

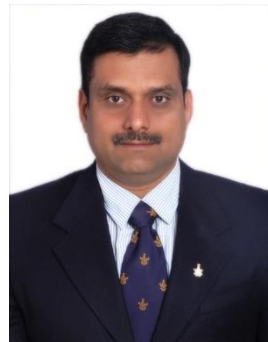


Microprocessors and Interfaces: 2021-22

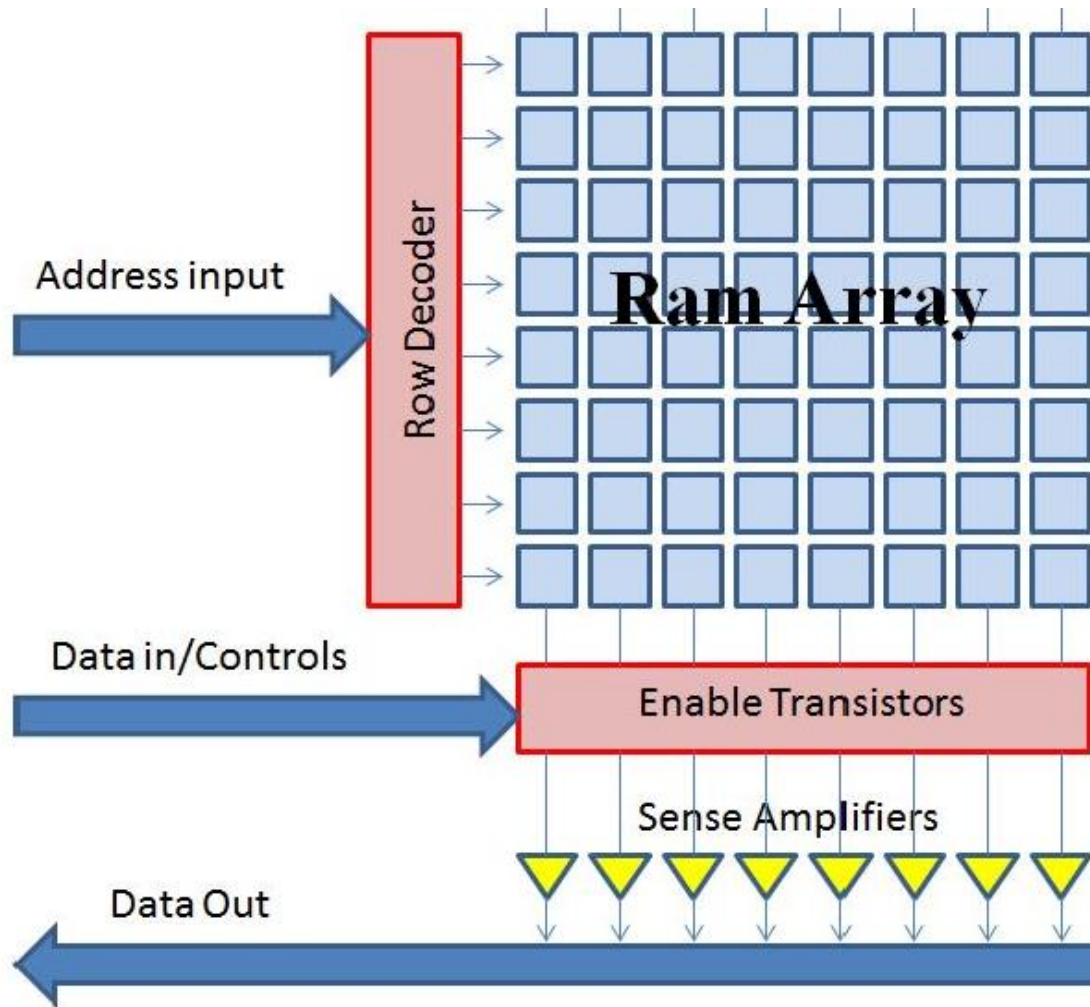
Lecture 19

Memory Organisation

By Dr. Sanjay Vidhyadharan



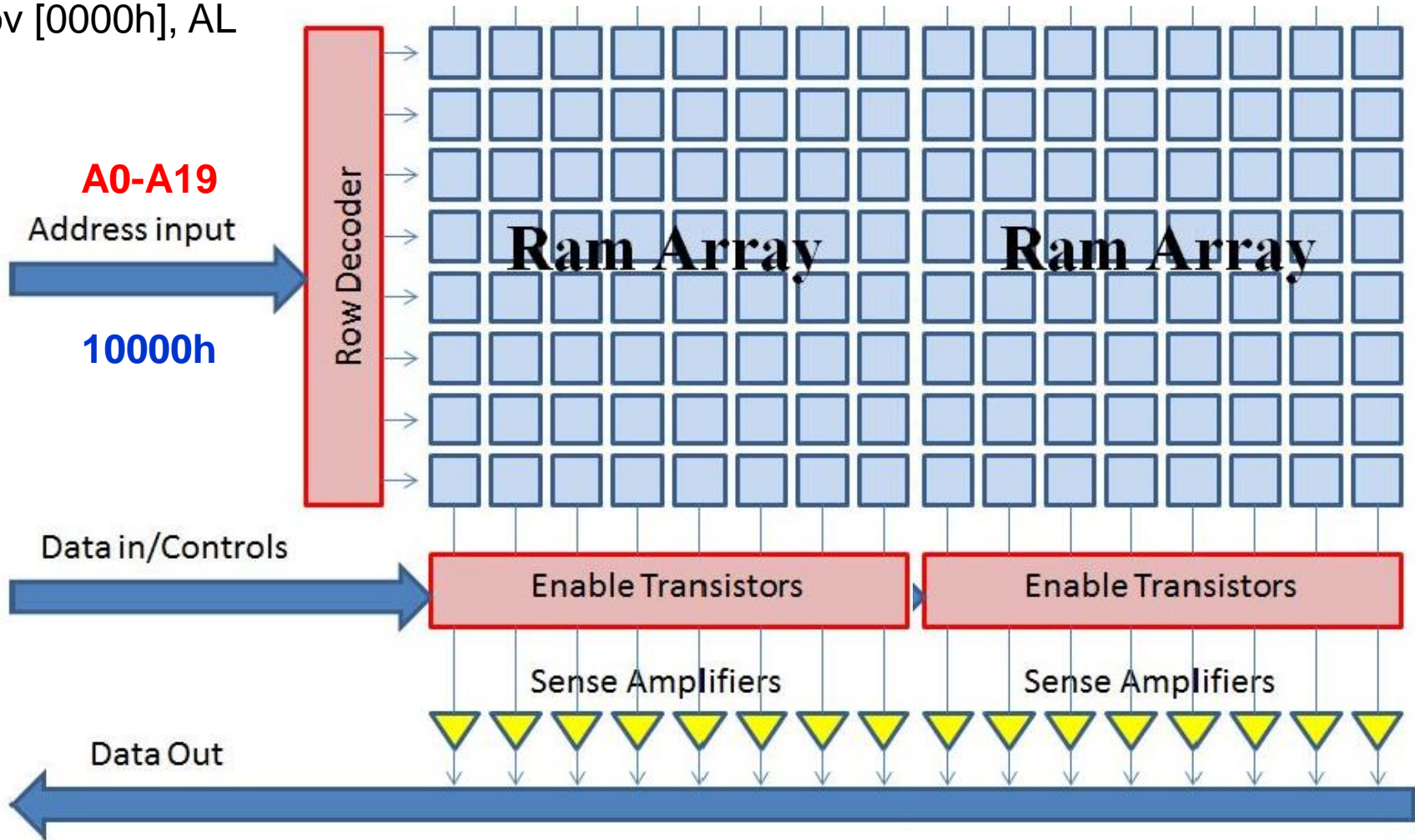
SRAM ARRAY



Memory Banking 8086

DS 1000
Mov [0000h], AL

1 MB x 16 bits



Memory Banking 8086

1 MB x
16 Bits

| | | | |
|--------|---|--------------------------|----------|
| 00000h | - | 1000 0000 0000 0000 0000 | (A0-A19) |
| 00001h | - | 1000 0000 0000 0000 0001 | (A0-A19) |
| 00002h | - | 1000 0000 0000 0000 0010 | (A0-A19) |
| 00003h | - | 1000 0000 0000 0000 0011 | (A0-A19) |
| 00004h | - | 1000 0000 0000 0000 0100 | (A0-A19) |
| 00005h | - | 1000 0000 0000 0000 0101 | (A0-A19) |

A0 = 0

A0 = 1

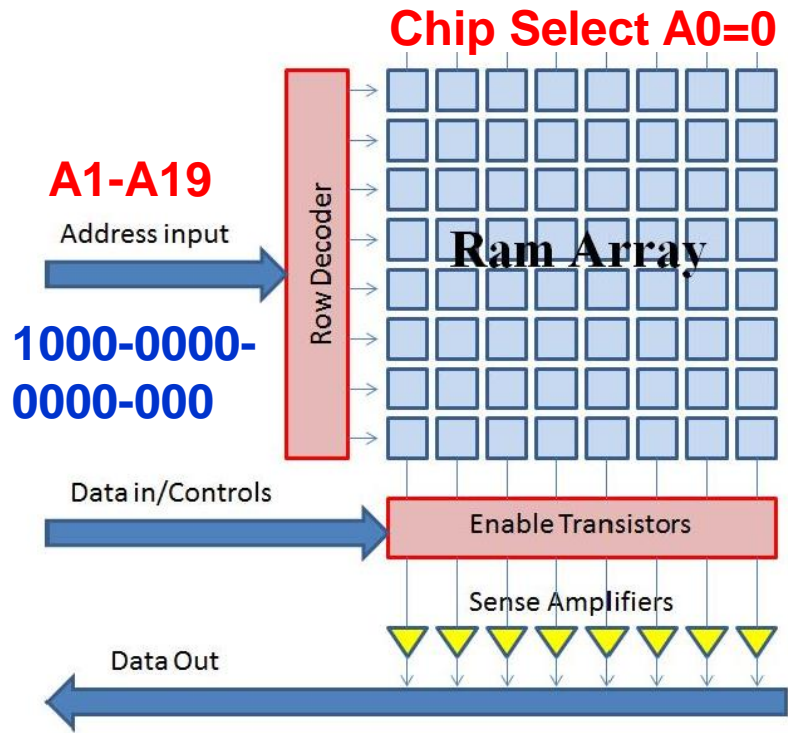
| | | | | | | | |
|--------|---|-------------------------|----------|--------|---|--------------------------|---------|
| 00000h | - | 0000 0000 0000 0000 000 | (A1-A19) | 00001h | - | 0000 0 000 0000 0000 000 | (A1-19) |
| 00002h | - | 0000 0000 0000 0000 001 | (A1-A19) | 00003h | - | 0000 0000 0000 0000 001 | (A1-19) |
| 00004h | - | 0000 0000 0000 0000 010 | (A1-A19) | 00005h | - | 0000 0000 0000 0000 010 | (A1-19) |

500 KB X 8 bits

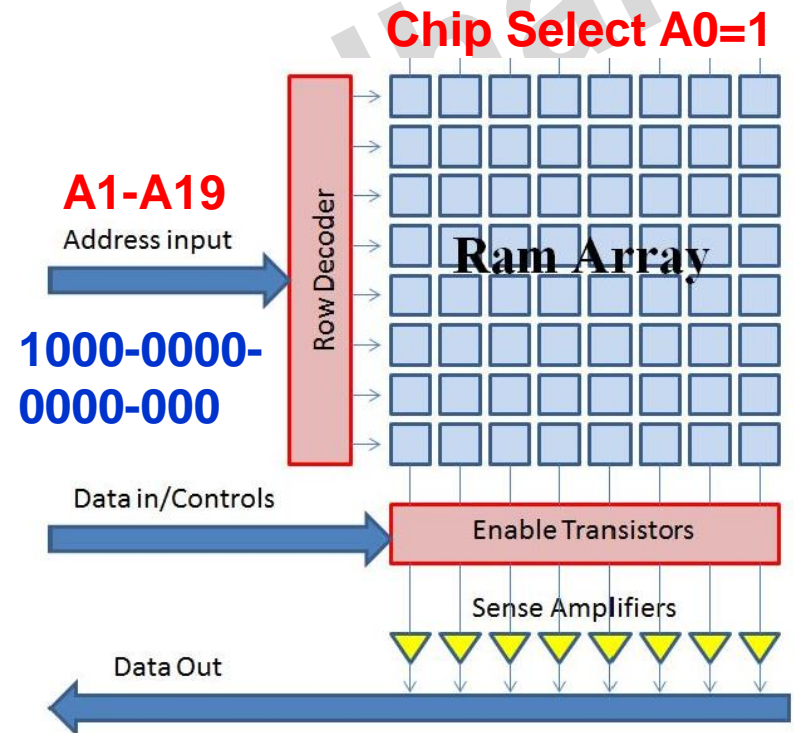
500 KB X 8 bits

Memory Banking 8086

DS 1000
Mov [0000h], AL



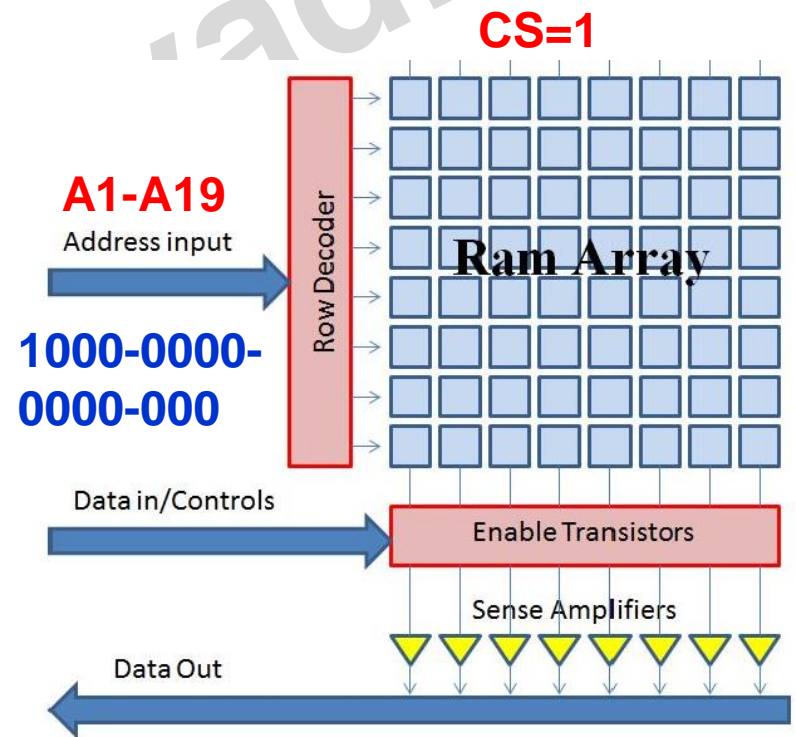
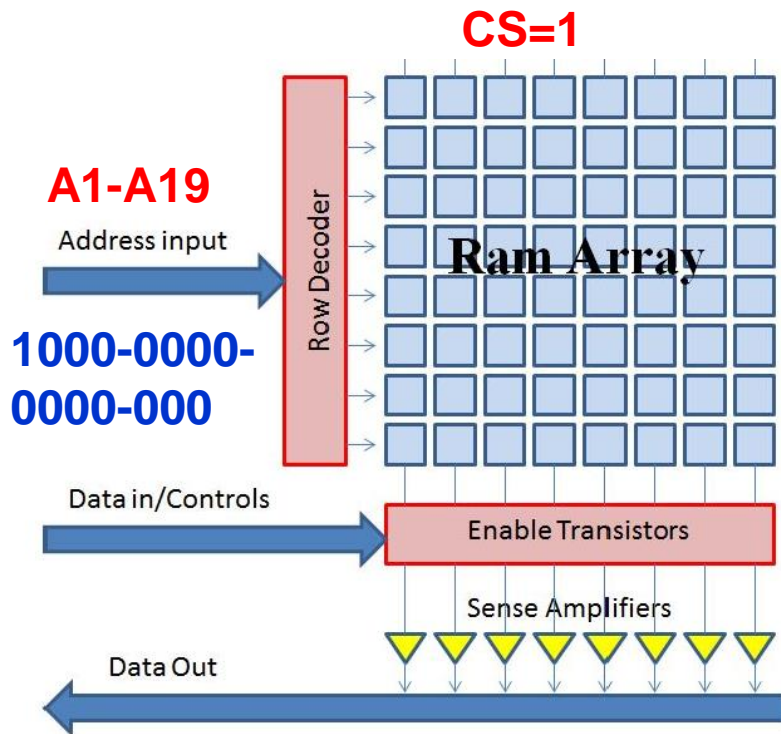
DS 1000
Mov [0001h], AL



Memory Banking 8086

DS 1000
Mov [0000h], AX $\overline{\text{BHE}}=0$

| $\overline{\text{BHE}}$ | A_0 | Indication |
|-------------------------|-------|------------------------------------|
| 0 | 0 | Whole word (2 bytes) |
| 0 | 1 | Upper byte from or to odd address. |
| 1 | 0 | Lower byte from or to even address |
| 1 | 1 | None |

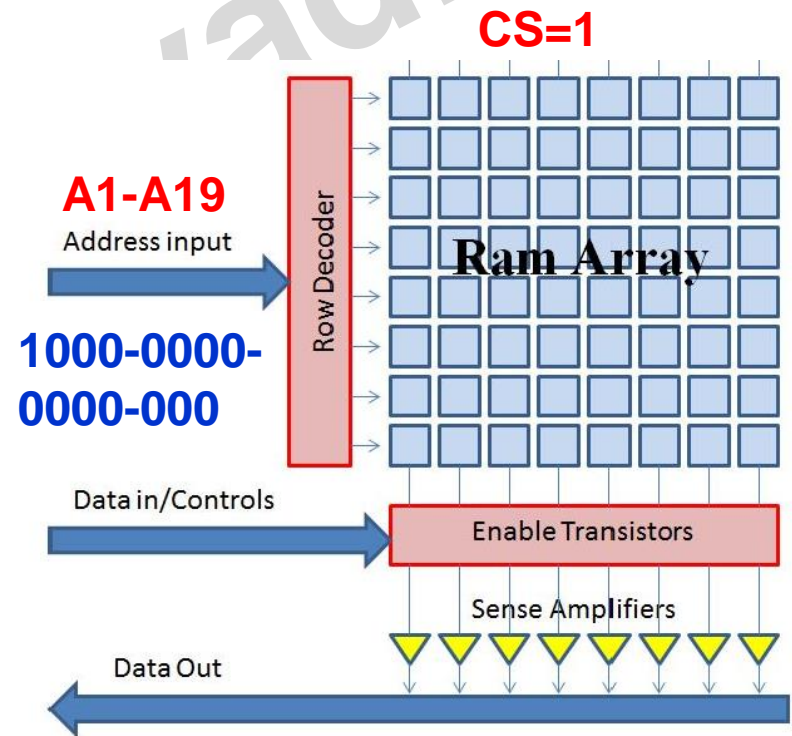
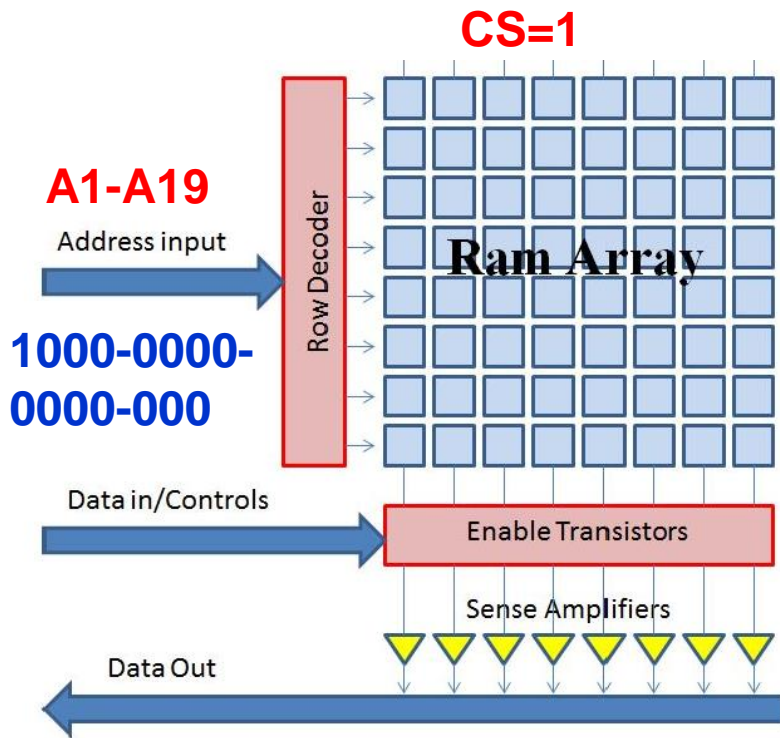


Memory Banking 8086

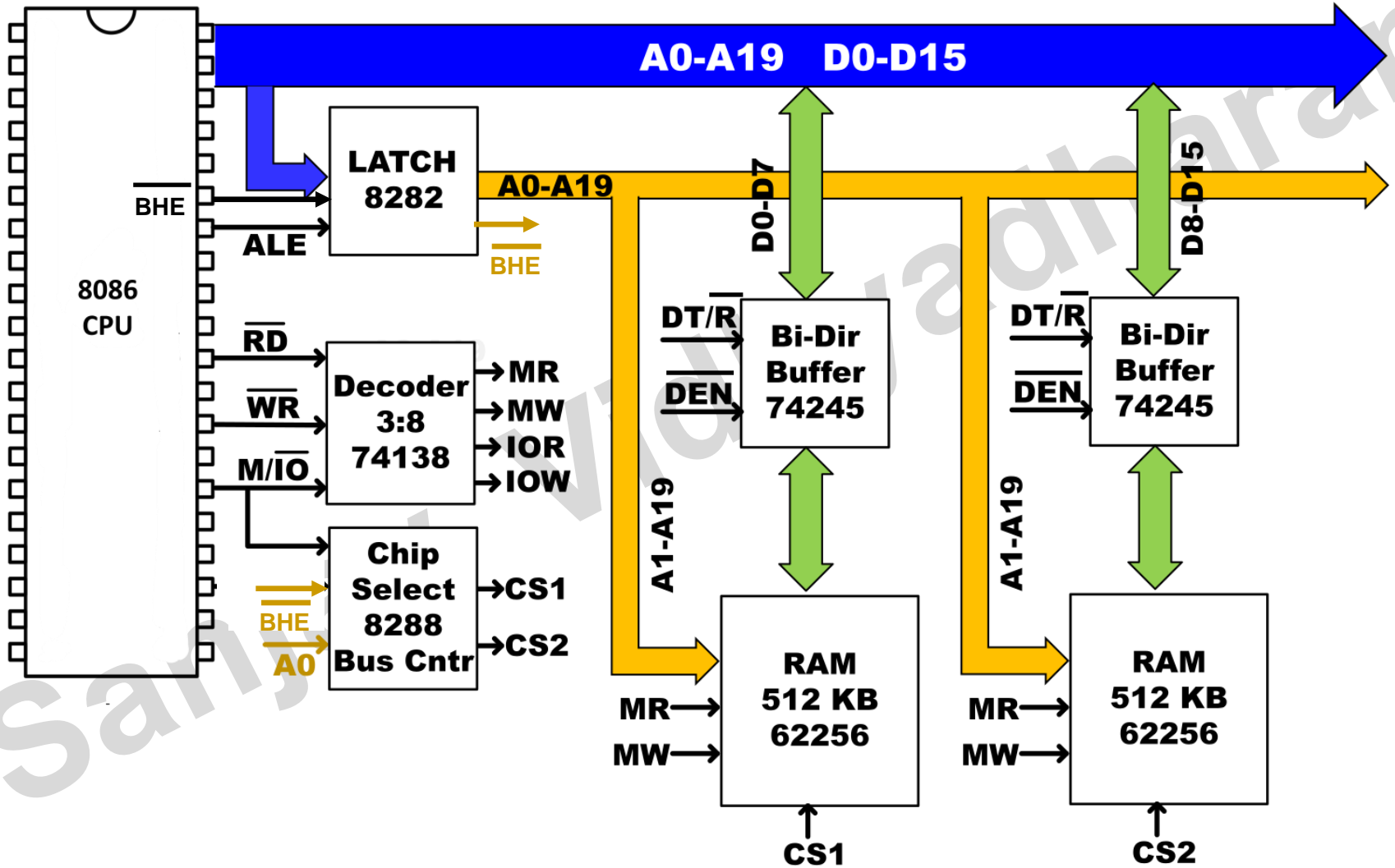
```
DS 1000
Mov [0000h], CL
Mov [0001h], AX
```



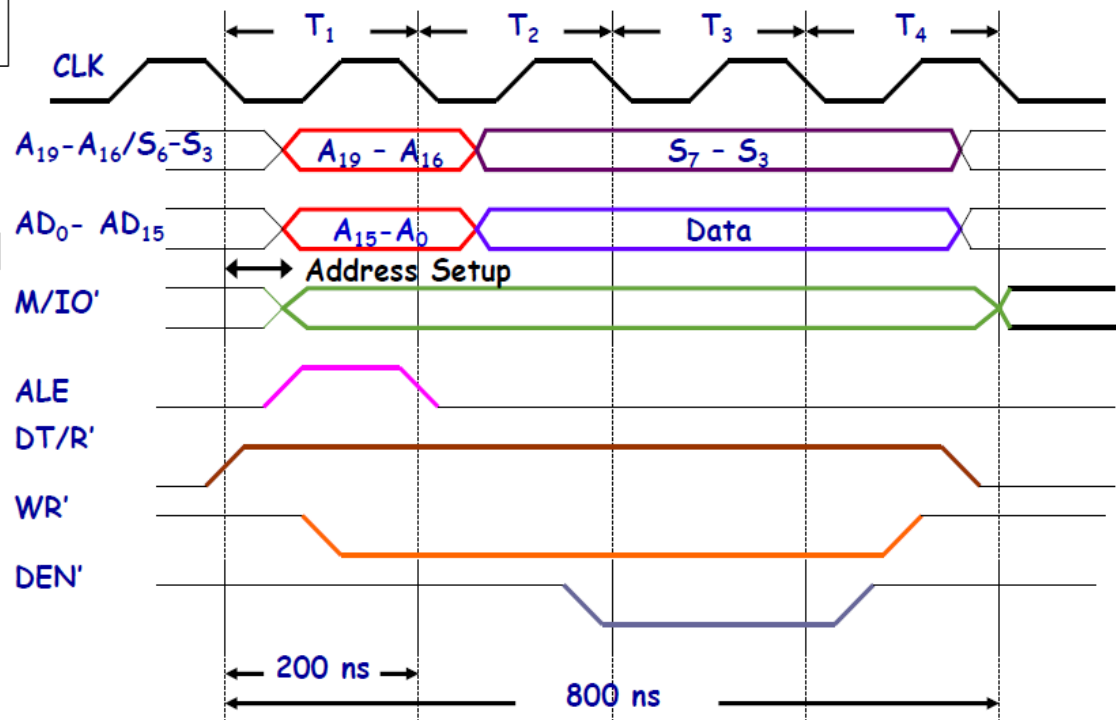
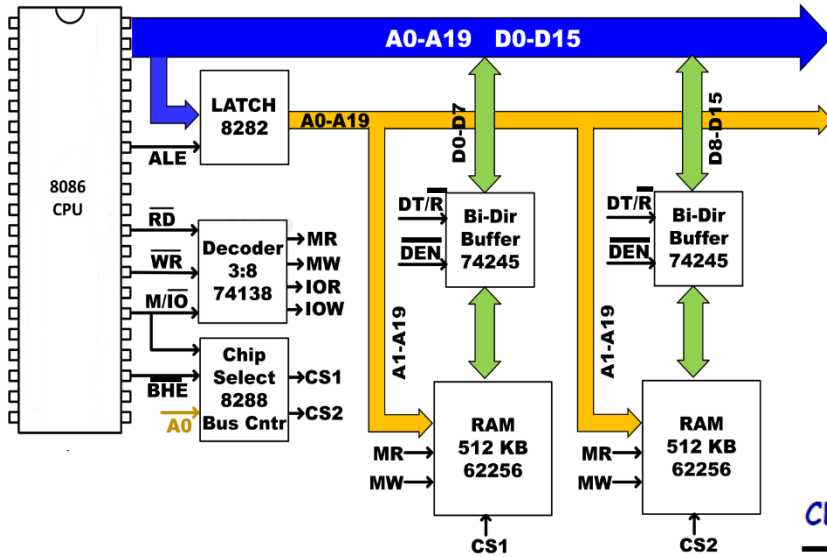
| \overline{BHE} | A_0 | Indication |
|------------------|-------|------------------------------------|
| 0 | 0 | Whole word (2 bytes) |
| 0 | 1 | Upper byte from or to odd address. |
| 1 | 0 | Lower byte from or to even address |
| 1 | 1 | None |



8086 Memory Organization



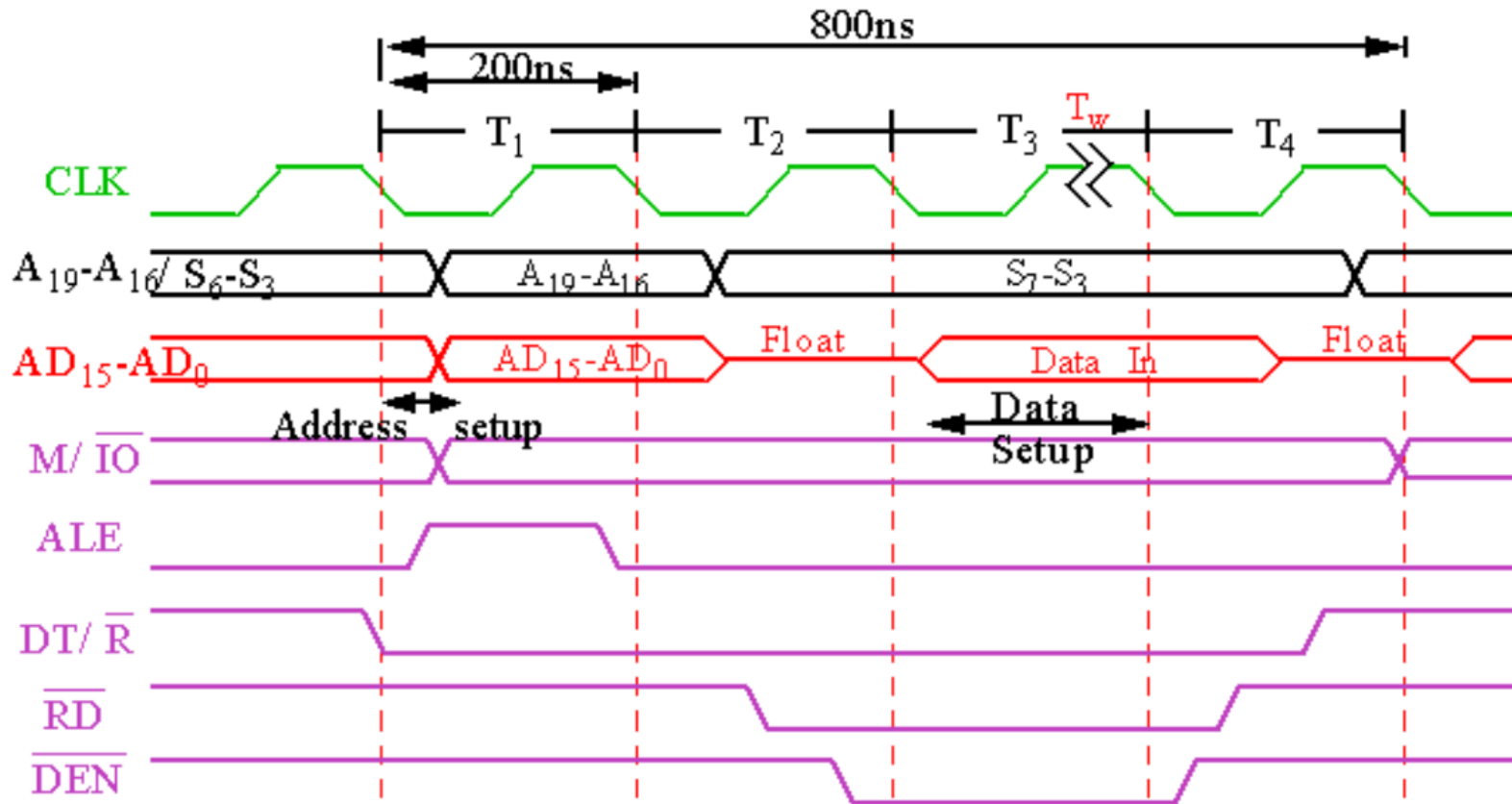
8086 Memory Write Operation



Sanjay

8086 Memory Read Operation

• Bus Timing:



Thankyou

Sanjay Vidnyadharaan