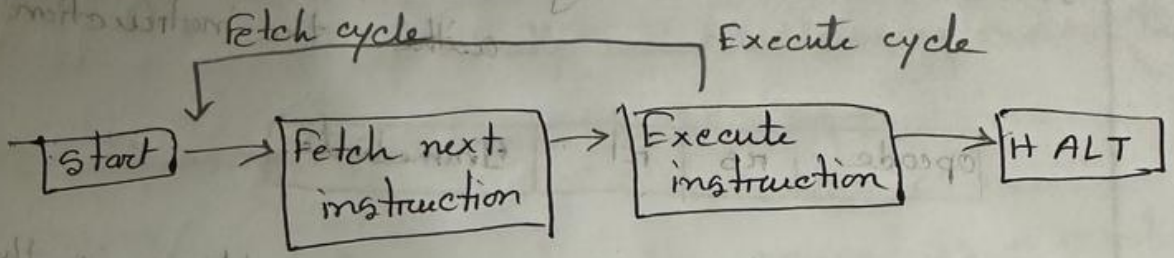
Sub.: Instruction Cycle

SAT SUN MON TUE WED THU FRI

DATE: / /

Instruction:- Fetch, Execute.



Fetch cycle:-

→ Program counter (PC) holds address of next instruction to ℘ fetch.

→ Processor fetches instruction from memory location pointed to by PC.

→ Increment PC
  ↳ unless told otherwise.

→ Instruction loaded into instruction register.

→ Processor interprets instruction and performs required actions.

Execute cycle:-

→ Processor - memory
  ↳ data transfer between CPU and main memory.

→ Processor I/O
  → Data transfer between CPU and I/O module.

Sub.:

DATE: / /

→ Data processing
some arithmetic or logical on data.

→ Control.
→ Alteration of sequence of operations.
→ e.g. jump.

→ Combination of above.

Instruction Cycle:-

→ Instruction fetch (if)
→ Instruction operation decoding (iod)
→ operand address calculation (oac)
→ operand fetch (of)
→ Data operation (do)
→ Operand store (os).

System Bus:- A bus that connects major computer components is called a system bus.

Types:-
→ Data bus.
→ Control bus.
→ Address bus.

Sub.:

DATE: / /

Data bus :-

→ It is a bidirectional Bus.
→ Data can flow in both direction.
→ Usually a multiple of 8. 8, 16, 32, 64.
→ Carries data :- there is no difference between "data" and instruction at this level.
→ The processor must access the memory module twice during each instruction cycle.

Address Bus :-

→ Carries memory address of the instructions which are to be executed.
→ Unidirectional.
→ The number of locations that the cpu can address is determine by the number of address lines.

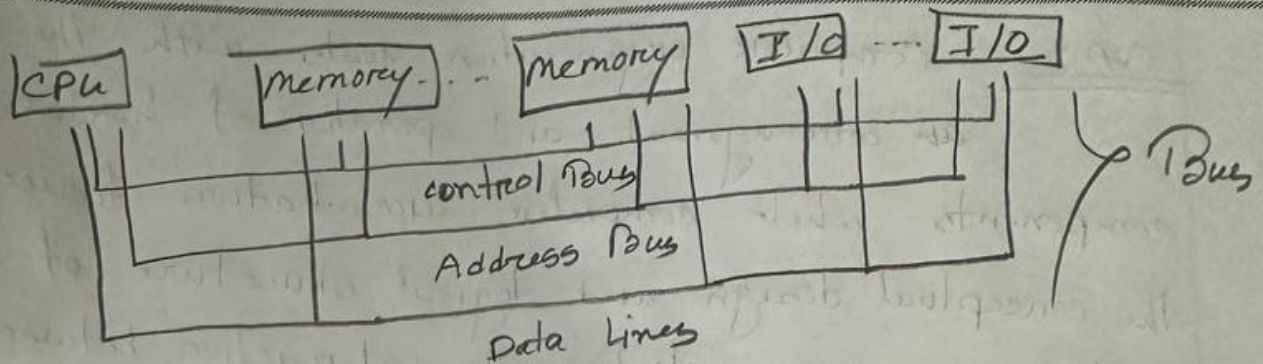
Control Bus :-

→ It carries timing and control signals generated by the cpu that are used to synchronize operation of the individual microcomputer elements.
→ It can carry many different signals.
  → I/O Read, I/O write,
  → Interrupt.
  → Memory Read, memory write.

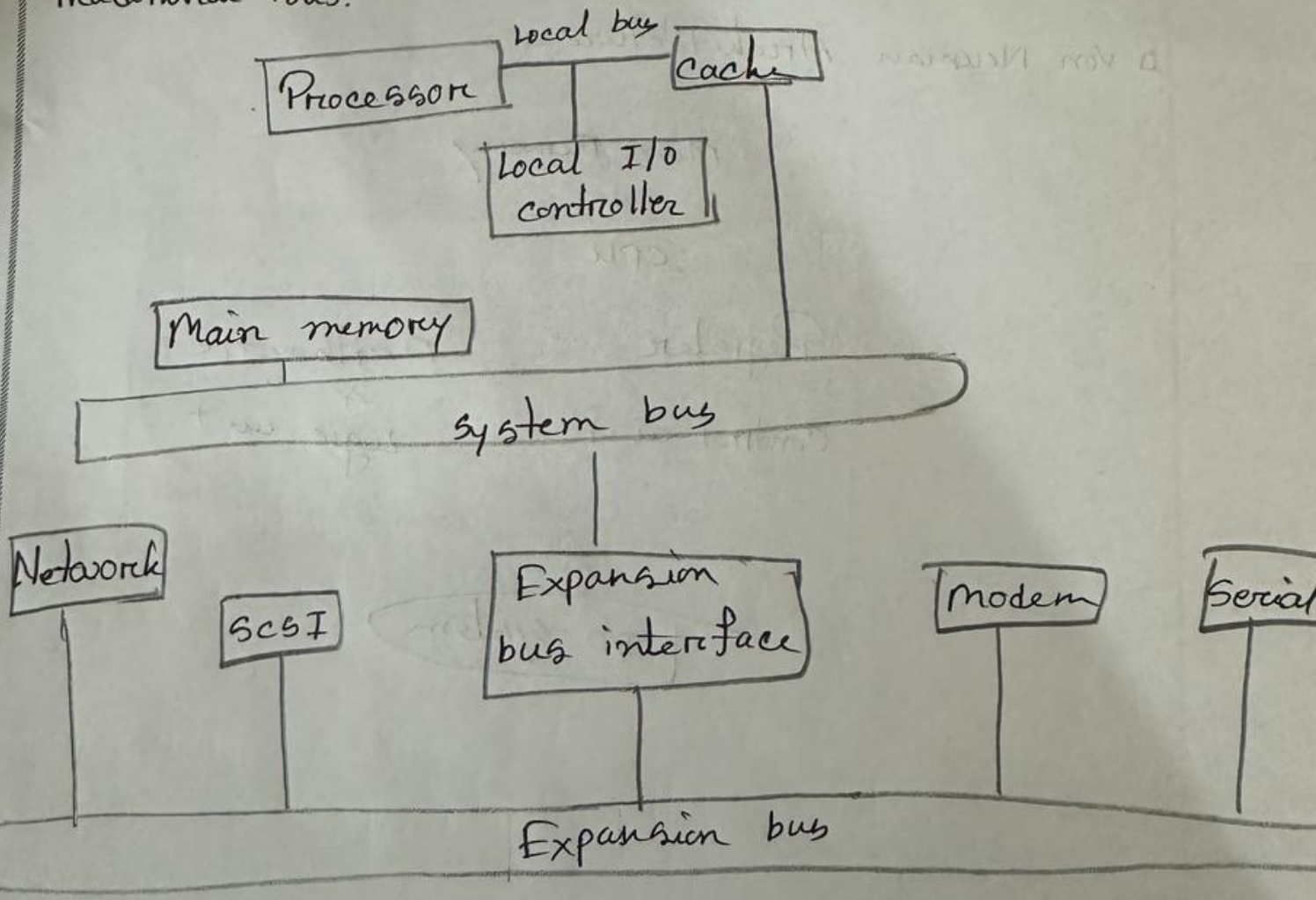
Sub.:

SAT SUN MON TUE WED THU FRI

DATE: / /



Traditional Bus:-



Sub.:

DATE: / /

COA:- Computer organization deals with the physical arrangment and operation of hardware components, while computer architecture focuses on the conceptual design and logical structure of computer system. So, COA includes the interaction between hard ware and software components.

- Von Neuman Architecture:-