

16.216: ECE Application Programming

Protected Mode Practice Problems

Assume the 80386 is running in protected mode with the state given below (all values in hex); note that each memory location shown contains a descriptor about a particular segment:

GDTR = 00200000001F
LDTR = 000B

DS = 0017
SS = 0018
ESI = 00001000
EBX = 0001120

Memory	Address
Base = 030010F0 Limit = 020F	00200000
Base = 00200020 Limit = 0017	00200008
Base = 00200038 Limit = 0010	00200010
Base = 1200C000 Limit = FFFF	00200018
Base = 12340000 Limit = 00FF	00200020

Memory	Address
Base = 01000010 Limit = 1127	00200028
Base = 03170200 Limit = 03F7	00200030
Base = 1A000000 Limit = 01FF	00200038
Base = 06B01000 Limit = 0F07	00200040
Base = 05000120 Limit = 000F	00200048

- What is the base address and limit of the global descriptor table? How many descriptors does this table contain?
- What is the base address and limit of the current local descriptor table? How many descriptors does this table contain?
- What are the starting and ending addresses for the current data and stack segments?
- What address is accessed by each of the following instructions?
 - MOV AX, [0100H]
 - ADD DX, [SI]
 - MOV AX, SS:[SI+EF00]
 - SUB SS:[A200], CX
 - MOV DX, [BX+SI]
 - MOV CX, [BX+SI+1EH]