

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - Operating Systems

Subject Co-ordinator - Prof. Sorav Bansal

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introductio to UNIX System Calls - Part 1  
Lecture 2 - Introductio to UNIX System Calls - Part 2  
Lecture 3 - Threads, Address Spaces, Filesystem Devices  
Lecture 4 - PC Architecture  
Lecture 5 - x86 Instruction Set, GCC Calling Conventions  
Lecture 6 - Physical Memory Map, I/O, Segmentation  
Lecture 7 - Segmentation, Trap Handling  
Lecture 8 - Traps, Trap Handlers  
Lecture 9 - Kernel Data Structures, Memory Management  
Lecture 10 - Segmentation Review, Introduction to Paging  
Lecture 11 - Paging  
Lecture 12 - Process Address Spaces Using Paging  
Lecture 13 - Translation Lookaside Buffer, Large Pages, Boot Sector  
Lecture 14 - Loading the kernel, Initializing the Page table  
Lecture 15 - Setting up page tables for user processes  
Lecture 16 - Processes in action  
Lecture 17 - Process structure, Context Switching  
Lecture 18 - Process Kernel stack, Scheduler, Fork, Context-Switch, Process Control Block, Trap Entry and Return  
Lecture 19 - Creating the first process  
Lecture 20 - Handling User Pointers, Concurrency  
Lecture 21 - Locking  
Lecture 22 - Fine-grained Locking and its challenges  
Lecture 23 - Locking variations  
Lecture 24 - Condition variables  
Lecture 25 - Multiple producer, multiple consumer queue; semaphores; monitors  
Lecture 26 - Transactions and lock-free primitives read/write locks  
Lecture 27 - Synchronization in xv6  
Lecture 28 - More synchronization in xv6  
Lecture 29 - Demand Paging; Introduction to Page Replacement

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- Lecture 30 - Page Replacement, Thrashing
- Lecture 31 - Storage Devices, Filesystem Interfaces
- Lecture 32 - File System Implementation
- Lecture 33 - File System Operation
- Lecture 34 - Crash Recovery and Logging
- Lecture 35 - Logging in Linux ext3 filesystem
- Lecture 36 - Protection and Security
- Lecture 37 - Scheduling Policies
- Lecture 38 - Lock-free multiprocessor coordination, Read-Copy-Update
- Lecture 39 - Microkernel, Exokernel, Multikernel
- Lecture 40 - Virtualization, Cloud Computing, Technology Trends