**Homework 2**

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**October 28, 2024**

1. (5 points) Why are segmentation and paging sometimes combined into one scheme?

They are sometimes combined into one scheme to gain benefits from both approaches. With segmentation being highly organized and flexible and paging containing no external fragmentation, and simple but efficient memory management.

1. (10 points) Consider the following segment table:

|  |  |  |
| --- | --- | --- |
| SEGMENT | BASE | LENGTH |
| 0 | 219 | 600 |
| 1 | 2300 | 14 |
| 2 | 90 | 100 |
| 3 | 1327 | 580 |
| 4 | 1952 | 96 |

What are the physical addresses for the following logical addresses?

* 1. 0, 430
     1. 649
  2. 1, 10
     1. 2310
  3. 2, 500
     1. Invalid logical address (offset given exceeds length of segment)
  4. 3, 400
     1. 1727
  5. 4, 112
     1. Invalid logical address (offset given exceeds length of segment)

1. (10 points) Assuming a 1 KB page size, what are the page numbers and offsets for the following address references (provided as decimal numbers): 1page = 1024
   1. 2375
      1. 2, 327
   2. 19366
      1. 18, 934
   3. 30000
      1. 29, 304
   4. 256
      1. 0, 256
   5. 16385
      1. 16, 1
2. (10 points) Consider a logical address space of 32 pages with 1024 Bytes per page; mapped onto a physical memory of 16 frames.
   1. How many bits are required in the logical address?

2^a = 1024 bytes/pg a=10 (10bits)

2^x = 32 pages x=5 (5bits)

10+5 = 15 bits required for logical address

* 1. How many bits are required in the physical address?

2^b = 1024 bytes/pg b=10 (10bits)

2^y = 16 frames y=4 (4bits)

10+4 = 14 bits required for physical address