**UNIT-5 Pipes and Message queue**

1. Explain the kernel data structure for Message queue with a neat diagram. Also explain the APIs associated for message queue with an example program [15]

2.What are pipes ? Explain their limitations. Explain how pipes are created and used in IPC with an example programs [15]

3Compare the IPC functionality provided by pipes and message queues. What are the advantages and drawbacks of each? Explain briey. [15]

4. (a) What are the security problems associated with system V IPC mechanisms?

(b) Write a program to illustrate client/server application using named pipes.[7+8]

5 A) Write a C program to create a message queue with read and write permissions and write 3 messages to it with different priority numbers.

B)Write a C program that receives the messages from the above message queue and display them.

6 .a) What are the disadvantages of pipes? Write a program to implement client-server system using named pipes.

b) What are the drawbacks of System V IPC mechanisms? [15]

**UNIT-6 Shared memory, Semaphores**

1. Explain the kernel data structure for shared memory with a neat diagram. Also explain the APIs associated for creating and destroying a shared memory with example.
2. Explain the kernel data structure for semaphores with a neat diagram. Also explain the APIs associated for semaphores with example
3. (a) Explain similarities and dissimilarities between the semaphore and shared

memory IPC Mechanisms.

(b) Write and explain a program to transfer large amount of data between two

unrelated processes using shared memory. [7+8]

1. A)Write a C program to create a shared memory and store username and mobile number details

B)Write a C program to use the shared memory created by the above program and print the mobile number of a given username by searching the shared memory

5. a.Write in detail on kernel data structures for semaphores.

b. Write in detail on kernel data structures for semaphores

**UNIT-7 -Multithreading**

1. Write in detail about how threads can be synchronized using semaphores and mutex primitives with example code [15 M]
2. a) Differentiate between multithreaded programming and single threaded programming.

b) Explain thread synchronization with semaphores with example . [6+9]

3a)Explain the differences between thread and process

b) List and explain various POSIX APIs for mutex locks manipulation with example program

4 Illustrate pthread create( ) and pthread kill( ) function prototypes with an example.

5a)Write briefly on POSIX threads

b)Write briefly on thread synchronization woth semaphores

**UNIT-8- SOCKETS**

1Explain a stream socket with a illustrative example for client/server program. [15]

(OR)

Write in detail about how client and server programs can be developed in using TCP based system calls

2Explain a datagram socket with a illustrative example for client/server program. [15]

(OR)

Write in detail about how client and server programs can be developed in using UDP based system calls

3 Explain the sequence of steps to process various socket functions using TCP protocol with example [15]

4. Write a c program to implement echo server and echo client on port number 1234 using connection oriented system calls.

5 Explain briey about the following socket APIs with clear syntax:

(i) socket( ) (ii) bind( ) iii) listen( ) (iv) accept( ) (v)connect( )

6 (a) Explain how TCP connections are established and terminated.

(b) Write notes on byte ordering functions. [7+8]

7(a) How TCP NODELAY option is used while sending small packets?

(b) Explain how a client running on IPV4 con\_gured host communication with a

server in IPV6 host? [6+9]

8(a) De\_ne the three states of TCP connection establishment and termination.

(b) Write a program to illustrate bind( ), listen( ) and accept( ) system calls.

[6+9]

.