Simple as Possible 3
SAP-3

SAP 3

- 8 bit microcomputer
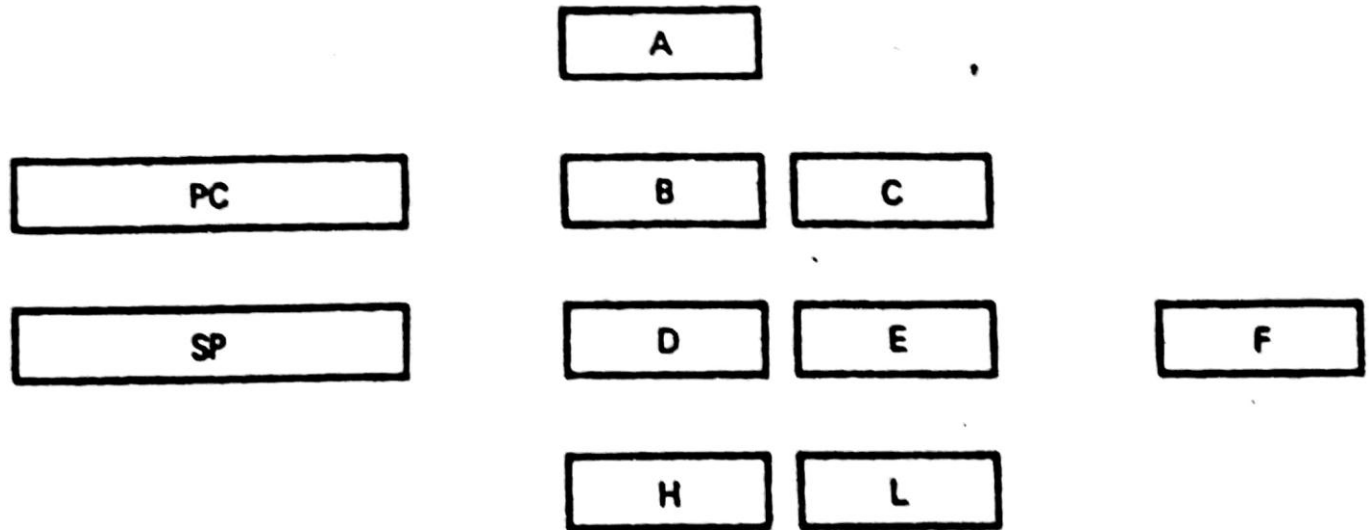- Upward compatible with 8085

Fig. 12-1 SAP-3 programming model.

MOV and MVI

- MOV reg1, reg2
- Where reg1 = A, B, C, D, E, H, L

  reg2 = A, B, C, D, E, H, L
- For example:
  - MOV L,A
  - MOV E,H

- MVI reg, byte
- Where reg1 = A, B, C, D, E, H, L
- For example:
  - MVI D, 0EH
  - MVI L, FFH

ADD Instructions

- ADD reg

Where reg = A, B, C, D, E, H, L

- ADC reg

Where reg = A, B, C, D, E, H, L

SUB Instructions

- SUB reg

Where reg = A, B, C, D, E, H, L

- SBB reg

Where reg = A, B, C, D, E, H, L

Increment, Decrements and Rotates

- INR reg

Where reg = A, B, C, D, E, H, L

- DCR reg

Where reg = A, B, C, D, E, H, L

- RAL (with carry)
- RAR (with carry)
- RLC (without carry)
- RRC (without carry)

Logical Instructions

- ANA reg

- ORA reg

- XRA reg

Where reg = A, B, C, D, E, H, L

- CMP reg

Where reg = A, B, C, D, E, H, L

Arithmetic and Logic Immediates

- ANI byte
- ORI byte
- XRI byte
- ADI byte
- ACI byte
- SUI byte
- SBI byte
- CPI byte

JUMP Instructions

- JMP address (unconditional jump)
- JM address (Jump if minus)
- JZ address (Jump if zero)
- JNZ address (Jump if not zero)
- JP address
- JC address
- JNC address
- JPE address
- JPO address

Extended Register Instructions

- Load extended immediate

LXI B, dble

LXI D, dble

LXI H, dble

Where:

B stands for BC

D stands for DE

H stands for HL

dble stands for double byte

Extended Register Instructions

- DAD Instructions

DAD B

DAD D

DAD H

Where:

B stands for BC

D stands for DE

H stands for HL

Extended Register Instructions

- INX and DCX Instructions

INX B

INX D

INX H

Where:

B stands for BC

D stands for DE

H stands for HL

Indirect Instructions

- HL register pair acts like a data pointer.
- The contents of HL register pair are used as the address for data in memory.

- MOV reg, M
- MOV M, reg
- MVI M, byte
- ADD M
- ADC M
- SUB M
- SBB M
- INR M
- DCR M
- ANA M
- ORA M
- XRA M
- CMP M

Stack Instructions

- The Stack
- Stack Pointer
- PUSH B, D, H, PSW (PSW is program status word, AF)
- POP B, D, H, PSW
- CALL, RET (return)
- CNZ address….RNZ
- CZ address…CNZ
- CNC address….RNC
- CC address….RC
- CPO address….RPO
- CPE address….RPE
- CP address….RP
- CM address….RM