SARDAR RAJA COLLEGE OF ENGINEERING,
ALANGULAM

DEPARTMENT OF COMPUTER APPLICATIONS

MICRO LESSON PLAN

SUBJECT	**:**	**NETWORK PROGRAMMING**
CODE	**:**	**MC9241**
CLASS	**:**	**II MCA / IV SEM**

STAFF: Mr. M.Thirumeni, Asst.Prof,

DEPT. OF MCA.

MC7404 NETWORK PROGRAMMING L T P C

3 0 0 3

UNIT I INTRODUCTION 9

Overview of UNIX OS - Environment of a UNIX process - Process control – Process relationships Signals – Interprocess Communication- overview of TCP/IP protocols

UNIT II ELEMENTARY TCP SOCKETS 9

Introduction to Socket Programming –Introduction to Sockets – Socket address Structures – Byte ordering functions – address conversion functions – Elementary TCP Sockets – socket, connect, bind, listen, accept, read, write , close functions – Iterative Server – Concurrent Server.

UNIT III APPLICATION DEVELOPMENT 9

TCP Echo Server – TCP Echo Client – Posix Signal handling – Server with multiple clients – boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) – poll function – TCP echo Client (with Multiplexing)

UNIT IV SOCKET OPTIONS, ELEMENTARY UDP SOCKETS 9

Socket options – getsocket and setsocket functions – generic socket options – IP socketoptions – ICMP socket options – TCP socket options – Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP and UDP sockets – Domain name system – gethostbyname function – Ipv6 support in DNS – gethostbyadr function –getservbyname and getservbyport functions.

UNIT V ADVANCED SOCKETS 9

Ipv4 and Ipv6 interoperability – threaded servers – thread creation and termination – TCP echo server using threads – Mutexes – condition variables – raw sockets – raw socket creation – raw socket output – raw socket input – ping program – trace route program.

TOTAL: 45 PERIODS

REFERENCES

1. W. Richard Stevens, B. Fenner, A.M. Rudoff, “Unix Network Programming – The Sockets Networking API”, 3rd edition, Pearson, 2004. 2. W. Richard Stevens, S.A Rago, “Programming in the Unix environment”, 2nd edition, Pearson, 2005.

SUBJECT DESCRIPTION AND OBJECTIVES

COURSE OBJECTIVES

1. To understand interprocess and inter-system communication
2. To understand socket programming in its entirety
3. To understand usage of TCP/UDP / Raw sockets
4. To understand how to build network applications

COURSE OUTCOMES

1. To write socket API based programs
2. To design and implement client-server applications using TCP and UDP sockets
3. To analyze network programs

MICRO LESSON PLAN

Hours	LECTURE TOPICS	READING
UNIT I - INTRODUCTION		
1	Overview of UNIX OS	R1
2	Environment of a UNIX process	R1
3	Environment of a UNIX process	R1
4	Process control	R1
5	Process control	R1
6	Process relationships Signals (AV Class)	R1
7	Process relationships Signals	R1
8	Interprocess Communication	R1
9	overview of TCP/IP protocols (AV Class)	R1
UNIT II – ELEMENTARY TCP SOCKETS		
10	Introduction to Socket Programming	R1
11	Introduction to Sockets	R1
12	Socket address Structures (AV Class)	R1
13	Byte ordering functions	R1
14	Address conversion functions	R1
15	Elementary TCP Sockets	R1
16	Socket, connect, bind, listen, accept, read, write , close functions (AV Class)	R1
17	Iterative Server	R1
18	Concurrent Server	R1
UNIT III - APPLICATION DEVELOPMENT		
19	TCP Echo Server	R1
20	TCP Echo Client	R1
21	Posix Signal handling	R1
22	Server with multiple clients (AV Class)	R1
23	Boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown	R1
24	I/O multiplexing	R1
25	I/O Models (AV Class)	R1
26	Select function – shutdown function	R1
27	TCP echo Server (with multiplexing) – poll function – TCP echo Client (with Multiplexing)	R1
UNIT IV - SOCKET OPTIONS, ELEMENTARY UDP SOCKETS		
28	Socket options	R1
29	getsocket and setsocket functions	R1
30	generic socket options	R1
31	IP socketoptions – ICMP socket options	R1
32	TCP socket options – Elementary UDP sockets	R1
33	UDP echo Server – UDP echo Client (AV Class)	R1
34	Multiplexing TCP and UDP sockets	R1

35	Domain name system – gethostbyname function – Ipv6 support in DNS –	**R1**
36	gethostbyadr function –getservbyname and getservbyport functions.	**R1**
UNIT V - ADVANCED SOCKETS		
37	Ipv4 and Ipv6 interoperability	**R1**
38	Threaded servers – Thread creation and termination	**R1**
39	TCP echo server using threads	**R1**
40	Mutexes – condition variables	**R1**
41	raw sockets	**R1**
42	raw socket creation	**R1**
43	raw socket output (AV Class)	**R1**
44	raw socket input – ping program	**R1**
45	Trace route program.	**R1**