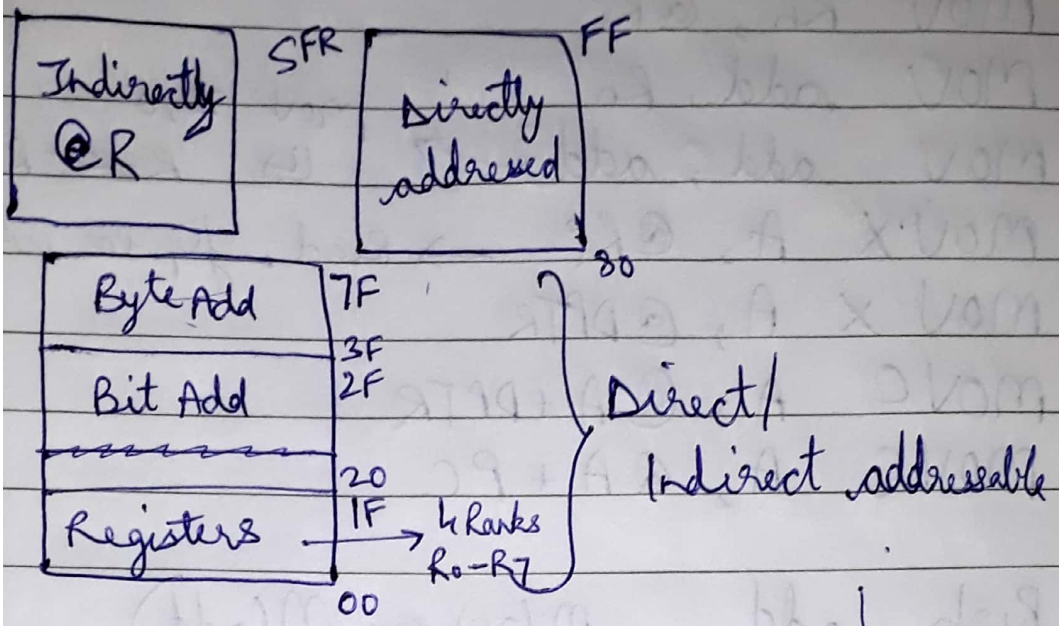
Instr^n's

Internal RAM 8052



Arithmetic

R0 or Ri only

Add A, Rn/@Ri/add/#n
AddC A, Rn/@Ri/add/#n
Subb A, Rn/@Ri/add/#n
Mul AB
Div AB
INC Rn/@Ri/add
DEC Rn/@Ri/add

Logical

ANL A, Rn/@Ri/add/#n
ORL & XRL
RL, RLC, RR, RRC
CLR A, CPL A

Bit

ANL C, bit
ORL C, bit
CLR C
CLR bit ⇒ 8bit addr
SETB C ⇒ carry = 1
SETB bit
CPL C
CPL bit

ANL add, A/#n

dest^n is add.

Data transfer

MOV Rn, add
MOV Rn, @Ri
MOV add, Rn
MOV add, add → MOV 2,0 ↳ R2 ← R0

Ext. RAM:
MOVX A, @Ri ⇒ Read, flip for writing
MOV X A, @DPTR

Ext. ROM:
MOVC A, @A+DPTR
MOVC A, @A+PC

Push add M(SP) ← M(add)
Pop add M(add) ← M(SP)
XCH A, Rn / @Ri / add
SWAP A ⇒ 86 → 68 (interchanges the 2 nibbles)

control flow

ACALL add 11
LCALL add 16
AJMP add 11 - 2 byte
LJMP add 16 - 3 byte
SJMP rel - 2 byte
RET - 1 byte
RETI
JZ rel
JNZ rel
JC rel
JNC rel
CJNE A, add, rel → compare A & add content & if not equal, jump to

CJNE Rn / @Ri / add, #n, rel
DJNZ Rn, rel
↳ 1st decrement Rn, check if zero, if not zero then jump

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10 values, 1st stored at 50H, ~~check for 50~~

→
```
MOV R3, #10
MOV R0, #50H
MOV R5, #0
MOV A, @R0
LOOP: INC R0
DEC R3
ADD A, @R0
JNC Next
INC R5
Next: CJNE R3, #0, loop
MOV R4, A
Stop: SJMP Stop
```

31/07 40 values, 1st stored in 50H, check if 25 present.

```
MOV R0, #50H
MOV R2, #40
loop: MOV A, @R0
CJNE A, #25, Forward
MOV R3, 0 ⇒ 0 refers to R0. We can't write R0 directly
STOP SJMP STOP
forward: INC R0
DJNZ R2, loop
CLR A
STOP: SJMP STOP
```

assembler directive

EQU Pi, #3.14

Sort 40 nos., starting from 50H

```
      MOV  R2, #40
loop2: MOV  R0, #50H
      MOV  R3, 2
loop1: DEC  R3
loop1: MOV  A, @R0
      INC  R0
      MOV  R5, A
      CLR  C
      SUBB A, @R0
      JC   Nent
      MOV  A, R5
      XCH  A, @R0
      DEC  R0
      MOV  @R0, A
      INC  R0
Nent: DJNZ R3, loop1
      DJNZ R2, loop2
STOP: SJMP STOP
```

SWAP

Subroutine

```
ACALL SWAPPER
```

08-09

SP → 09

```
SWAPPER: MOV  A, R5
         XCH  A, @R0
         DEC  R0
         MOV  @R0, A
         INC  R0
         RET
```

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```
LCALL  WAIT        WAIT:  PUSH 04
                          MOV  R4, #50
                   WAIT2: DJNZ R4, WAIT2
                          RET
                          POP 4
```