For each case below, suppose that a program reads the logical blocks of the file sequentially, one after the other, and that the time to position the head over the first block is $T_{\text{avg seek}} + T_{\text{avg rotation}}$.

A. *Best case:* Estimate the optimal time (in ms) required to read the file over all possible mappings of logical blocks to disk sectors.

B. *Random case:* Estimate the time (in ms) required to read the file if blocks are mapped randomly to disk sectors.

6.25 ◆

The following table gives the parameters for a number of different caches. For each cache, fill in the missing fields in the table. Recall that m is the number of physical address bits, C is the cache size (number of data bytes), B is the block size in bytes, E is the associativity, S is the number of cache sets, t is the number of tag bits, s is the number of set index bits, and b is the number of block offset bits.

Cache	m	C	B	E	S	t	s	b
1.	32	1,024	4	4	_____	_____	_____	_____
2.	32	1,024	4	256	_____	_____	_____	_____
3.	32	1,024	8	1	_____	_____	_____	_____
4.	32	1,024	8	128	_____	_____	_____	_____
5.	32	1,024	32	1	_____	_____	_____	_____
6.	32	1,024	32	4	_____	_____	_____	_____

6.26 ◆

The following table gives the parameters for a number of different caches. Your task is to fill in the missing fields in the table. Recall that m is the number of physical address bits, C is the cache size (number of data bytes), B is the block size in bytes, E is the associativity, S is the number of cache sets, t is the number of tag bits, s is the number of set index bits, and b is the number of block offset bits.

Cache	m	C	B	E	S	t	s	b
1.	32	_____	8	1	_____	21	8	3
2.	32	2,048	_____	_____	128	23	7	2
3.	32	1,024	2	8	64	_____	_____	1
4.	32	1,024	_____	2	16	23	4	_____

6.27 ◆

This problem concerns the cache in Practice Problem 6.12.

A. List all of the hex memory addresses that will hit in set 1.

B. List all of the hex memory addresses that will hit in set 6.

6.28 ◆◆

This problem concerns the cache in Practice Problem 6.12.

A. List all of the hex memory addresses that will hit in set 2.