6 可编程计数器/定时器8253

- **8253的工作原理**
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- ✓ **8253控制字与初始化编程**
- ✓ **8253工作方式**
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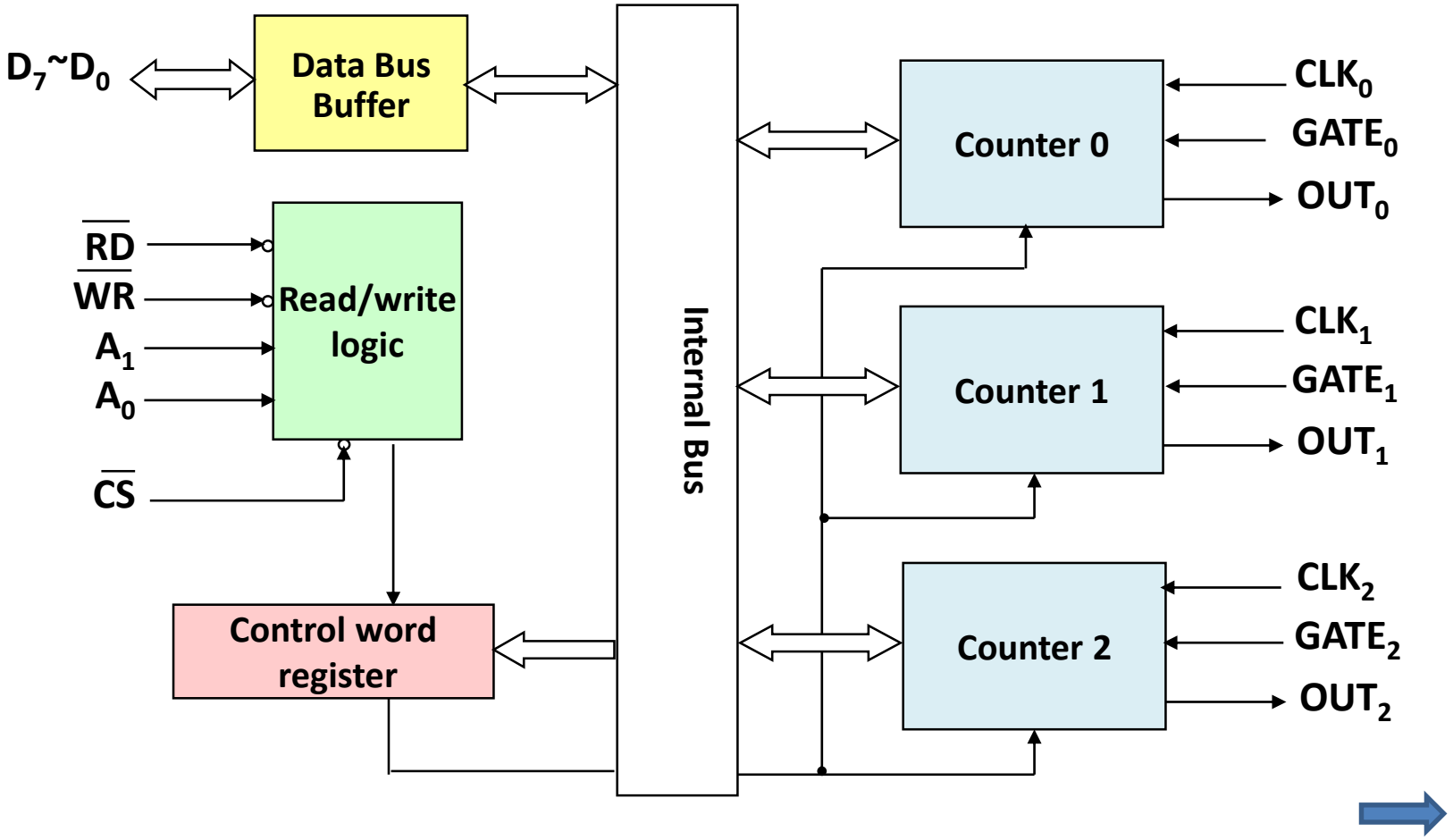
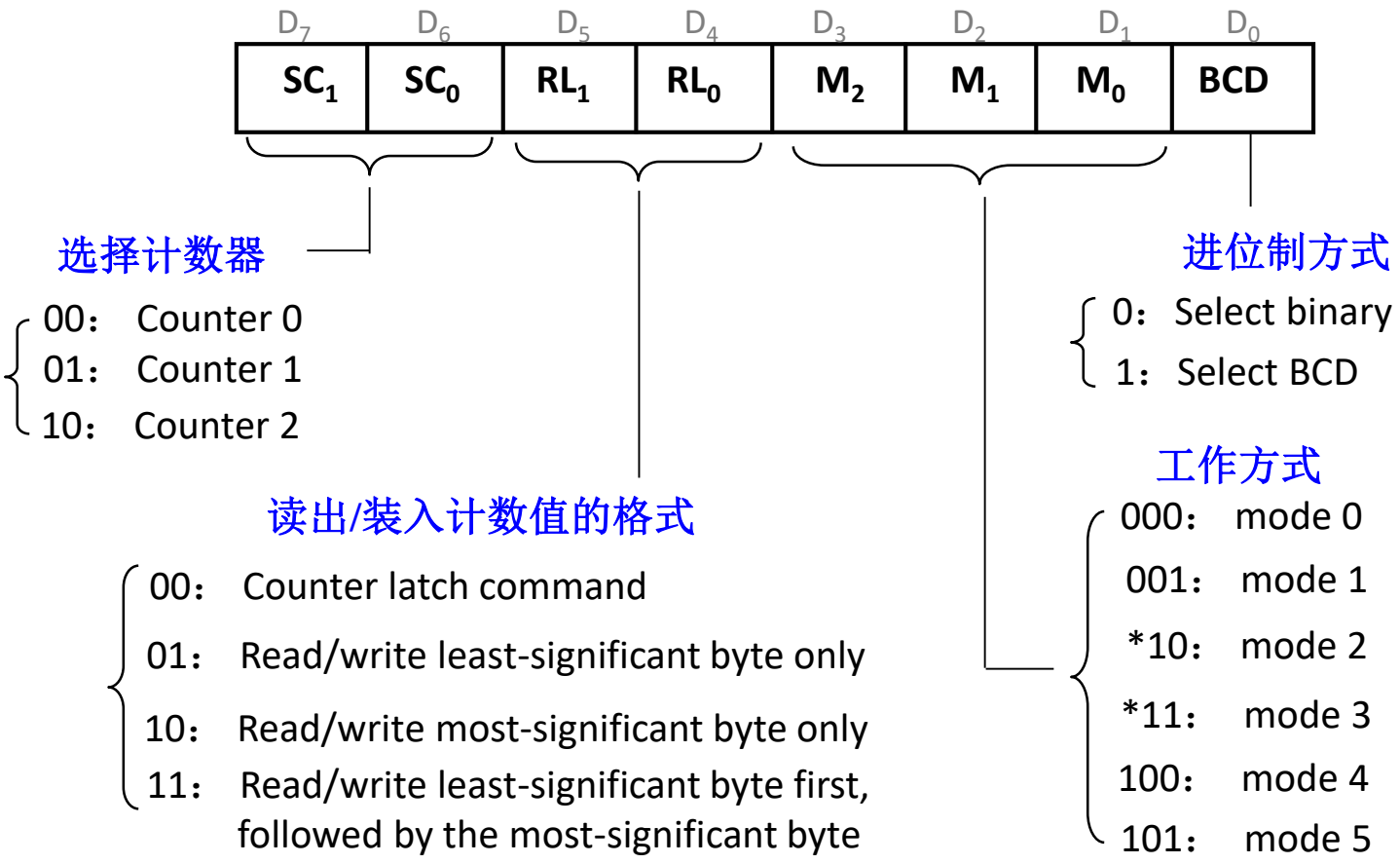
6.1 8253的工作原理

- 8253内部结构



- **8253控制字**



- **8253初始化编程**

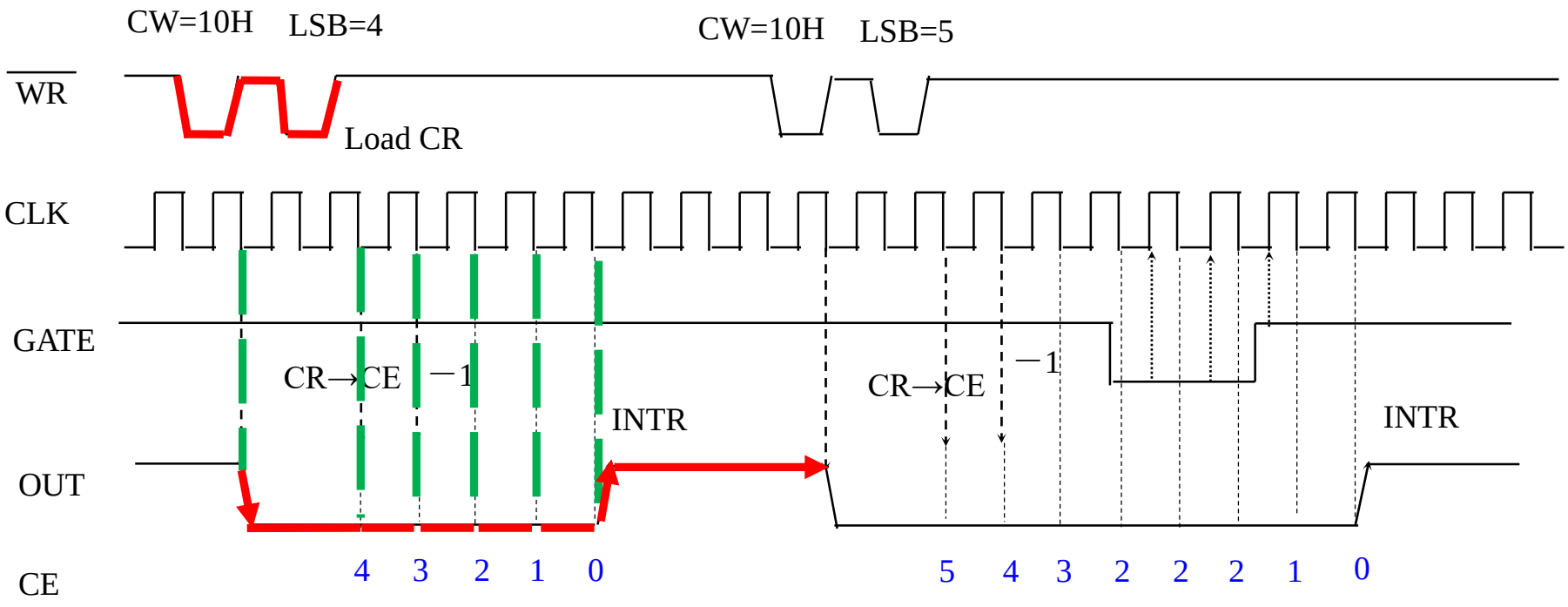
  控制字 + 计数初值

8253的工作方式

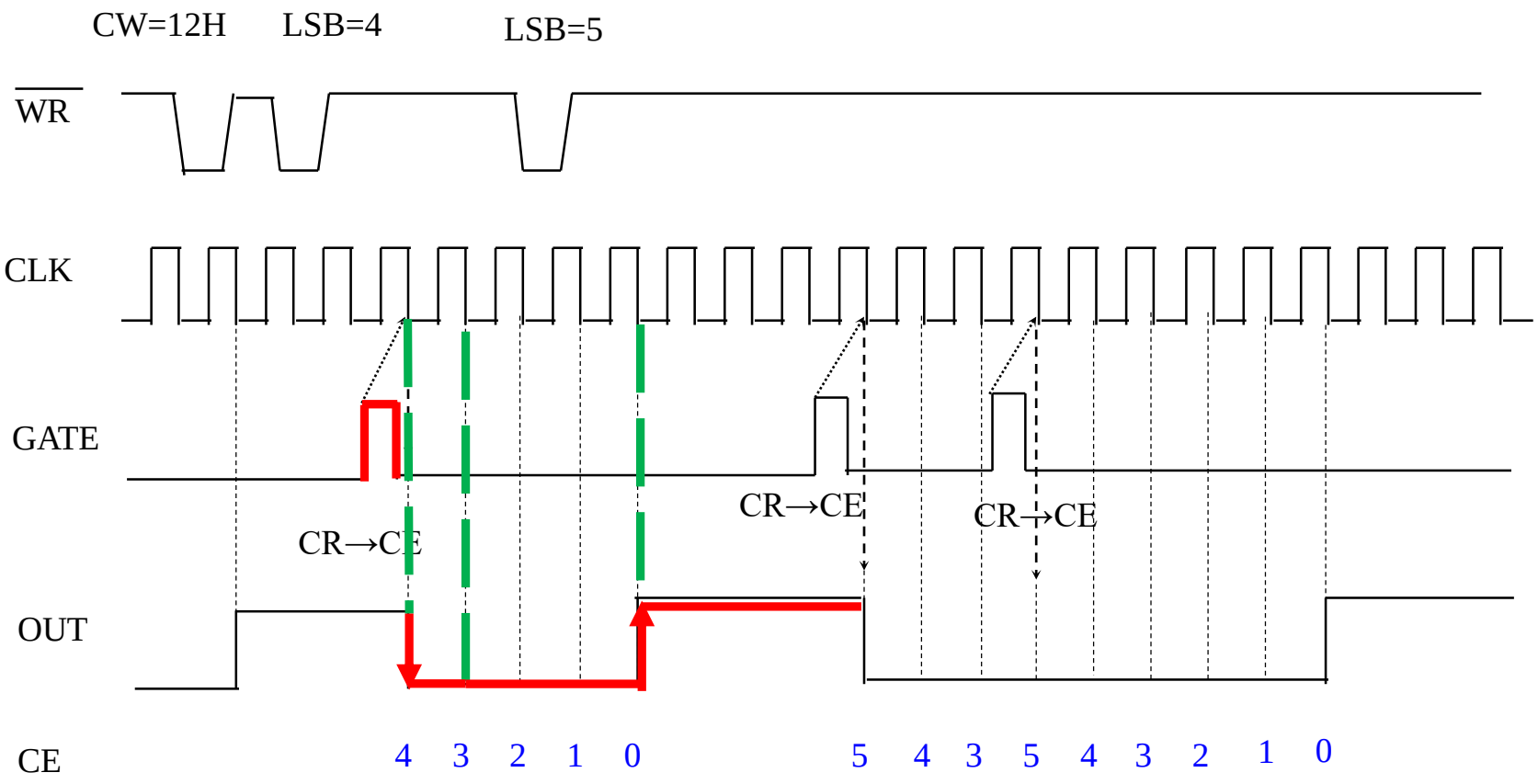
- 方式0: 计数结束中断方式 (Interrupt on terminal count)
- 方式1: 可编程单次脉冲方式 (Hardware retriggerable one-shot)
- 方式2: 分频工作方式 (Pulse generator)
- 方式3: 方波方式 (Square wave generator)
- 方式4: 软件触发方式 (Software triggered strobe)
- 方式5: 硬件触发方式(Hardware triggered strobe)

方式0——计数结束中断方式

- **Used as an events counter.**

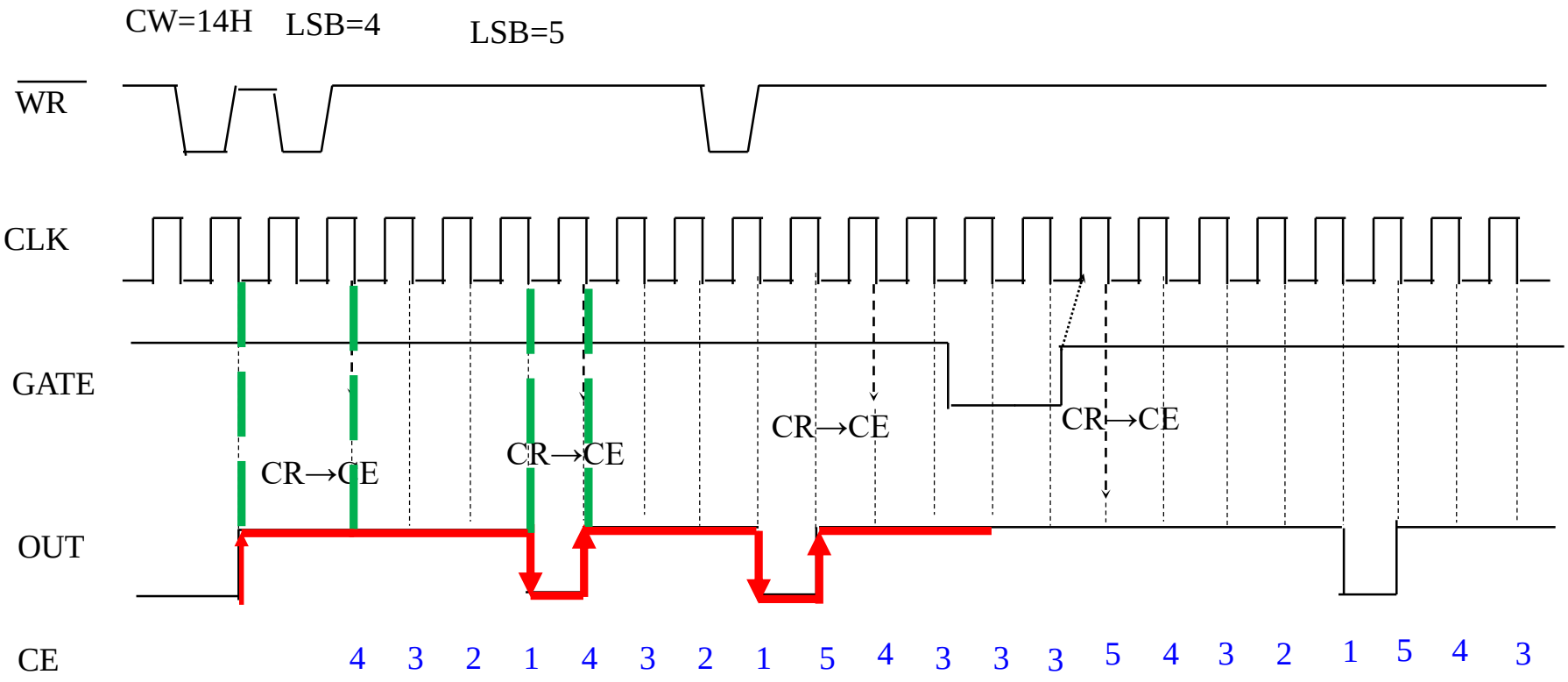


方式1——可编程单次脉冲方式



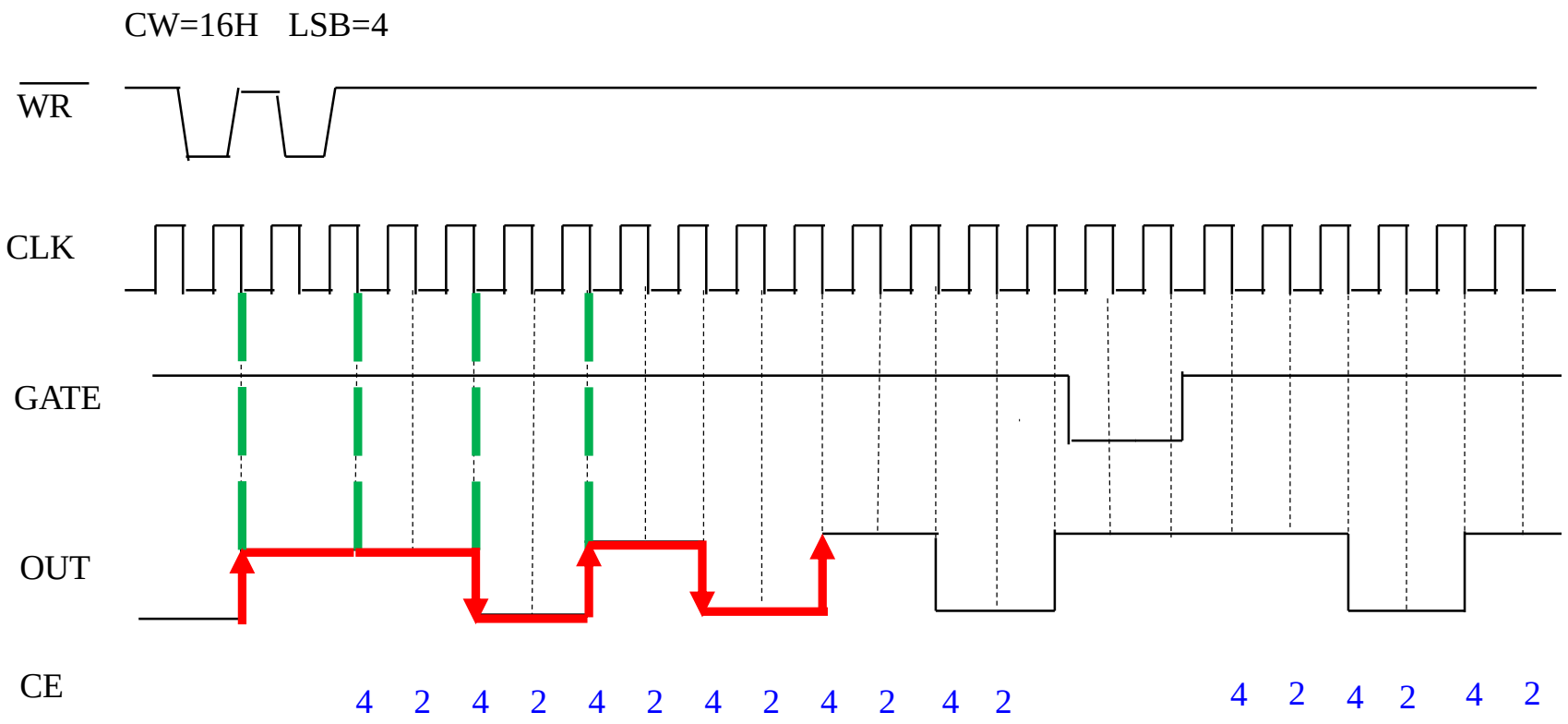
方式2——分频工作方式

- **generates a series of continuous pulses that are one clock wide.**



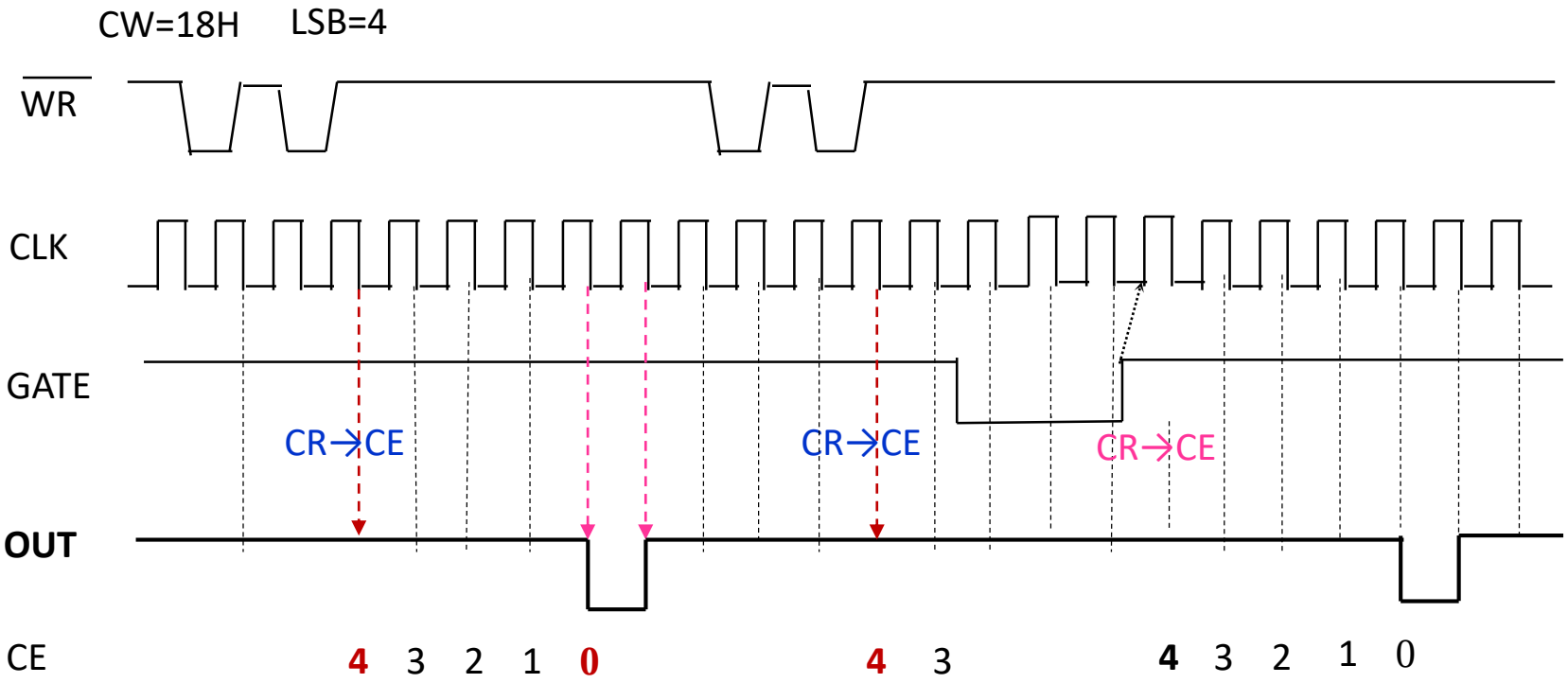
方式3——方波方式

- **generates a continuous square-wave.**



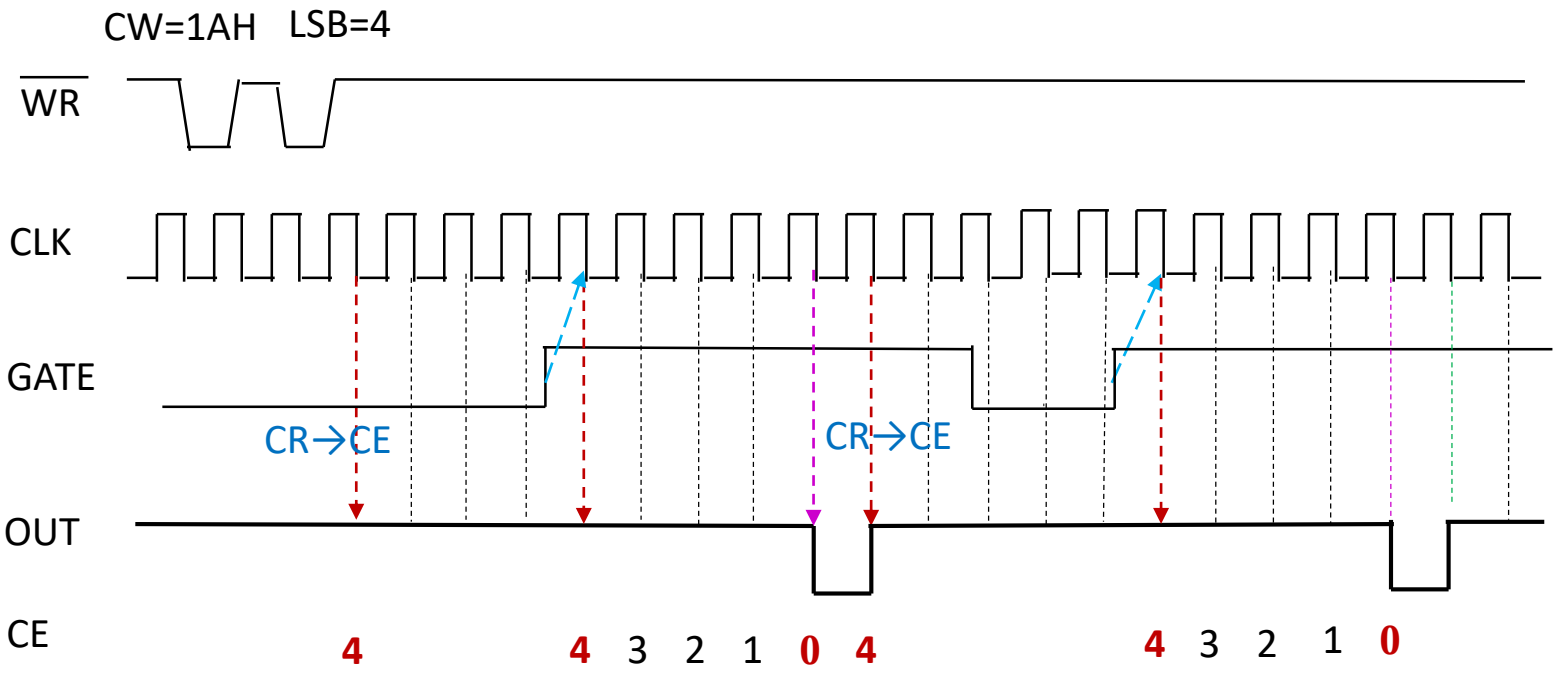
方式4——软件触发方式

- **produces a single pulse.**
- **The mode operates as a software triggered one-shot.**

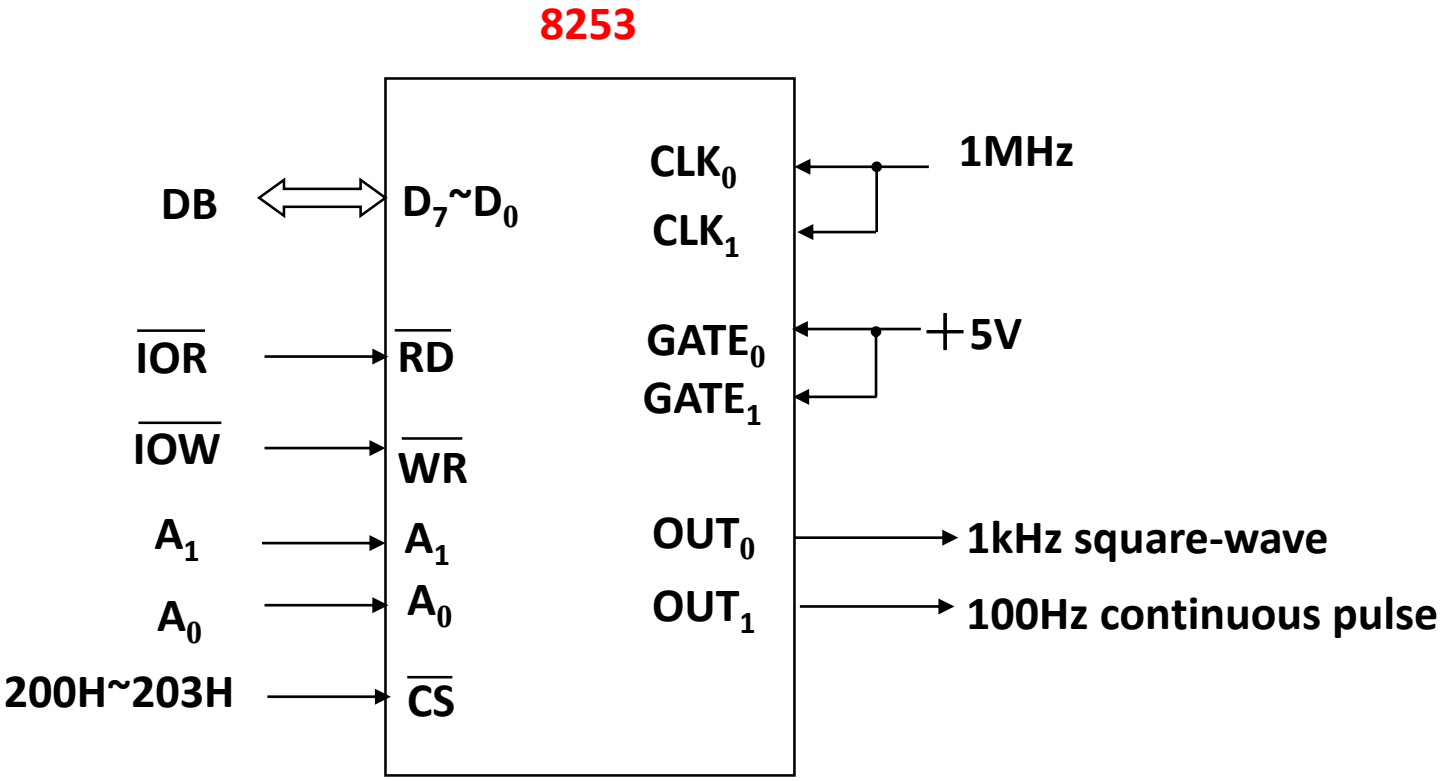


方式5——硬件触发方式

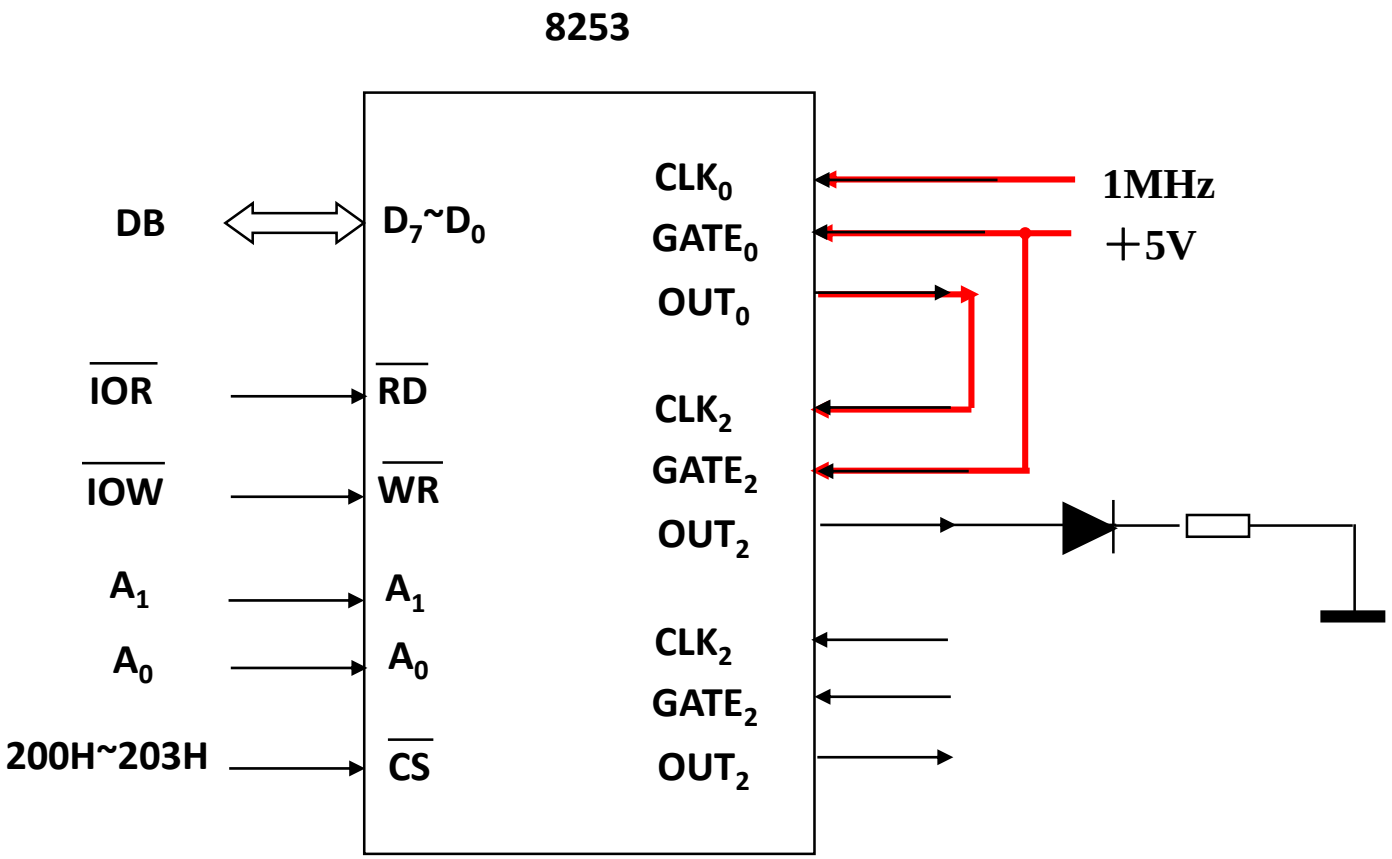
- **produces a single pulse. (functions as mode 4)**
- **The mode operates as a hardware triggered one-shot.**



Example: 编程实现: 定时器0输出频率为1kHz的方波; 定时器1工作为分频方式, 输出频率为100Hz的脉冲信号.



Question: 8253通道2接一发光二极管, 有1个1MHz的时钟信号, 使发光二极管以点亮2秒、熄灭2秒的间隔工作.



Example:自动计数系统

- **Port address: F0H, F2H, F4H, F6H.**