BHARAT ACHARYA EDUCATION
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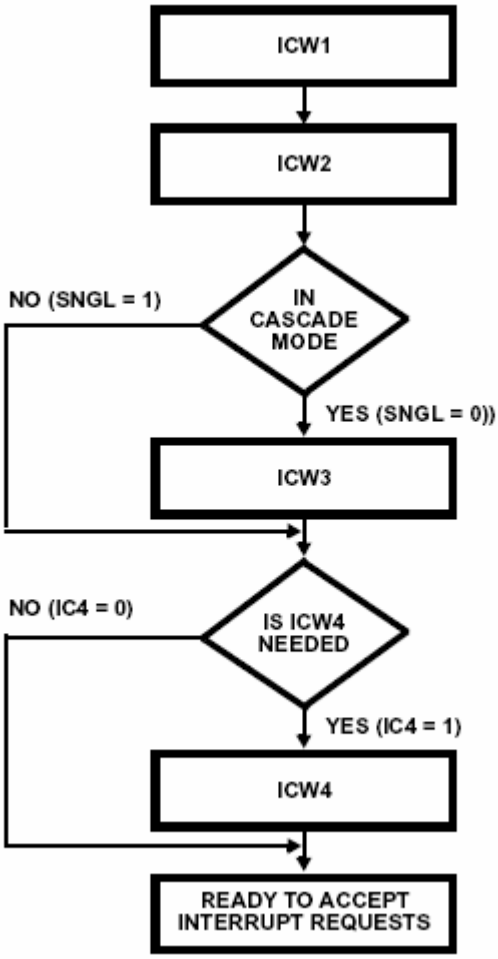
Initialization of 8259



As seen above there are **two types** of **control words**, **Initialization Control Words (ICWs)** and **Operational Control Words (OCWs).**

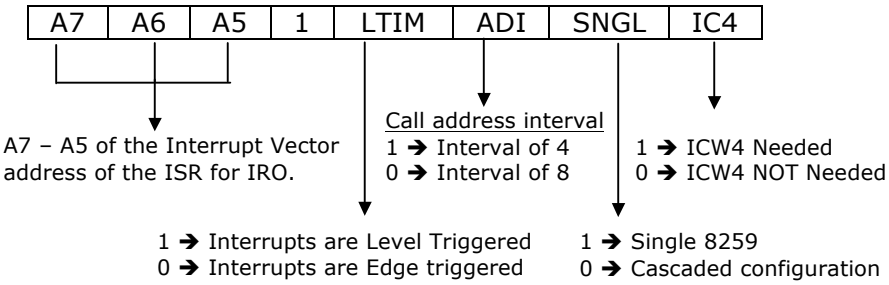
ICWs

- **ICWs** have to be **given during** the **initialization** of 8259 (i.e. **before** the µP can start **using 8259**).
- **ICW1** and **ICW2** are **compulsory**.
- **If Cascaded**, **ICW3** has to be given.
- Whether **ICW4** is **required** or not, is **specified in the ICW1**.
- **If ICW4** is **required**, it has to be **written**.
- It is **important** that the ICWs are **written in** the **above sequence only**.

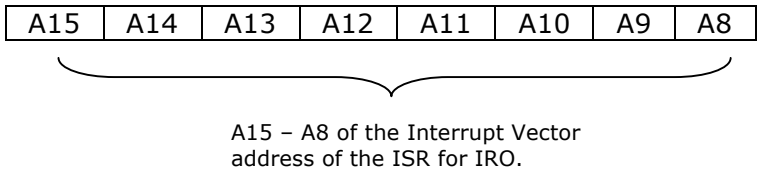
OCWs

- **OCWs** are **given during** the **operation** of 8259 (i.e. **after** the µP has **started using** 8259).
- **OCWs** are **neither compulsory**, **nor** do they have a **specific sequence**.
- They are mainly used to alter the **masking** status and the **operation modes** of 8259.

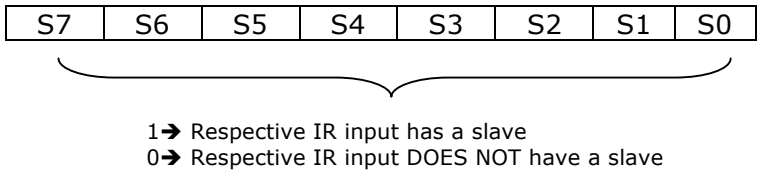
ICW-1 *(A0 = 0)*



ICW-2 *(A0 = 1)*



ICW-3 MASTER *(A0 = 1)*

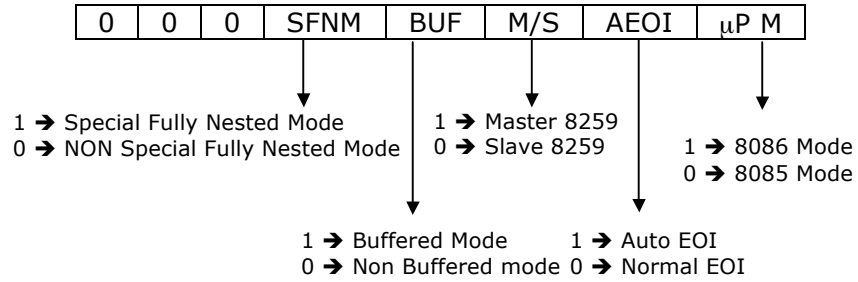


ICW-3 SLAVE *(A0 = 1)*

0	0	0	0	0	**ID_2**	**ID_1**	**ID_0**

ID_2	ID_1	ID_2	Slave ID
0	0	0	**0**
0	0	1	**1**
0	1	0	**2**
0	1	1	**3**
1	0	0	**4**
1	0	1	**5**
1	1	0	**6**
1	1	1	**7**

ICW-4 *(A0 = 1)*



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OCW-1 *(A0 = 1)*

M7	M6	M5	M4	M3	M2	M1	M0

1➔ MASK Respective IR input
0➔ UNMASK Respective IR input

OCW-2 *(A0 = 0)*

R	SL	EOI	**0**	**0**	L2	L1	L0

R	SL	EOI	Action	
0	0	1	NON Specific EOI Command	**End Of Interrupt**
0	1	1	Specific EOI Command	
1	0	1	Rotate on NON Specific EOI	**Auto rotation**
1	0	0	Rotate in AUTO EOI Mode (Set)	
0	0	0	Rotate in AUTO EOI Mode (Clear)	
1	1	1	Rotate on Specific EOI Command	**Specific rotation**
1	1	0	Set Priority command	
0	1	0	NOP	

L2	L1	L0	IR Level
0	0	0	IR0
0	0	1	IR1
0	1	0	IR2
0	1	1	IR3
1	0	0	IR4
1	0	1	IR5
1	1	0	IR6
1	1	1	IR7

OCW-3 *(A0 = 0)*

X	ESMM	SMM	**0**	**1**	P	RR	RIS

1 ➔ POLL Command
0 ➔ No Poll

ESMM	SMM	Action
0	0	No Action
0	1	
1	0	Exit SMM
1	1	Enter SMM

RR	RIS	Action
0	0	No Action
0	1	
1	0	Read IRR on next RD pulse
1	1	Read InSR on next RD pulse