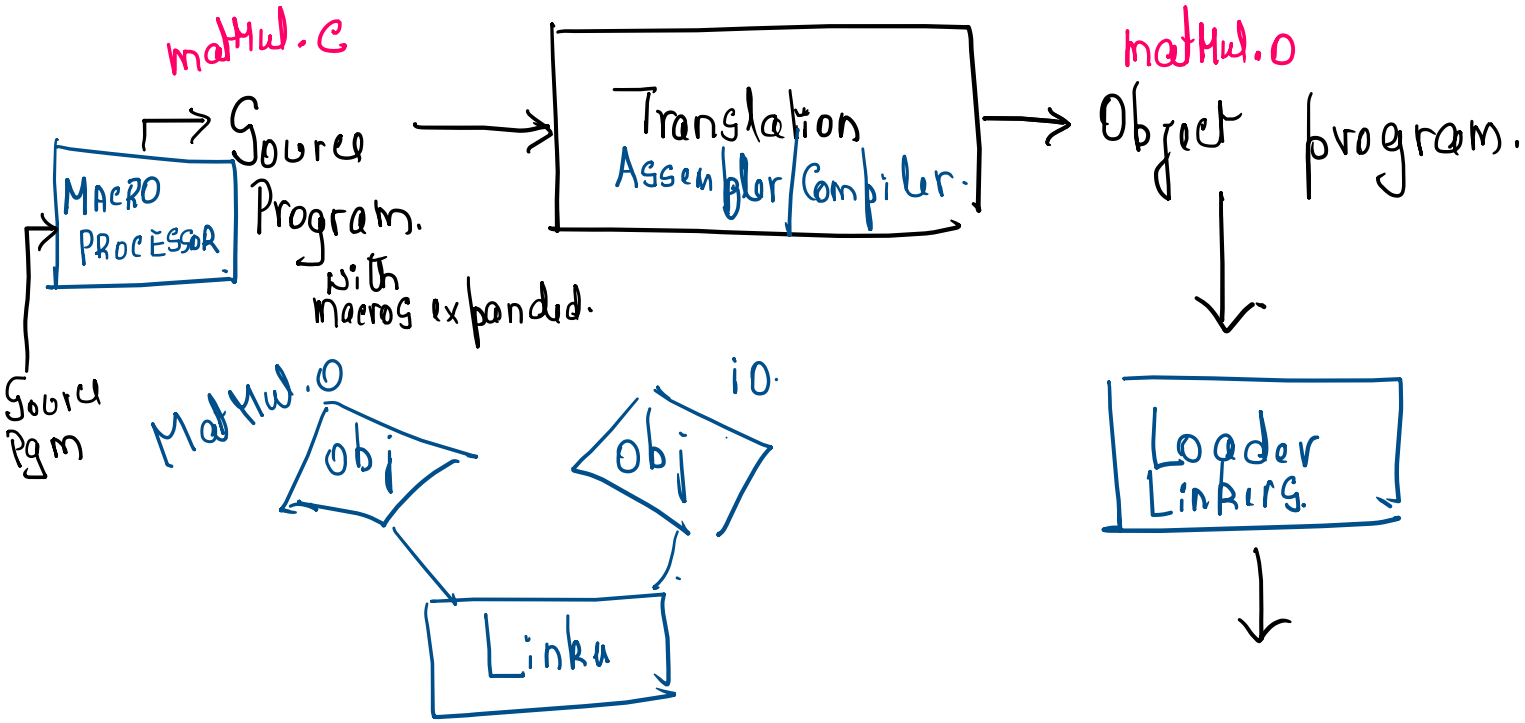
H/W + Translators ①

+ Library Programs ②

+ Utility Programs I/O ③




SW
System
Application.
OS
Translators.
Assembler
Compiler
Interpreter.
C
C++
Fortran.


matHw.c
Source Program.
MACRO PROCESSOR
with macros expanded.
Translation
Assembler/Compiler.
matHw.o
Object program.
Source Pgm
MatHw.o
obj
io.
obj
Linker
Loader
Linkers.

Assembler.

Loader

Linker.

Macroprocessor.

Text Processor
↳ Tool.

Compilers

Interpreters

Debuggers.

Operating system.

Database Management System.

Network connection.