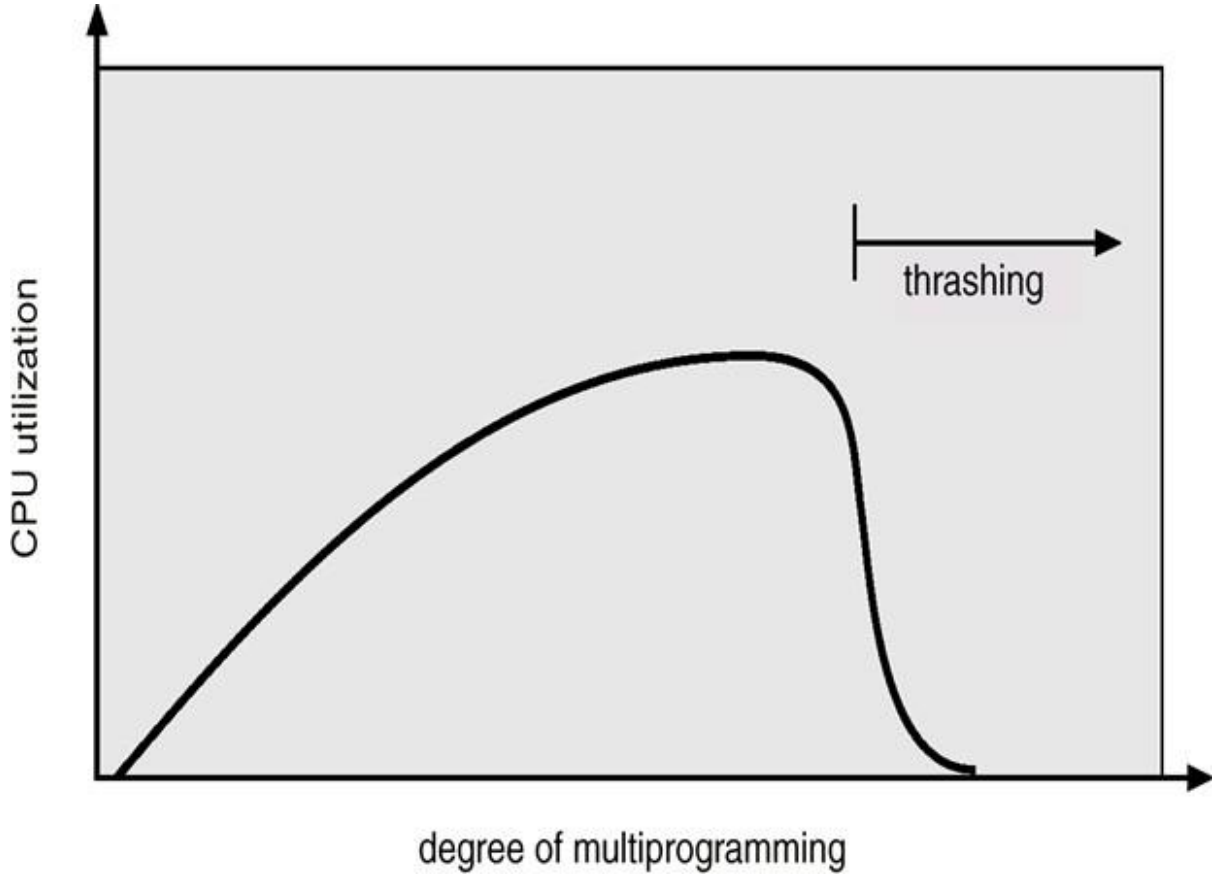
OPERATING SYSTEM
WEEK 12 ASSIGNMENT

1. What is Thrashing? When a process said to be thrashed and discuss the in details about the various solutions for thrashing?

- If a process does not have "enough" pages, the page-fault rate is very high.
  This leads to:low CPU utilization.
- operating system thinks that it needs to increase the degree of multiprogramming.
- another process added to the system.
- Thrashing º a process is busy swapping pages in and out.
- This high paging activity is called thrashing.
- A process is thrashing if it is spending more time paging than executing.



Image

```
while(true)
{
        /* produce an item in next produced */
        while (counter == BUFFER_SIZE) ;
                /* do nothing */
        buffer[in] = next_produced;
        in = (in + 1) % BUFFER_SIZE;
        counter++;
}
```

- We can limit the effects of thrashing by using a local replacement algorithm (or priority replacement algorithm).
- local replacement - if one process starts thrashing, it cannot steal frames from another process to thrash.
- This problem is not entirely solved. If processes are thrashing, they will be in the queue for the paging device most of the time.
- The average service time for a page fault will increase. Thus, the effective access time will increase even for a process that is not thrashing.

2. Given the reference to the following pages by a program 0, 9, 0, 1, 8, 1, 8, 7, 8, 7, 1, 2, 8, 2, 7, 8, 2, 3, 8, 3. There are 3 page frames in memory. Calculate the number of page faults occurs with respect to Optimal Page Replacement Algorithm and FIFO Page Replacement Algorithm.

0 9 0 1 8 1 8 7 8 7 1 2 8 2 7 8 2 3 8 3

			1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
	9	9	9	9	9	9	7	7	7	7	7	7	7	7	7	7	3	3	3
0	0	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
F	F	H	F	F	H	H	F	H	H	F	H	H	H	H	H	H	F	H	H

so total no. of page fault = 7