

LINUX SYSTEM PROGRAMMING and INTERPROCESS COMMUNICATIONS

Prerequisite : Basic C Programming

MODULE 1: LINUX SYSTEM & IPC PROGRAMMING

CH1: INTRODUCTION TO UNIX/LINUX

- History of Unix/Linux
- Linux Layered Architecture
- Type of Kernels
- Micro and Monolithic kernel
- Different types of kernel structure
- Linux Bootup Sequence

CH3: FILE SYSTEM MANAGERMENTS

- File Systems – VFS
- File Systems Layouts
- Super Block & Inode Block
- Inode block Structure
- Device Special Files
- Types of File
- File descriptor table
- System calls Sequence
- System Vs Function Calls
- File related System Calls
- open(),read(),write(),close()
- stat(),lstat(),dup() etc.

CH5: FILE LOCKING PROGRAMMING

- File Control Operations
- Types of File Locking
- Advisory and Mandatory File locking
- fcntl() and flock()calls

CH7: THREADS AND MULTI-THREAD

- Threads on different O.S
- Why Threads in Linux
- Threads Vs Process
- Thread APIs
- Creation of Multithreading
- Performig Multiple operations using multi-threading

CH9: SIGNALS VS. INTERRUPTS

- Sources of Signals
- Diffrents type of Signals
- Actions of Signals
- Receiving a Signal

CH2: PROCESS MANAGERMENTS

- Program and Process
- Process Control Block (PCB)
- States Of Process
- Mode of Execution
- User mode and Kernel mode
- Context Switching
- Scheduling & Priority

CH4: PROCESS RELATED PROGRAMMING

- Process Creation by fork() amd vfork()
- Why fork() not vfork()
- Details of struct task_struct
- Creation and Destroying Zombie Process
- Creation of Orphan Process
- wait() and waitpid() calls
- exit() and exec() ,sleep() calls
- Creating , synchronizing and performing multiprocessing concepts
- Setting and changing nice value and Priority no.

CH6: MEMORY MANAGERMENTS AND MMU

- Memory Policy and Hirarchy
- Details of struct mm_struct
- Memory allocation Technique
- Physical memory &Virtual Memory
- Paging & Demand paging
- Memory Mapping using TLB
- Swap in & Swap out
- Internal & External Fragmentation

CH8: PRIMITIVE INTERPROCESS COMM (IPCS)

- PIPES
- Creation of Half and Full-duplex
- Half and Full-duplex communication
- FIFO

CH10. SYSTEMS V IPCs

- Shared Memory
- Message Queues
- Semaphores

- Handling a Signal
- Signal System Calls

CH11: USER AND DAEMON PROCESS

- Creating a Daemon Process
- Characteristics of a Daemon
- Writing and Running Daemon

CH12: NETWORKANDSOCKET PROGRAMMING

- Description of ISO/OSI Model
- Types of IP Classes (A,B,C,D and E)
- Network addresses and Host addresses
- UDP Connectionless Oriented Socket
- TCP/IP Connection Oriented Socket
- Iterative Server-Client Programming
- Concurrent Server- Client Programming
- One Server and Many client Programming

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