NETWORK PROGRAMMING LAB

Course	Code :13IT1108	L	Τ	Р	C
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Course Educational Objectives:

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To teach the students how to write programs that communicates with other programs across a computer network.

- The student shall be able to write their own network programs in UNIX.
- To provide an opportunity to do network programming using TCP sockets.
- To provide an opportunity to do network programming using UDP sockets.
- To provide to do IPC programs.
- To learn about socket programming

Course Outcomes:

At the end of the lab course the students will be able to

- Achieve a deep understanding of the protocol stack in widely available computer networks.
- Enable the students to consider programming client/server systems over transport layer protocols.
- Understand the functionality of network layers in detail, with the potential to eventually develop or implement simple versions of tasks like packetization, control flow, error correction, network flow control and security.
- To design client server application using protocols
- To know about shared memory concept

LIST OF EXPERIMENTS:

1. Design TCP iterative Client and Echo server application to given input sentence.

- 2. Design TCP iterative Client and server application to reverse the given input sentence
- 3. Design TCP client and server application to transfer file.
- 4. Design a TCP concurrent server to convert a given text into upper case using multiplexing system call "select".
- 5. Design a TCP concurrent server to echo given set of sentences using poll functions
- 6. Design UDP Client and server application to reverse the given input sentence
- 7. Design UDP Client server to transfer a file
- 8. Implement the following forms of IPC.
 - a. Pipes
 - b. FIFO
- 9. Implement file transfer using Message Queue form of IPC
- 10. Write a program to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions
- 11. Design using poll client server application to multiplex TCP and UDP requests for converting a given text into upper case.
- 12. Design a RPC application to add and subtract a given pair of integers

TEXT BOOKS:

- 1. W.Richard Stevens, "UNIX Network Programming, Sockets API, Volume I", 3rd Edition, Pearson Education, 2004.
- 2. W.Richard Stevens, "UNIX Network Programming, Volume II", 1st Edition, PHI, 2010.

REFERENCES:

- 1. T Chan, "UNIX Systems Programming using C++", 1st Edition, PHI, 2010.
- 2. Graham Glass, King abls, "UNIX for Programmers and Users", 3rd Edition, Pearson Education, 2010.
- 3. M. J. Rochkind, "*Advanced UNIX Programming*", 2nd Edition, Pearson Education, 2008