1

The Translation Lookaside Buffer (TLB) is a hardware cache used to speed up virtual-to-physical address translation in memory management. It stores recently accessed page table entries, allowing the system to avoid looking up the page table in main memory for frequently accessed pages, which improves performance.

2

A global replacement policy allows any process to replace frames belonging to other processes, while a fixed allocation policy ensures that each process has a specific number of allocated frames. Combining these policies is not possible because fixed allocation prohibits the dynamic redistribution of frames between processes, which is essential for global replacement to function.

3

Demand cleaning: Pages are written to disk only when they are being evicted from memory, often resulting in higher latency during page eviction.

Precleaning: Pages are written to disk before they are evicted, typically during idle times, reducing the latency during eviction at the cost of potentially writing unnecessary pages.

4

A.

7	7			F
0	7	0		F
1	7	0	1	F
2	2	0	1	F
0	2	0	1	
3	3	0	1	F
0	3	0	1	
4	4	0	1	F
2	4	2	1	F
3	3	2	1	F
0	2	1	F	

3	0	3	1	F
2	0	3	2	F

B.

7	7			F
0	7	0		F
1	7	0	1	F
2	2	0	1	F
0	2	0	1	
3	3	0	1	F
0	3	0	1	
4	4	0	1	F
2	4	2	1	F
3	3	2	1	F
0	0	2	1	F
3	0	3	1	F
2	0	3	2	F