A PROPER PLAN ON HOW TO STUDY OPERATING SYSTEMS EFFECTIVELY

- Planning is the process of thinking about activities required to achieve a desired goal
- Desired goal :
  - Understand the basics of operating system
  - Score good marks in competitive exams like GATE
  - Pass your college semester exam of OS
  - Crack your interviews
- Activities:
  - Follow the order of the topics as I mention below
  - Understand what to study vs what to not
    - Studying for GATE vs studying for semester exam
    - Theory vs Examples
  - Ask questions whenever you have doubt - google it or ask in comments
  - Solve as much examples as you can
  - Pause the video and try to solve problem. Then watch my solution
  - Go slow. Don’t aim for just completing the playlist. Exception exists for college students who are just studying for passing it 😛. Otherwise, take your time.
  - Read my notes on each topic

- Before I go through the planned syllabus for OS, let me discuss what I expect from you
  - Subscribe if you like the content - positive feedback
  - Dislike and comment on the video - negative feedback
  - Issue with quality of the video or sound - comment
  - I will fix the issues and upload video again

CONTENTS

A. Process synchronisation

- a. **Race condition in operating system**
- b. **Critical section and critical section problem**
- c. **Software solution to critical section problem - Peterson solution and its drawbacks**
- d. **Hardware solution to critical section problem - test and set vs swap instruction solution**
- e. **Semaphore and mutex**
- f. **Spin lock vs mutex vs binary semaphore vs counting semaphore**
- g. **Producer consumer problem and its solution using mutex and semaphore**
- h. **Reader writer problem and its solution using mutex and semaphore**

B. Deadlocks

- a. **What is deadlock and its characteristics**
- b. **How to detect deadlock**
- c. **Methods for handling and preventing deadlocks**

4. Memory management

A. Memory management techniques

- a. **Contiguous memory management techniques**
- b. **Fixed partitioning method vs variable partitioning**
- c. **First fit, next fit and best fit algorithms**
- d. **Logical address space vs physical address space**
- e. **Memory mapping and protection in contiguous memory management**
- f. **Noncontiguous memory management techniques**
- g. **Paging in operating system**
- h. **Pages, frames, page table concepts**
- i. **TLB in operating system**
- j. **Memory protection in paging**
- k. **Segmentation memory management technique**

B. Virtual memory management

- a. **What is virtual memory and virtual memory management**
- b. **Demand paging in operating system**
- c. **Page replacement techniques**
- d. **FIFO vs Optimal vs LRU page replacement algorithm with**

    examples

e. **Frame allocation techniques and thrashing**

5. **Storage management**

    a. **File representation and operation on files**
    b. **Types of files**
    c. **Access methods for files**
    d. **Directory and its structure**
    e. **File protection**
    f. **How a file system is implemented**
    g. **Disk scheduling**
    h. **RAID levels**