



BOOLEAN INSTRUCTIONS

Here you will see bit wise operations like:

- Set
- Clear
- Complement
- Movement between a bit and Carry flag
- Logical AND
- Logical OR

IMPORTANT TIP FROM BHARAT ACHARYA

These are bit wise operations.

“b” represents any bit from the bit addressable area of the internal RAM having bit addresses 00H... 7FH.

“b” can also be a bit of any bit addressable SFR like PSW.3 or P0.7 etc.

100) SETB C

| “SET the carry Flag”

Example:

SETB C; Carry Flag \leftarrow 1

Operation:

This instruction is used to SET the Carry Flag.

This makes Carry Flag \leftarrow 1

No of cycles required: **1**

101) CLR C

| “CLEAR the carry Flag”

Example:

CLR C; Carry Flag \leftarrow 1

Operation:

This instruction is used to CLEAR the Carry Flag.

This makes Carry Flag \leftarrow 0

No of cycles required: **1**

102) CPL C

| “COMPLEMENT the carry Flag”

Example:

CPL C; Carry Flag \leftarrow complement of Carry Flag

Operation:

This instruction is used to COMPLEMENT the Carry Flag.

This makes Carry Flag \leftarrow Complement of Carry Flag

No of cycles required: **1**

IMPORTANT TIP FROM BHARAT ACHARYA

These are bit wise operations.

“b” represents any bit from the bit addressable area of the internal RAM having bit addresses 00H... 7FH.

“b” can also be a bit of any bit addressable SFR like PSW.3 or P0.7 etc.

103) SETB b | “SET a bit”

Example:

SETB P0.2; P0.2 ← 1

SETB 00H; bit location 00H of Internal RAM gets the value ← 1

Operation:

This instruction is used to SET the any bit “b”.

It can be a bit from the bit addressable area of the Internal RAM having bit address 00H... 7FH

It can also be a bit from a bit addressable SFR like TCON.4

No of cycles required: **1**

104) CLR b | “CLEAR a bit”

Example:

CLR P0.2; P0.2 ← 0

CLR 00H; bit location 00H of Internal RAM gets the value ← 0

Operation:

This instruction is used to CLEAR the any bit “b”.

It can be a bit from the bit addressable area of the Internal RAM having bit address 00H... 7FH

It can also be a bit from a bit addressable SFR like TCON.4

No of cycles required: **1**

105) CPL b | “COMPLEMENT a bit”

Example:

CPL P0.2; P0.2 gets complemented

CPL 00H; bit location 00H of Internal RAM gets the value gets complemented

Operation:

This instruction is used to COMPLEMENT the any bit “b”.

It can be a bit from the bit addressable area of the Internal RAM having bit address 00H... 7FH

It can also be a bit from a bit addressable SFR like TCON.4

No of cycles required: **1**

106) MOV C, b

| “Move a bit into the Carry Flag”

Example:

MOV C, P0.2; Carry Flag ← P0.2

MOV C, 25H; Carry Flag ← [25H] bit address

Operation:

This instruction is used to copy the value of some bit into the Carry Flag.

It can be a bit from the bit addressable area of the Internal RAM having bit address 00H... 7FH

It can also be a bit from a bit addressable SFR like TCON.4

No of cycles required: **1**

IMPORTANT TIP FROM BHARAT ACHARYA

There is a clear difference between the following two instructions:

MOV A, 25H; This refers to Byte Location 25H.

We can make this conclusion because A is an 8-bit register.

MOV C, 25H; This refers to Bit Location 25H.

We can make this conclusion because C is the Carry Flag.

107) MOV b, C

| “Move a from Carry flag into a bit”

Example:

MOV P0.2, C; P0.2 ← Carry Flag

MOV 25H, C; [25H] bit address ← Carry Flag

Operation:

This instruction is used to copy the value of the Carry Flag into some bit.

It can be a bit from the bit addressable area of the Internal RAM having bit address 00H... 7FH

It can also be a bit from a bit addressable SFR like TCON.4

No of cycles required: **2**

IMPORTANT TIP FROM BHARAT ACHARYA

There is a clear difference between the following two instructions:

MOV 25H, A; This refers to Byte Location 25H.

We can make this conclusion because A is an 8-bit register.

MOV 25H, C; This refers to Bit Location 25H.

We can make this conclusion because C is the Carry Flag.

108) ANL C, b

| “AND Carry Flag with a bit”

Example:

ANL C, P0.2; Carry Flag \leftarrow Carry Flag AND P0.2

ANL C, 25H; Carry Flag \leftarrow Carry Flag AND [25H] bit address

Operation:

This instruction is used to AND the value of some bit with the Carry Flag.

It can be a bit from the bit addressable area of the Internal RAM having bit address 00H... 7FH

It can also be a bit from a bit addressable SFR like TCON.4

The result will be stored in the Carry Flag

It is interesting to note that, in bit wise operations, Carry Flag acts as the “Accumulator”.

No of cycles required: **2**

109) ANL C, /b

| “AND Carry Flag with the COMPLEMENT of a bit”

Example:

ANL C, P0.2; Carry Flag \leftarrow Carry Flag AND (NOT) P0.2

ANL C, 25H; Carry Flag \leftarrow Carry Flag AND (NOT) [25H] bit address

Operation:

This instruction is used to AND the value of Carry Flag with the COMPLEMENT of a bit.

No of cycles required: **2**

108) ORL C, b

| “OR Carry Flag with a bit”

Example:

ORL C, P0.2; Carry Flag \leftarrow Carry Flag OR P0.2

ORL C, 25H; Carry Flag \leftarrow Carry Flag OR [25H] bit address

Operation:

This instruction is used to OR the value of some bit with the Carry Flag.

No of cycles required: **2**

109) ORL C, /b

| “OR Carry Flag with the COMPLEMENT of a bit”

Example:

ORL C, P0.2; Carry Flag \leftarrow Carry Flag OR (NOT) P0.2

ORL C, 25H; Carry Flag \leftarrow Carry Flag OR (NOT) [25H] bit address

Operation:

This instruction is used to OR the value of Carry Flag with the COMPLEMENT of a bit.

No of cycles required: **2**