In 32-bit mode, R/M has a different meaning compared to 16-bit mode.

Address size prefix (674) except the instruction can or Sec word descriptor get to 32-bit mode.

32-bit Address Mode

INT, JOS, BIOS

STARTUP, etc.

Common on: TI, Y, .COM, .EXE

Lecture 8
Note: Only valid if MOD = 0 or 10 (If MOD = 0, R/M = memory)

| DI/C1 | B/M = 111 |
| SI/E1 | D/M = 101 |
| 8P/EP | L/M = 100 |
| SI/E1 | A/M = 000 |
| 8P/EP | L/M = 010 |

11 = R/M is a register
10 = 16-bit/32-bit displacement
01 = 8-bit displacement
00 = no displacement

Next Page

\[ w = 1 \]
AN SCALED-INDEX BYTE IS ADDED TO THE INSTRUCTION.
IN THE CASE OF 28-BIT MODE & SCALED-INDEX ADDRESSES.

; DS : [EBP + DI] = 111
; DS : [EBP + SI] = 0 11
; DS : [EBP + DI] = 1 01
; DS : [EBP + SI] = 001
; CS : [EBX] = 110
; CS : [EDI] = 010
; CS : [ECX] = 100
; CS : [EAX] = 000

28-bit R/M

16-bit R/M
0 = 0

R/M = Source-Index
Reg = AX = 000
0 = Mod = 00
No displacement

OP Code = 8B

\[\text{R/M} \rightarrow \text{Reg} \rightarrow \text{AX} \rightarrow \text{EAX} + 4*\text{ECX}\]

Opcode \(= \text{8B}\)

Prefixes \((67, \#66)\)

In 16-bit mode w/ 32-bit address & register

\(16\) bit Mode w/ 32-bit Address & Register

In 16-bit Mode

\(\text{ASSUME } \text{386 Processor}\)

\(\text{MOV} \text{ EAX, } [\text{EBX} + 4*\text{ECX}]\)
= 0 INSTRUCTION = 8E0985

NOTE: IF PROCESSOR IN 32-BIT MODE

Final Instruction = 6766830485

Scaled-Index Byte = 85

```
1110001011
  INX = ECX = 100
  EAX = 3BX = 110
Multiplier = 4 = 0 SS = 10
```