Exercises
Segmentation-Multilevel-Paging

E-1: Consider a simple byte addressable segmentation system with the following values: Physical memory of 2^{26} bytes and maximum segment size of 2^{14} bytes and a logical address space of 2^{20} segments.

- How many bits are in a logical address?
- How many bytes in a segment?
- How many bits in the physical address specify the segment # ?
- What is the size of a segment table?

E-2: In a physical memory of 2^{30} bytes, and maximum segment size of 2^{20} bytes.

- What could be minimum and maximum size of a segment?
- How many segments bits in the physical address specify the segment?
- What is the size of a segment table (number of entries)?
- Range of physical address space?

E-3: What could be the situation when a segmentation memory management system is working like variable partitions system.

E-4: Consider a logical address space of 16 pages of 2,048 bytes each, mapped onto a physical memory of 32 frames.

- How many bits are there in the logical address?
- How many bits are there in the physical address?
- How many bits for page/frame displacement ?

E-5: Consider the following segment table:

Segment	Base	Length
0	ABC	400
1	2400	1FF
2	FF	200
3	1234	567
4	EEFF	200

What are the physical addresses (Hexadecimal) for the following logical addresses in Hexadecimal ? digit before comma indicates segment number, followed by segment displacement.

0,330 1, 200 2,1FF 3,456 4,199

E-6: The VAX architecture (a 32-bit machine) supported a variation of two-level paging, with a page size of 512 bytes. The logical address space of a process is divided into four equal sections, each of which consists of 2^{30} bytes. Each section represents a different part of the logical address space of a process. The first 2 high-order bits of the logical address designate the appropriate section.
How many bits to represent the logical page number of that section.

Section	Page	Offset
2 bits	bits?	bits?