



8051 INSTRUCTION SET

Lecture-7



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- Data Transfer Instructions
- Arithmetic Instructions
- Logical Instructions
- Boolean or Bit Manipulation Instructions
- Program Branching Instructions



DATA TRANSFER INSTRUCTION



- Associated with transfer of data between registers or external program memory or external data memory.

Mnemonic	Description
MOV	Move Data
MOVC	Move Code
MOCX	Move External Data
PUSH	Move Data to Stack
POP	Copy Data from Stack
XCH	Exchange Data between two Registers
XCHD	Exchange Lower Order Data between two Registers



ARITHMETIC INSTRUCTION



- perform addition, subtraction, multiplication and division.
- include increment by one, decrement by one and a special instruction called Decimal Adjust Accumulator.
- performed by the arithmetic instructions affect flags like carry, overflow, zero, etc. in the PSW Register.

Mnemonic	Description
ADD	Addition without Carry
ADDC	Addition with Carry
SUBB	Subtract with Carry
INC	Increment by 1
DEC	Decrement by 1
MUL	Multiply
DIV	Divide



LOGICAL INSTRUCTION



- perform logical operations like AND, OR, XOR, NOT, Rotate, Clear and Swap.
- performed on Bytes of data on a bit-by-bit basis.

Mnemonic	Description
ANL	Logical AND
ORL	Logical OR
XRL	Ex-OR
CLR	Clear Register
CPL	Complement the Register
RL	Rotate a Byte to Left
RLC	Rotate a Byte and Carry Bit to Left
RR	Rotate a Byte to Right
RRC	Rotate a Byte and Carry Bit to Right
SWAP	Exchange lower and higher nibbles in a Byte



BOOLEAN OR BIT MANIPULATION INSTRUCTION



special bit-addressable area in the RAM and some of the Special Function Registers (SFRs) are also bit addressable.

Mnemonic	Description
CLR	Clear a Bit (Reset to 0)
SETB	Set a Bit (Set to 1)
MOV	Move a Bit
JC	Jump if Carry Flag is Set
JNC	Jump if Carry Flag is Not Set
JB	Jump if specified Bit is Set
JNB	Jump if specified Bit is Not Set
JBC	Jump if specified Bit is Set and also clear the Bit
ANL	Bitwise AND
ORL	Bitwise OR
CPL	Complement the Bit



PROGRAM BRANCHING INSTRUCTIONS



- control the flow of program logic.

Mnemonic	Description
LJMP	Long Jump (Unconditional)
AJMP	Absolute Jump (Unconditional)
SJMP	Short Jump (Unconditional)
JZ	Jump if A is equal to 0
JNZ	Jump if A is not equal to 0
CJNE	Compare and Jump if Not Equal
DJNZ	Decrement and Jump if Not Zero
NOP	No Operation
LCALL	Long Call to Subroutine
ACALL	Absolute Call to Subroutine (Unconditional)
RET	Return from Subroutine
RETI	Return from Interrupt
JMP	Jump to an Address (Unconditional)



THANK YOU