

①

## TEST INSTRUCTION

- USED TO DETERMINE IF A BIT IS SET (STORING A 1)  
CLEARED (STORING A 0)

E.G.

CHECK IF SET

AX: 1100 1100 1100 1000  
TEST: 0000 0000 0000 1000

- ① BIT TO BE TESTED: SET TO 1
- ② EVERYTHING ELSE IN THE MASK IS SET TO 0.

AX: 1100 1100 1100 1000	
TEST: 0000 0000 0000 <span style="border: 1px solid black; padding: 2px;">1</span> 000	
0000 0000 0000 1000	← ZERO FLAG = 0 (FALSE)

AX: 1100 1100 1100 0000	
TEST: 0000 0000 0000 <span style="border: 1px solid black; padding: 2px;">1</span> 000	
0000 0000 0000 0000	← ZERO FLAG = 1 (TRUE)

(2)

JZ : Jumps WHEN ZF = 1

JNZ : Jumps WHEN ZF = 0

E.G.

```
MOV AX, 0ecc8h
```

```
TEST AX, 0008h
```

```
JZ NOTBITSET
```

}  
|  
}

; CODE FOR BIT  
; IS SET

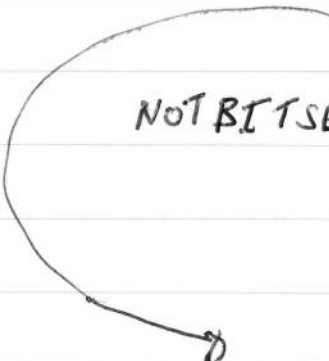
```
JMP NEXTBIT
```

```
NOTBITSET:
```

}  
|  
}

; CODE FOR  
; BITNOTSET

```
NEXTBIT:
```



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## SHIFT INSTRUCTIONS

SHL : SHIFT LEFT

SHR : SHIFT RIGHT

### SHL

E.G. MOV AX, 2

SHL AX, 1

; SHIFT BITS 1 PLACE  
TO LEFT

(THIS DOUBLES THE  
VALUE IN THE NUMBER)

### EXPLAN.

AX: 0000 0000 0000 0010  $2_{10}$

SHL AX, 1

AX NOW: 0000 0000 0000 0100  $4_{10}$

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## SHR

MOV AX, 16

SHR AX, 1

; SHIFT BITS IN AX

1 PLACE TO THE RIGHT  
(THIS HALVES THE VALUE  
IN THIS EXAMPLE)

AX: 0000 0000 0001 0000 : 16<sub>10</sub>

SHR AX, 1

AX NOW: 0000 0000 0000 1000 : 8<sub>10</sub>

MOV AX, 7

SHR AX, 1

ODD No. IN  
THIS EXAMPLE

AX: 0000 0000 0000 0111 : 7<sub>10</sub>

SHR AX, 1 0000 0000 0000 0011 : 3<sub>10</sub>

(5)

## XOR INSTRUCTION

XOR	A	B	Z
	0	0	0
	0	1	1
	1	0	1
	1	1	0

E.G.    MOV AX, 2  
         XOR AX, AX

AX:    0000 0000 0000 0010  
XOR AX, AX    0000 0000 0000 0010  
         -----  
         0000 0000 0000 0000

WHEN you XOR AX, AX THE RESULT IS 0.

