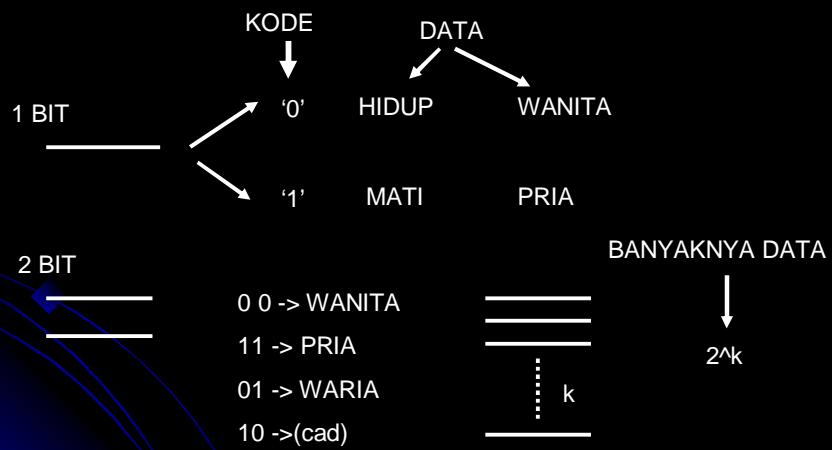
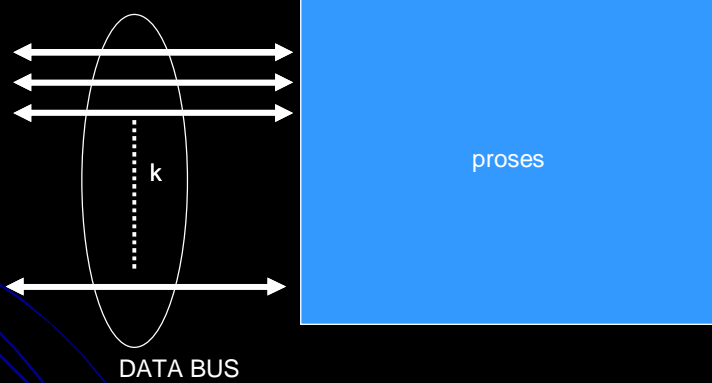


DATA & INFORMASI DALAM FORMAT DIGITAL

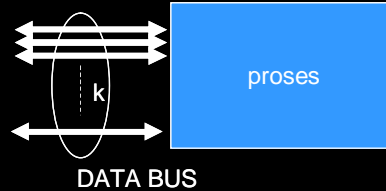


Digital databus

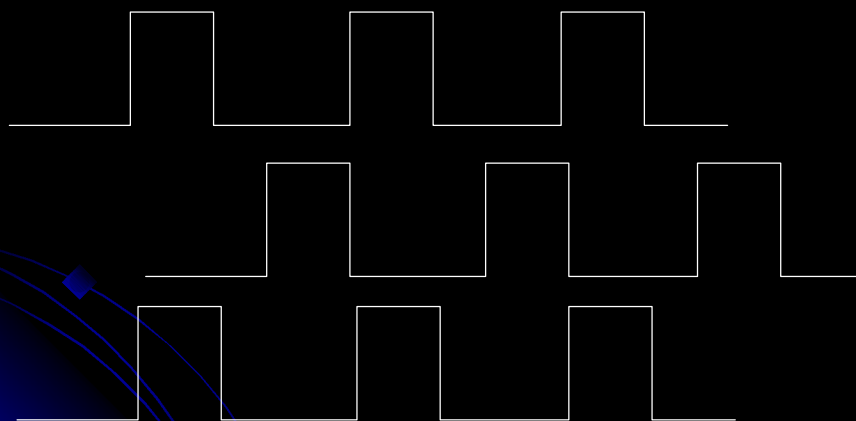


BUS DATA

- BUS-> sekelompok
- Input=output (bergantian)
bidirectional
 - Menghemat pin IC
 - Lebih lambat
- uP ideal jumlah k =tidak berhingga
- uP real k =berhingga (dibatasi jumlah pin)
- Informasi yang dapat diolah 2^k
- Contoh uP 8bit bisa mengolah data $2^8=256$ kombinasi, Contoh lain: 16bit, 32bit dst...

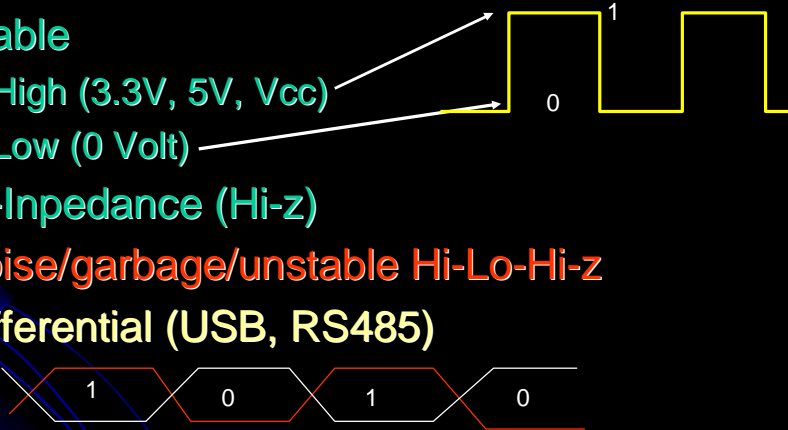


Digital signal

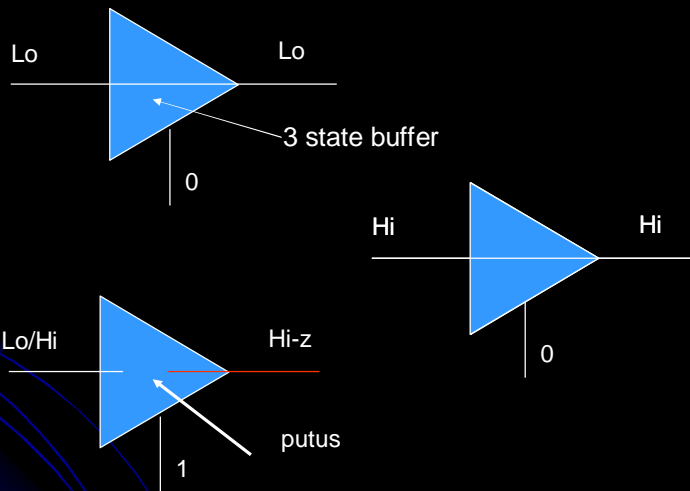


Digital state

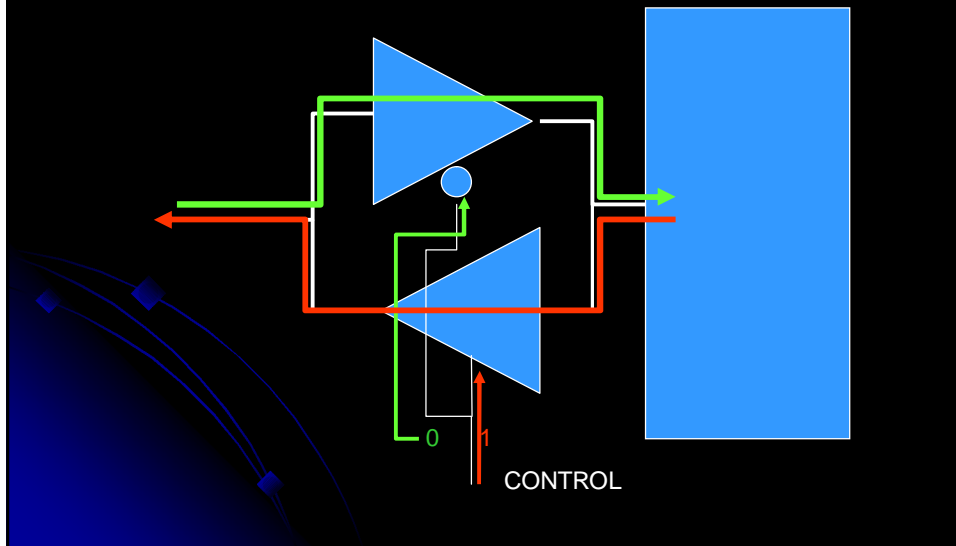
- Stable
 - High (3.3V, 5V, Vcc)
 - Low (0 Volt)
- Hi-Impedance (Hi-z)
- Noise/garbage/unstable Hi-Lo-Hi-z
- Differential (USB, RS485)



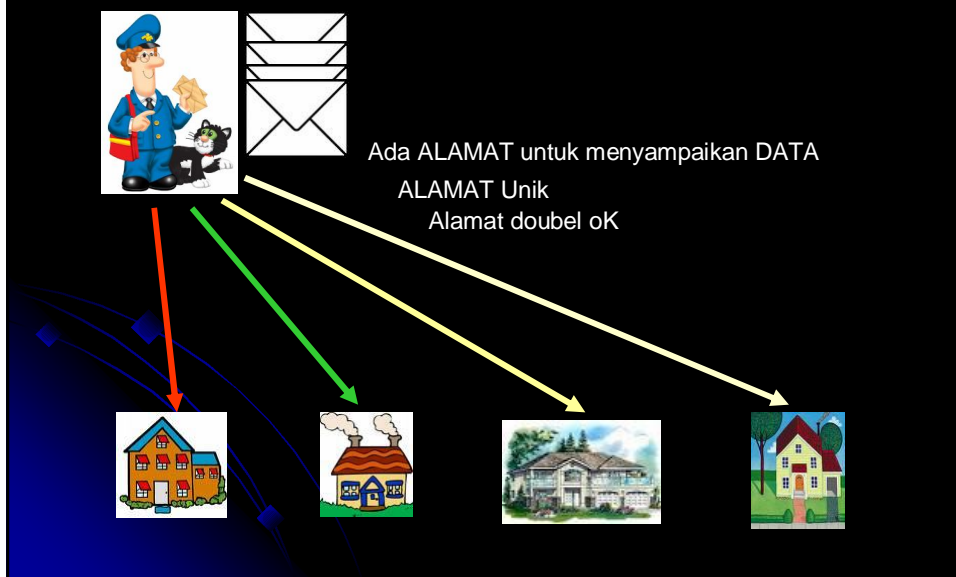
Hi-z (hi impedance)



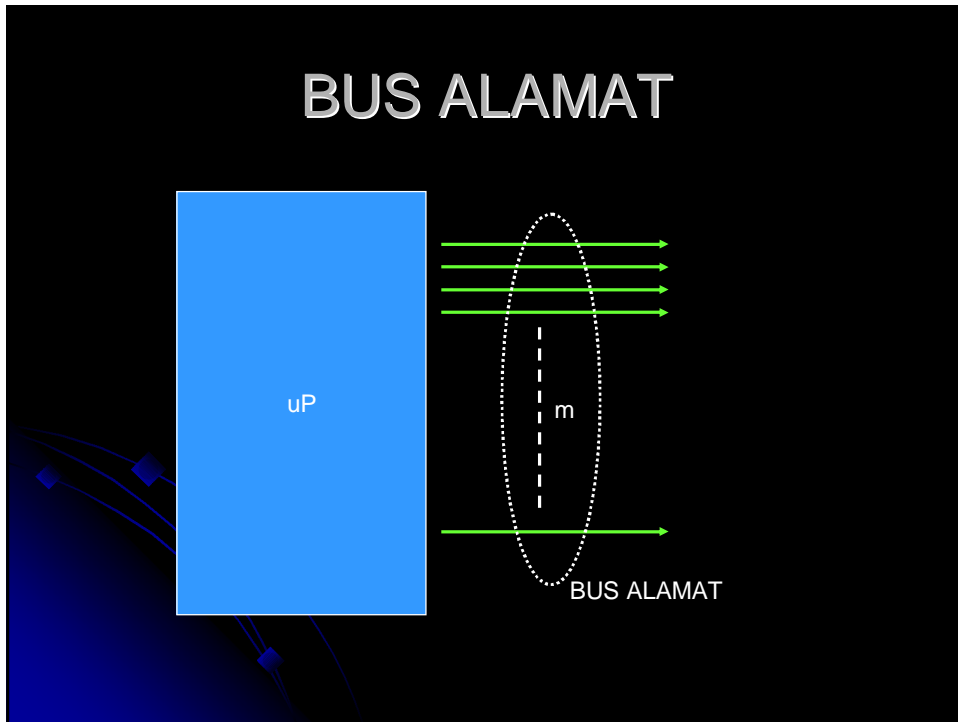
Bidirectional DATABUS



Konsep alamat

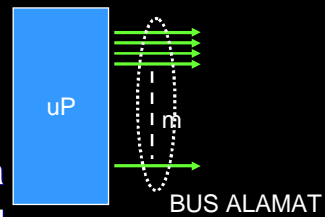


BUS ALAMAT

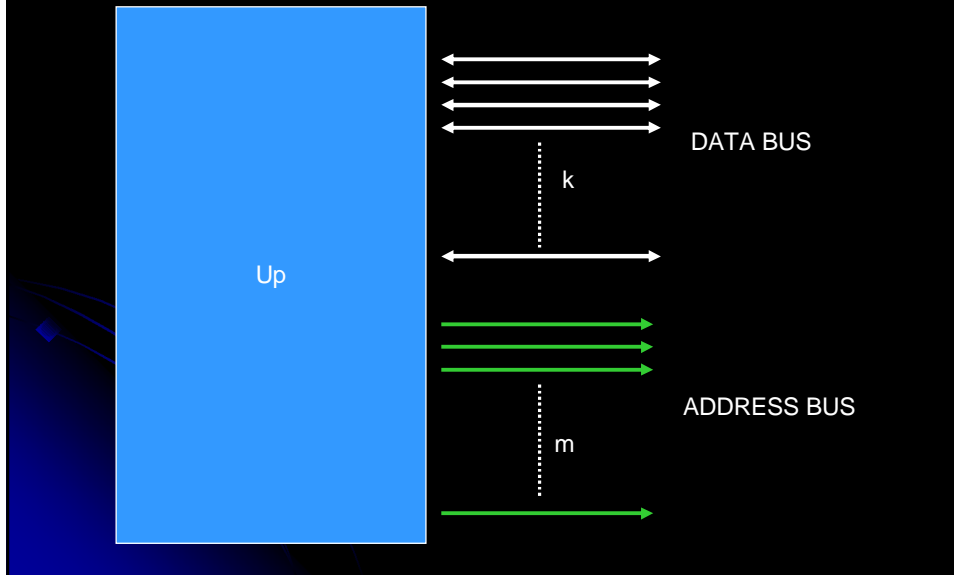


BUS ALAMAT

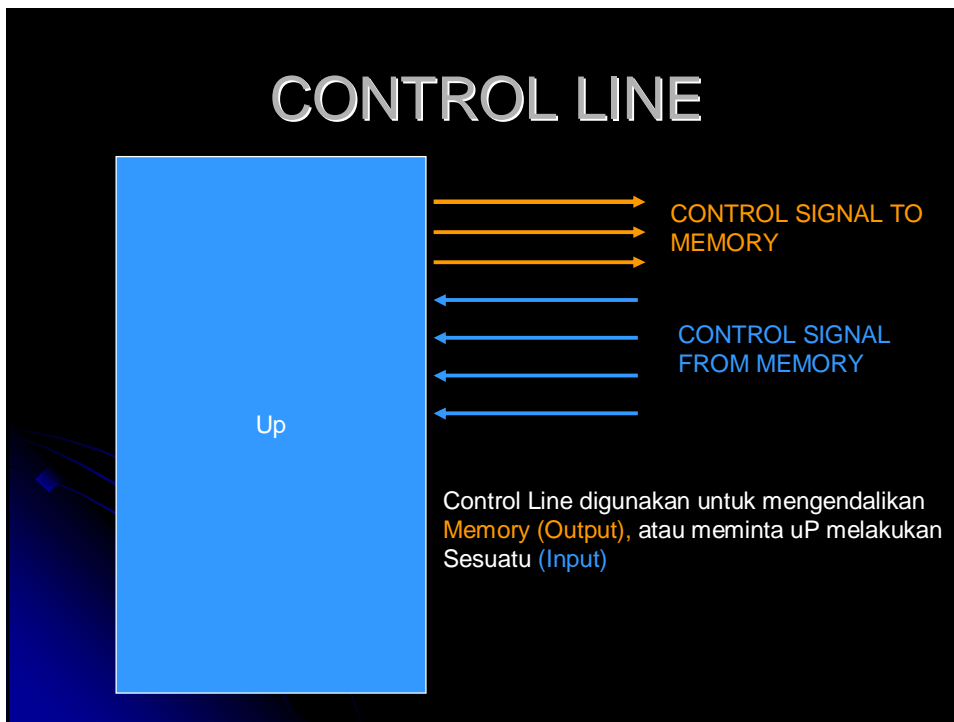
- uP ideal jumlah m tak terbatas
- uP real \rightarrow m terbatas (pin)
- Dengan m jalur alamat, uP bisa mengamati 2^m memory atau I/O
- Contoh; uP dengan 16bit address bus bisa mengamati $2^{16} = 65535$ lokasi memory atau I/O

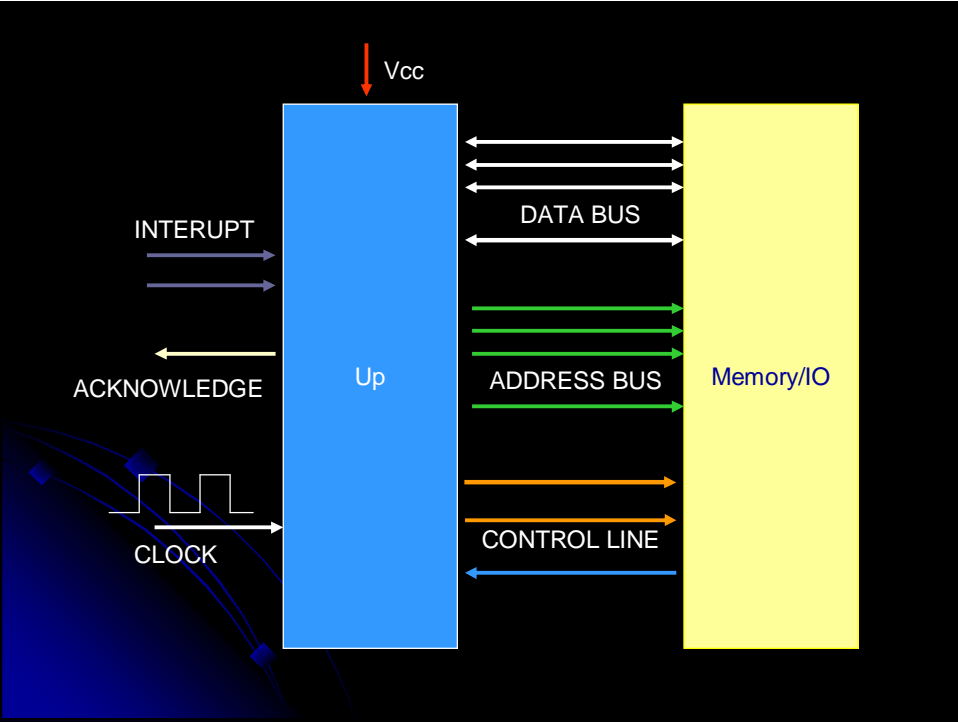
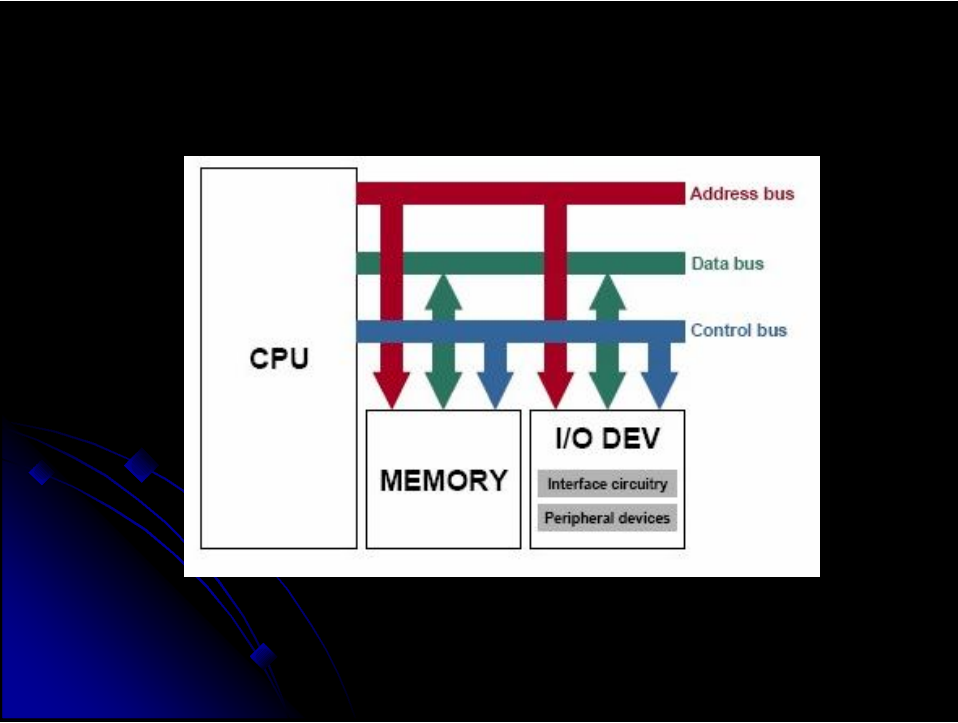


BUS DATA & ALAMAT

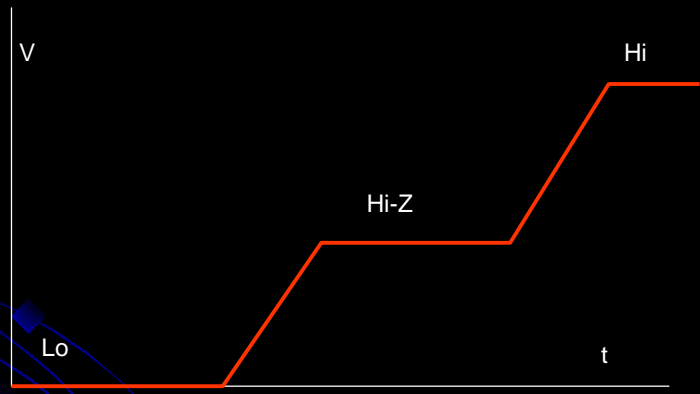


CONTROL LINE

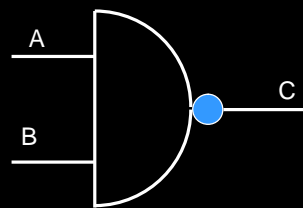




Line State



DIGITAL STATE STATIC

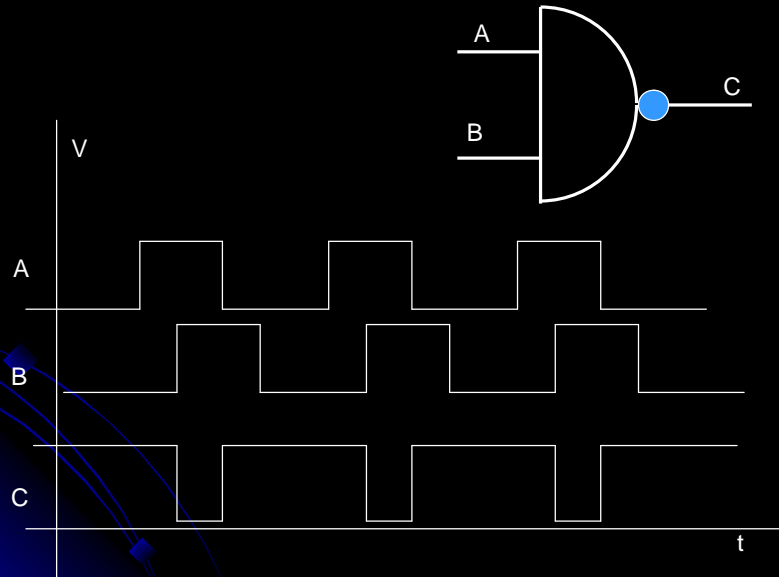


NAND GATE

TABEL KEBENARAN

A	B	C
0	0	1
0	1	1
1	0	1
1	1	0

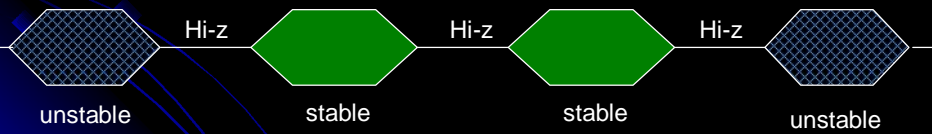
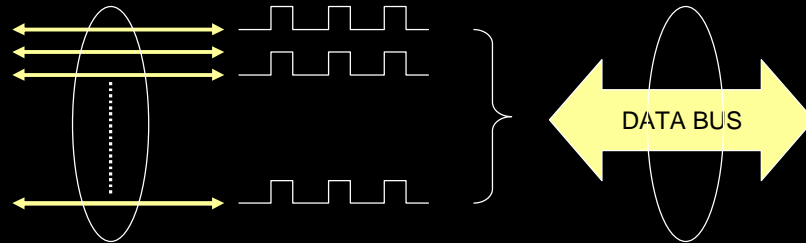
DIGITAL STATE DYNAMIC



MIKROPROCESSOR STATE

- Mikroprosesor bekerja hanya dalam mode dinamik, sehingga tidak dimungkinkan untuk mengukur / mengamati state di bus / line – nya dengan multi tester ataupun dengan menggunakan logic probe / led, hanya bisa diamati dengan logic analyser atau oscilloscope storage.

Bus State



MEMORY/IO READ & WRITE TIMING SIGNAL NOTATION

