Problem Set

1. Consider a logical address space of 64 pages of 1,024 words each, mapped onto a physical memory of 32 frames.

a. How many bits are there in the logical address

b. How many bits are there in the physical address?

2. Given five memory partitions of 100-KB, 500-KB, 200-KB, 300-KB, and 600-KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212-KB, 417-KB, 112-KB, and 426-KB (in order)? Which algorithm makes the most efficient use of memory?

3. Assuming a 1-KB page size, what are the page numbers and offsets for the following address references (provided as decimal numbers):

    a) 2375   b) 19366

4. 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?

a) 0, 430   b) 1, 10   c) 2, 500

6. How many page faults occur using the LRU, FIFO and Optimal replacement algorithms for the following reference string with three page frames? Show how pages are populated in physical frames over time, and indicate where page faults occur, for each of the algorithm.

    1,2,3,4,1,2,5,6,1,3,1,2,7,6,3,2,1,2,3,6