Learning Report-Linux Operating System Programming

GLOBAL ENGINEERING ACADEMY

Genesis

L&T Technology Services

Ver. Rel. No.	Release Date	Prepared. By	Reviewed By	Approved By	Remarks/Revision Details
1	1/3/21	99003543	99003539, 99003551		
2	2/3/21	99003543	99003531, 99003554		
3	3/3/21	99003543			

Document History

Contents

Activity 1:

Type of Activity: Individual
Goal of Activity: Familiarization and practice of Linux OS Architecture

Topics covered: GCC & Build Process, Utilities, Static & Dynamic Libraries, Make file creation
Learning Outcomes: Performed different functions along with test code & Make file, Link the static & shared libraries with test code
Challenges: Difficulties in the implementation of static & Dynamic make file
LearningResources:-
https://web.microsoftstream.com/channel/04fdad23-021c-4e64-bb7c-06b2469801f9

References:

https://www3.ntu.edu.sg/home/ehchua/programming/cpp/gcc_make.html

Activity 2:

Familiarization and perform operations using System calls, Signals and Processes

Type of Activity: Individual

Goal of Activity: To get practiced and understand programs using System calls, Signals and Processes

Topics covered: System calls**,** Signals, Scheduling, Context Switch, Process related commands

Learning Outcomes: Implemented the working of Stages in scheduling of processes, Zombie processes system calls and signals, Context switch and structure of Linux OS

Challenges: Implementing and remembering of System calls and Processes related commands

Learning Resources:

https://linuxhint.com/linux-exec-system-call/

https://www.csl.mtu.edu/cs4411.ck/www/NOTES/process/fork/create.html

https://www.csl.mtu.edu/cs4411.ck/www/NOTES/process/fork/create.html

Understanding Zombie Processes!

References:

https://linuxhint.com/linux-exec-system-call/

Git-hub link

https://github.com/AiswaryaPS/Linux--OS

Activity 3:

Understanding and practicing of IPC

Type of Activity: Individual

Goal of Activity: To get practiced and understanding IPC concepts

Topics covered: IPC, Semaphores, Mutex, Files, Race condition, Sequencing, Context switching. Critical condition

Learning Outcomes: Implemented the working of mutex and semaphores of Linux OS and implementing the concepts to prevent race condition and scheduling issues

Challenges: Implementing and remembering of commands

Learning Resources:

Operating System #25 How to Implement Locking: Software Solutions

Operating System #25 How to Implement Locking: Software Solutions

Operating System #28 Mutexes, Thundering Herd Problem

References:

https://opensource.com/article/20/10/linux-kernel-interrupts

https://www.cs.cmu.edu/afs/cs/academic/class/15492-f07/www/pthreads.html

Activity 4:

Understanding and practicing of IPC

Type of Activity: Individual

Goal of Activity: To get practiced and understanding IPC concepts

Topics covered: IPC, Semaphores, Mutex, Files, Race condition, Sequencing, Context switching. Critical condition

Learning Outcomes: Implemented the working of mutex and semaphores of Linux OS and implementing the concepts to prevent race condition and scheduling issues

Challenges: Implementing and remembering of commands

Learning Resources:

https://www.guru99.com/semaphore-in-operating-system.html

References:

https://www.guru99.com/semaphore-in-operating-system.html

Activity 5:

Understanding and practicing Message queue & pipe

Type of Activity: Individual

Goal of Activity: To get practiced and understanding Pipes

Topics covered: Deadlock, Producer-consumer problem, Inline inputs, Shared memory

Learning Outcomes: Implemented and understanding of queue and pipe concept

Challenges: Implementing and remembering of commands

Learning Resources:

- https://www.geeksforgeeks.org/ipc-using-message-queues/

References:

- https://www.tutorialspoint.com/inter_process_communication