UNIX NETWORK PROGRAMMING
(Common for CSE & IT)

Course Code : 15CT1133

L	T	P	C
3	0	0	3

Pre-requisites:

UNIX Shell Programming

Course Outcomes:

At the end of the Course, the Student will be able to:

CO 1 Identify interfaces and frameworks for developing network applications.

CO 2 Develop programs for data communication using socket functions.

CO 3 Implement functioning of TCP echo server.

CO 4 Write UDP Client Server programs using socket functions.

CO 5 Develop programs for inter-process communication.

UNIT-I **(9 Lectures)**

INTRODUCTION TO NETWORK PROGRAMMING:

OSI model, TCP and UDP, TCP connection establishment and termination, Buffer sizes and limitations, Standard Internet services, Protocol usage by common internet applications.

UNIT-II **(12 Lectures)**

SOCKETS:

Address structures, Value – result arguments, Byte ordering and manipulation functions and related functions. Elementary TCP sockets– socket, connect, bind, listen, accept, fork and exec functions, concurrent servers, close function and related functions.

UNIT-III (11 Lectures)

TCP CLIENT SERVER EXAMPLE&I/O MULTIPLEXING:

Introduction, TCP Echo server and client functions, Normal startup and Termination, Signal handling, Server process termination, Crashing and Rebooting of server host, Shutdown of server host. I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server.

UNIT-IV (10 Lectures)

ELEMENTARY UDP SOCKETS&ELEMENTARY NAME AND ADDRESS CONVERSIONS:

Introduction, recvfrom and send to functions, UDP Echo server and client functions, Lost datagrams, Lack of flow control with UDP, determining outgoing interface with UDP, DNS, gethostbyname function, Resolver option, gethostbyname2 function and IPV6 support, getserverbyname and getservbyport functions.

UNIT-V (8 Lectures)

IPC:

Introduction, File and record locking, Pipes, FIFOs, streams and messages, Message queues, Semaphores, Shared memory.

TEXT BOOKS:

1. W.Richard Stevens, "UNIX Network Programming, Sockets API", Volume I, 3rdEdition, PHI, 2010.
2. W.Richard Stevens, "UNIX Network Programming, VolumeII", 1stEdition, PHI, 2009.

REFERENCES:

1. T Chan, "UNIX Systems Programming using C++", 1stEdition, PHI, 2010.
2. Graham Glass, King abls, "UNIX for Programmers andUsers", 3rdEdition, Pearson Education, 2010.
3. M. J. Rochkind, "Advanced UNIX Programming", 2nd Edition, Pearson Education, 2008.