PESIT Bangalore South Campus

10CS62: UNIX SYSTEM PROGRAMMING

Faculty: Mrs. Pooja Agarwal /Mrs. Ciji **No. of Hrs Specified: 56**

Objective : The goal of this course is to provide a thorough understanding of the basics of UNIX operating system, an introduction to ANSI C & C++ standards and also the X open standards.

The objective is to understand the UNIX & POSIX API's and file systems, processes, signals, daemon process and Interprocess communication.

Lecture plan

Class No.	Chapter Title /Reference Literature	Topics to be covered	% of portions to be covered	
			Ref. Chap.	Cumul-ative
1.	**UNIT I**	The ANSI C standard, The ANSI/ISO C++ standard	**8.02%**	**8.02%**
2.		Differences between ANSI C and C++, The POSIX standards		
3.	**INTRODUCTION**	The POSIX.1 FIPS standard, The X/OPEN standards		
4.	T1: Chapters 1, 5	The POSIX APIs, The UNIX and POSIX development environment, API common characteristics		
5.	**UNIT – II**	File types, UNIX and POSIX file systems, file attributes	**8.02%**	**16.04%**
6.	**UNIX Files**	Inodes in UNIX System V, Application program interface to files		
7.	T1: Chapter 6	UNIX kernel support for files, Relationship of C stream pointers and file descriptors		
8.		Directory files, Hard and symbolic links		
9.		General File APIs	**23.21%**	**39.25%**

Class No.	Chapter Title /Reference Literature	Topics to be covered	% of portions to be covered	
			Ref. Chap.	Cumul-ative
10.	**UNIT – III** **UNIX File APIs** T1: Chapter 7	General File APIs contd..		
11.		General File APIs contd..		
12.		General File APIs contd..		
13.		General File APIs contd..		
14.		General File APIs contd..		
15.		General File APIs contd..		
16.		General File APIs contd..		
17.		General File APIs contd..		
18.		File and Record locking		
19.		Directory file APIs		
20.		Device file APIs		
21.		FIFO file APIs, symbolic link file APIs		
22.	**UNIT – IV** **UNIX Processes** T1: Chapter 7 T2: Chapter 7	Introduction, main function, process termination, Command line arguments	**8.02%**	**47.27%**
23.		Environment list, Memory layout of a C program, shared libraries		
24.		Memory allocation, Environment variables, setjmp and longjmp functions		
25.		Getrlimit, setrlimit functions UNIX kernel support for processes		
26.	**UNIT – V** **Process Control** T2: Chapter 8,9	Process identifiers, fork, vfork functions	**17.85%**	**65.12%**
27.		Exit, wait, waitpid, wait3, wait4 functions		
28.		Race conditions, exec functions		
29.		Changing user Ids and group Ids		
30.		Interpreter files, sys function, process accounting		
31.		User identification, Process times		
32.		Terminal logins, network login		
33.		Process groups, sessions		
34.		Controlling terminal, tcgetgrp and tcsetgrp functions, job control		
35.		Shell execution of programs, Orphaned process groups		
36.	**UNIT – VI**	UNIX kernel support for signals	**12.5%**	**77.62%**

Class No.	Chapter Title /Reference Literature	Topics to be covered	% of portions to be covered	
			Ref. Chap.	Cumul-ative
37.	**Signals and Daemon Processes** T1: Chapter 9 T2: Chapter 13	Signal, signal mask, sigaction		
38.		SIGCHLD signal and waitpid function		
39.		Sigsetjmp and siglongjmp functions, kill, alarm		
40.		Internal timers,POSIX.1b timers		
41.		Daemon characteristics, coding rules		
42.		Error logging, Client-server model		
43.	**UNIT-III UNIX File APIs (Remaining Part)** T1: Chapter 7	General file class, Regfile class for regular files, dirfile class for directory files	**5.35%**	**82.97%**
44.		FIFO and Device file class		
45.		Symbolic link file class, file listing program		
46.	**UNIT – VII Interprocess Communication-1** T2: Chapter 15	Overview of IPC methods	**9%**	**91.97%**
47.		Pipes, popen, pclose functions		
48.		Coprocesses, FIFOs, System V IPC		
49.		Message Queues		
50.		Semaphores		
51.	**UNIT – VIII Interprocess Communication-2** T2: Chapter 15,17	Shared Memory	**8.03%**	**100%**
52.		Client Server properties		
53.		Stream pipes, passing file descriptors		
54.		Open Server version 1, Client Server connection functions		
55.	**Revision**	Revision and Question Paper Discussions		
56.		Revision and Question Paper Discussions		

Literature

Book Type	Code	Title & Author	Publication Info		
			Edition	Publisher	Year
Text Book	T1	**UNIX System Programming using C++ by** Terrence Chan	First	PHI	1999
Text Book	T2	**Advanced Programming in the UNIX Environment** W Richard Stevens	Second	PE	2005
Reference Book	R1	**The Design of the UNIX operating System** by Maurice.J.Bach		PE	1998
Reference Book	R2	**UNIX Internals** by Uresh Vahalia		PE	2001


PES
INSTITUTIONS
CSE