OPERATING SYSTEMS INTERNALS

Course code: 13CS2204   **L   P   C**
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Pre requisites: Operating systems, Computer Networks, Android
Course Outcomes:
By the end of the course student will gain knowledge on
CO1: Understand UINIX O.S. Architecture and internals of Unix O.S.
CO2: Implement different system calls which explore networking and
       security Applications.
CO3: Understand the process and inner mechanism with processes
       security issues in operating system.
CO4: Implement Inter process communication mechanism
CO5: Implement android mobiles inner process system.

UNIT – I
Introduction to Kernel - Architecture of the UNIX operating system, System concepts, Data structures. Buffer Cache: Buffer header, Structure of Buffer pool, Reading and writing disk blocks. Files INODES, Structure of a regular file, Directories, Super block, Inode assignment. System calls - OPEN, Read, Close, Write, Create, CHMOD, CHOWN, Pipes, Mounting and Unmounting

UNIT – II
Process - Layout the system memory, Context, Process control, process creation, signals, Process scheduling, time, clock. Inter-Process Communications - Process tracing, System V IPC, Shared Memory, Semaphores.

UNIT – III
Network Communications - Socket programming: Sockets, descriptors, Connections, Socket elements, Stream and Datagram Sockets.

UNIT – IV
Windows Operating system - versions, Concepts and tools, Windows internals, System Architecture, Requirements and design goals, Operating system model, Architecture overview.

Key system components. System mechanisms - Trap dispatching, object manager, Synchronization, System worker threads, Windows global flags, Local procedural calls, Kernel event tracing.

UNIT – V
what is android, basic building blocks – activities, services, broadcast receivers & content, ui components- views & notifications, components for communication -intents & intent filters, android api levels launching emulator editing emulator settings emulator shortcuts log cat usage, Applications of Android.

TEXT BOOKS:

1. Maurice J. Bach: "The Design of the Unix Operating System", Prentice Hall of India, 1991.

2. Mark E. Russinovich and David A. Solomon: "Microsoft® Windows® Internals", 4th Edition, Microsoft Press, 2004.

REFERENCES:

1. W. Stallings: "Operating Systems: Internals and Design Principles", 5th Edition, Prentice Hall, 2005.

2. A. Tanenbaum, A. Woodhull: "Operating Systems Design and Implementation", 3rd Edition, Prentice Hall, 2006.