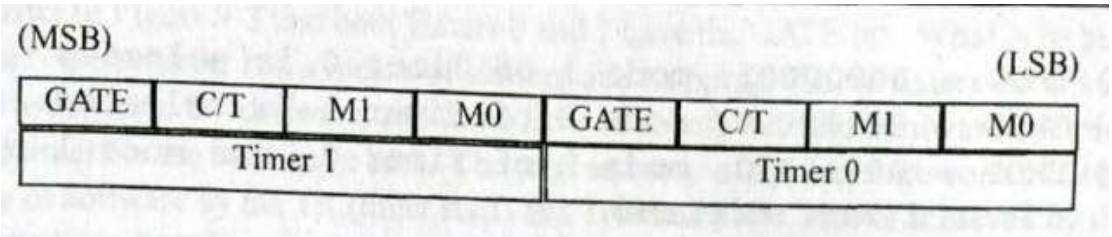
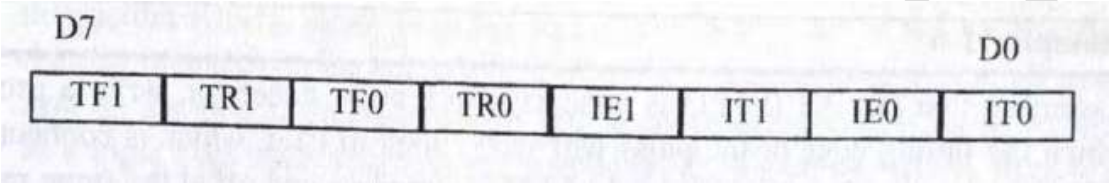
Timer and Counter

How to operate a Timer

1. Set its operation mode in the TMOD register



2. Set the initial value of the timer in the registers THX and TLX
3. Start the Timer using the TRX bit in the Timer Control register TCON.



How to know when the timer has completed the timing

Method 1. Polling for the Timer overflow flag TFX in the TCON register

1. TFX is equal to one when the timer finishes otherwise it is equal to 0.

Method 2. Generate an interrupt whenever the timer completes timing.

1. Use the interrupt enable register, IE to allow interruption by setting the bit EA to 1.

EA	--	--	ES	ET1	EX1	ET0	EX0

2. Enable the interrupt for the corresponding timer, ETX by setting it to 1.
3. Write the function to be called whenever the timer completes the timing (Interrupt service routine).

example code for an interrupt service routine for timer 0

```
void my_ISR() interrupt 1
{
    …handle the interrupt
    …
    …
}
```

A table of interrupt numbers

Interrupt functions

- Interrupt service routines (ISRs)
  - Special extension to denote ISR function
  - Keyword "interrupt" and a type number

Interrupt number	Description
0	External0
1	Timer0
2	External1
3	Timer1
4	Serial port
5	Timer2