ALVA'S
Education Foundation

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Information Science and Engineering (IS)

Course Name : UNIX SYSTEM PROGRAMMING (15CS744)

Class : Semester 7 A

Mr Sharan Lional Pais,
Assistant Professor,

2019-20

1 . Faculty Details

Name	:	Mr Sharan Lional Pais
Qualification	:	BE, M.Tech
Department	:	IS
Permanent Address	:	Christa Kiran House, Marody Village, Belthangady, 574236, India
Phone Number	:	9740761015
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Specimen Signature	:	Sharan

HOD

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

(A Unit of Alva's Education Foundation)

Shobhavana Campus, Mijar-574225, Moodbidri, D.K

Phone: 08258-262725, Fax: 08258-262726

Affiliated to VTU Belagavi and Approved by AICTE, New Delhi, Recognized by Govt. of Karnataka

CALENDAR OF EVENTS (ODD SEMESTER 2019-20) BE & MBA

VISION

"Transformative education by pursuing excellence in Engineering and Management through enhancing skills to meet the evolving needs of the community"

MISSION

- To bestow quality technical education to imbibe knowledge, creativity and ethos to students community.
- To inculcate the best engineering practices through transformative education.
- To develop a knowledgeable individual for a dynamic industrial scenario.
- To inculcate research, entrepreneurial skills and human values in order to cater the needs of the society.

Week	Month	Days							Activities
		Mon	Tue	Wed	Thu	Fri	Sat	Sun	
1	July	29	30	31					29th : Commencement of III, V & VII-Sem BE
1	AUG				1	2	3	4	1st : Commencement of I - Sem BE 1th : Inauguration Program for I-Semester BE 1th to 14th : Induction Program for I-Sem BE 8th : Commencement of III - Sem MBA 12th :Bakrid 15th : Independence day
2		5	6	7	8	9	10	11	
3		12	13	14	15	16	17	18	
4		19	20	21	22	23	24	25	
5		26	27	28	29	30	31		
5	SEP							1	2nd : Varasiddhi Vinayaka Vratha 10th : Last day of Muharram 19th, 20th, 21st : I-IA Test for III, V, VII–Sem BE and III - Sem MBA 28th : Mahalaya Amavasye
6		2	3	4	5	6	7	8	
7		9	10	11	12	13	14	15	
8		16	17	18	19	20	21	22	
9		23	24	25	26	27	28	29	
10		30							
10	OCT		1	2	3	4	5	6	2nd : Gandhi Jayanthi 7th : Ayudhapooja 8th : Vijayadashami 24th, 25th, 26th : II-IA Test for III, V, VII–Sem BE and III - Sem MBA 29th : Deepavali
11		7	8	9	10	11	12	13	
12		14	15	16	17	18	19	20	
13		21	22	23	24	25	26	27	
14		28	29	30	31				
14	NOV					1	2	3	1st : Kannada Rajyothsava 15th : Kanakadasa Jayanthi 26th,27th,28th : III-IA Test for III, V, VII–Sem BE 29th : Last Working Day of I-Sem- BE 30th : Last Working Day of III, V, VII-Sem- BE
15		4	5	6	7	8	9	10	
16		11	12	13	14	15	16	17	
17		18	19	20	21	22	23	24	
18		25	26	27	28	29	30		
18	DEC							1	2nd , 3rd, 4th : III-IA Test for III - Sem MBA 5th : Last Working Day of III-Sem- MBA
19		2	3	4	5	6	7	8	

Approved by IQAC Chairman

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY
SHOBHAVANA CAMPUS, MIJAR, MOODBIDRI – 574 225
PHONE: 08258-262725 FAX: 08258-262726
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

Department Calendar of Events 2019-20 (Odd Sem)

S.No	Activities	Dates
1	Pre-placement training for Final Years	10/7/2019 to 20/08/2019
2	Commencement of III,V ,VII Semester	29/July/2019
3	Submission of Project Synopsis – Final Year	30/July/2019
4	Soft skill Training for V Semester	04/Aug/2019
5	Commencement of VII Semester	21/Aug/2019
6	Guest Talk	24/Aug/2019
7	External Screening of Project Synopsis	30/Aug/2019
8	Submission of 1st Assignment	31/Aug/2019
9	Tech Crunch 2019	06/Sep/2019
10	Technical Talk - I	14/Sep/2019
11	Technical Talk - II	17/Sep/2019
12	I IA Test fot III,V,VII Semester	18,19,20 Sep 2019
13	Workshop on Coding Skill	21/Sep/2019
14	Submission of 2nd Assignments	30/Sep/2019
15	Project Phase I	10 , 12 Sep 2019
16	Appathon 2K19	14/Oct/2019
17	Workshop on "HTML, PHP and DATABASE"	18/Oct/2019
18	II IA Test fot III,V,VII Semester	24,25,26 Oct 2019
20	Workshop on Hardware and Networking Concepts	9/Nov/2019
21	Submission of 3rd Assignments	15/Nov/2019
22	III IA Test fot III,V,VII Semester	26,27,28 Nov 2019
23	Last Working Day of III,V,VII Semester	30/Nov/2019

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INSTITUTION VISION STATMENT and MISSION STATMENT

VISION STAMENT

"Transformative education by pursuing excellence in engineering and management through enhancing skills to meet the evolving needs of the community"

MISSION STATMENTS

- To bestow quality technical education to imbibe knowledge, creativity and ethos to students community.
- To inculcate the best engineering practices through transformative education.
- To develop a knowledgeable individual for a dynamic industrial scenario.
- To inculcate research, entrepreneurial skills and human values in order to cater the needs of the society.

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Mijar, MOODBIDRI - 574 225

Dr. Dattathreya

NBA Coordinator

Dr. Peter Fernandes

PRINCIPAL
Principal
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K.

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DEPARTMENT INFORMATION SCIENCE & ENGINEERING

VISION and MISSION

VISION:

To Impart quality education and nurture students to become successful technocrats by achieving excellence in information science and engineering field for addressing the evolving needs of the industry as well as the society.

MISSION:

1) To provide quality technical education for preparing competent professionals in the Information technology field.
2) To provide the suitable infrastructure and environment that inculcates best engineering practices for the Socio-economic development of the society.
3) To foster the students to become successful technocrats to meet the global competency in the field of IT industry.
4) To develop entrepreneurship skills with active research and innovation by inculcating ethical values among students.

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PEOs and PSOs

DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

Program Educational Objectives (PEOs)

Graduates of the program will be able to,

1. Apply the principles of fundamental mathematics and Information Science & engineering to provide solutions to the real time problems.
2. Pursue higher education and engage in research to meet the challenges of the latest technologies.
3. Design and develop reliable software systems to satisfy the industrial needs through multidisciplinary projects.
4. Able to work in various IT related fields and contribute to the society.

Program Specific Outcomes (PSOs)

1. Apply the knowledge of computer networking, database and computations to provide the solutions to the real-world engineering problems.
2. Design, develop, test and maintain the software systems that satisfy the needs of the IT industry.
3. Develop programs and projects using modern software tools for industrial & scientific applications.

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

ef No: AIET/ISE/2019-20/ACAD/10

PERSONAL TIME TABLE

ACADEMIC YEAR		2019-20		NAME OF THE FACULTY			PROF. SHARAN L PAIS		
TIME / DAY	9.00 TO 9.50	9.50 TO 10.40	10.40 TO 11.00	11.00 TO 11.50	11.50 TO 12.40	12.40 TO 1.40	1.40 TO 2.30	2.30 TO 3.20	3.30 TO 5.30
MON	ADE		BREAK			LUNCH	USP		
TUE				ADE			USP		
WED				USP			ADE		
THU		USP			ADE LAB B1				
FRI		ADE					USP		
SAT		ADE LAB B2							

ACADEMIC LOAD

SLN	NAME OF THE SUBJECT	CONTACT HOURS	TOTAL UNITS
18CS33	ANALOG AND DIGITAL ELECTRONICS	05	10
18CSL37	ANALOG AND DIGITAL ELECTRONICS LABORATORY	06	06
15CS744	UNIX SYSTEM PROGRAMMING	05	10
ALISDBMS	DBMS	04	08
ALISCODE	CODERS CLUB	04	04

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

Ref No: AIET/ISE/2019-20/ACAD/02

CLASS TIME TABLE WITH EFFECT FROM 29/07/2019

Academic Year	Scheme	Semester	Section	Room No	Class Coordinator
2019-20	2015	VII	16IS	303	SHARAN L PAIS

Time / Day	9.00 To 9.50	9.50 To 10.40	10.40 To 11.00	11.00 To 11.50	11.50 To 12.40	12.40 To 1.40	1.40 To 2.30	2.30 To 3.20	3.30 To 5.30
MON	IMS	ML-B1 / WT LAB-B2				LUNCH	USP	SADP	TECHNICAL ACTIVITIES
TUE	ML	IMS	BREAK	WTA	SEMINAR GATE		USP	SADP	
WED	SADP	WTA		USP	ML		SEMINAR	IMS	
THU	IMS	USP		WTA	PROJECT GATE		ML	SADP	
FRI	ML	IMS		WTA	SADP		USP	ML(T)	
SAT	WTA	ML-B2 / WT LAB-B1							

Allocation of Subjects

Subjects			NAME OF THE FACULTY	FACULTY CODE
15CS71	WTA	WEB TECHNOLOGY AND ITS APPLICATIONS	VANYASHREE M	VM
15IS72	SADP	SOFTWARE ARCHITECTURE AND DESIGN PATTERNS	JAISHMA KUMARI B	JKB
15CS73	ML	MACHINE LEARNING	DR. ROOPALAKSHMI R	RL
15CS744	USP	UNIX SYSTEM PROGRAMMING	SHARAN L PAIS	SLP
15IS753	IMS	INFORMATION MANAGEMENT SYSTEM	SUDARSHANA K	SK
15CSL76	MLL	MACHINE LEARNING LABORATORY	DR. ROOPALAKSHMI R + NEW FACULTY 1	RL
15CSL77	WTL	WEB TECHNOLOGY LABORATORY WITH MINI PROJECT	VANYASHREE M + JAISHMA KUMARI	VM + JK
15ISP78	ISP	PROJECT PHASE 1 + SEMINAR	DR. ROOPALAKSHMI R + SUDARSHANA K	RL+SK

TIME TABLE COORDINATOR

H.O.D.
Dept. Of Information Science & Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

Principal
Alva's Institute of Engg. & Technology

6 . Course Information

6 . 1 . 1 Course Syllabus

Objectives: To enable students Title of the Course : UNIX SYSTEM PROGRAMMING **Subject Code :** 15CS744

Module 1

Introduction :

UNIX and ANSI Standards, The ANSI C Standard, The ANSI/ISO C++ Standards, Difference between ANSI C and C++, The POSIX Standards, The POSIX.1 FIPS Standard, The X/Open Standards, UNIX and POSIX APIs - The POSIX APIs, The UNIX and POSIX Development Environment, API Common Characteristics.

Module 2

UNIX Files and APIs :

File Types, The UNIX and POSIX File System, The UNIX and POSIX File Attributes, Inodes in UNIX System V, Application Program Interface to Files, UNIX Kernel Support for Files, Relationship of C Stream Pointers and File Descriptors, Directory Files, Hard and Symbolic Links, UNIX File APIs - General File APIs, File and Record Locking, Directory File APIs, Device File APIs, FIFO File APIs, Symbolic Link File APIs.

Module 3

UNIX Processes and Process Control :

The Environment of a UNIX Process: Introduction, main function, Process Termination, Command-Line Arguments, Environment List, Memory Layout of a C Program, Shared Libraries, Memory Allocation, Environment Variables, setjmp and longjmp Functions, getrlimit, setrlimit Functions, UNIX Kernel Support for Processes, Process Control: Introduction, Process Identifiers, fork, vfork, exit, wait, waitpid, wait3, wait4 Functions, Race Conditions, exec Functions, Changing User IDs and Group IDs, Interpreter Files, system Function, Process Accounting, User Identification, Process Times, I/O Redirection, Process Relationships: Introduction, Terminal Logins, Network Logins, Process Groups, Sessions, Controlling Terminal, tcgetpgrp and tcsetpgrp Functions, Job Control, Shell Execution of Programs, Orphaned Process Groups.

Module 4

Signals and Daemon Processes :

Signals - The UNIX Kernel Support for Signals, signal, Signal Mask, sigaction, The SIGCHLD Signal and the waitpid Function, The sigsetjmp and siglongjmp Functions, Kill, Alarm, Interval Timers, POSIX.lb Timers, Daemon Processes: Introduction, Daemon Characteristics, Coding Rules, Error Logging, Client-Server Model.

Module 5

Interprocess Communication :

Overview of IPC Methods, Pipes, popen, pclose Functions, Coprocesses, FIFOs, System V IPC, Message Queues, Semaphores, Shared Memory, Client-Server Properties, Stream Pipes, Passing File Descriptors, An Open Server-Version 1, Client-Server Connection Functions.

6 . Course Information

6 . 1 . 2 Text Books and Reference Books

TEXT BOOKS :

1 . Unix System Programming Using C++ - Terrence Chan, PHI, 1999.

2 . Advanced Programming in the UNIX Environment - W.Richard Stevens, Stephen A. Rago, 3nd Edition, Pearson Education / PHI, 2005.

REFERENCE BOOKS :

1 . The Design of the UNIX Operating System - Maurice.J.Bach, Pearson Education / PHI, 1987.

2 . Unix Internals - Uresh Vahalia, Pearson Education, 2001.

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INFORMATION SCIENCE AND ENGINEERING

Course Code: **15CS744**	**SEMESTER VII** Course Name: **UNIX SYSTEM PROGRAMMING**
Course Teacher: **Mr. Sharan Lional Pais**	

Course Outcomes: After studying this course, students will be able to:

CO Numbers	Course Outcomes	Blooms Level	Target Level
15CS744.1	**Classify** POSIX Standards and API Common Characteristics and **Differentiate** between Procedure oriented and Object oriented programming.	Understand (L2)	2
15CS744.2	**Illustrate** UNIX File System and different UNIX File types.	Understand (L2)	2
15CS744.3	**Apply** various process commands and Process Relationships.	Apply (L3)	2
15CS744.4	**Explain** the various UNIX signals with programs and Characteristics of Daemon Process.	Understand (L2)	2
15CS744.5	**Implement** Inter-process communications using the various methods like Pipes, FIFO and Message Queues	Apply (L3)	2

CO-PO/CO-PSO Mapping Matrix:

CO Numbers	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
15CS744.1	2	1	1										1		
15CS744.2	2	1	2	1	1								1		
15CS744.3	2	1	2	1	1								1	2	1
15CS744.4	2		2	2	1								2	1	
15CS744.5	2		2	1	1								2	1	
SUM	10	3	9	5	4								7	4	
AVG	2	1	1.8	1.3	1								1.4	1.3	1

CO-PO/CO-PSO Mapping Matrix Justification:

CO	POs	Level	Justification
15CS744.1	PO1	2	Students should understand the fundamentals of POSIX standards.
	PO2	1	Students should have an ability to analyse API characteristics.
	PO3	1	Students should design and develop programs using POSIX standards.
	PSO1	1	Students should have an ability to identify the characteristics of common APIs and map those to real world problems.
15CS744.2	PO1	2	Students should have fundamental knowledge on Unix file system

	PO2	1	Students are having an ability to identify different Unix fie system.
	PO3	2	Students should develop an ability to design algorithm for different Unix file types
	PO4	1	Students should design the program for different unix file system types.
	PO5	1	Students should apply the various techniques to design different Unix file system using modern Unix tool.
	PSO1	1	Students should have basic knowledge on Unix file system.
15CS744.3	PO1	2	Students should have knowledge on various process commands.
	PO2	1	Students should have an ability to analyze the relationship between the processes.
	PO3	2	Students should have an ability to develop various programs on Unix processes.
	PO4	1	The students should have a strong knowledge and analyze the results of various process command output.
	PO5	1	Students should use the tool to execute various process programs using C.
	PSO1	1	Students should have minimum knowledge on various processes in unix file system.
	PSO2	2	Students should have an ability to execute various process commands.
	PSO3	1	Students should be able to execute and analyse the respective programs
15CS744.4	PO1	2	Students should have a knowledge on Unix signals and its characteristics.
	PO3	2	Students should design various Unix signal programs.
	PO4	2	Students to conduct the experiments on Unix signals.
	PO5	1	Students should able to execute the programs on Unix signals.
	PSO1	2	Students have a moderate knowledge on unix signals.
	PSO2	1	Students should have an ability to execute the programs on unix signals.
15CS744.5	PO1	2	Students are having a fundamental knowledge on IPC methods.
	PO3	2	Students should design and develop various concepts like FIFO and Message Queue.
	PO4	1	Students should analyze the outputs of various client server properties.
	PO5	1	Students should have an ability to use a tool to demonstrate the IPC concepts.

	PSO1	2	Students should have an moderate knowledge on IPC
	PSO2	1	Students should have an ability to implement FIFO and message queues.

Course Teacher
Signature with date

IQAC Member
Signature with date

IQAC Chairman
Signature with date

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

4: AIET/ISE/19-20/ Acad/19

7TH SEMESTER PROVISIONALSTUDENT LIST (2019 – 2020)

SL NO	USN	STUDENT NAME
1	4AL15IS002	AISHWARYA M B
2	4AL15IS003	AKSHAY SHENOY
3	4AL15IS004	AKSHAYA SHENOY
4	4AL15IS010	H M MILANA
5	4AL15IS021	PAVAN R
6	4AL15IS034	REKHA HALLI YB
7	4AL16IS002	AMULYA
8	4AL16IS005	ANKITHA P
9	4AL16IS006	ANUSHA
10	4AL16IS007	APARNASHREE R
11	4AL16IS008	APOORVA R
12	4AL16IS009	CHANDANA N S
13	4AL16IS012	DARSHAN P B
14	4AL16IS013	DHEERAJ SHETTY
15	4AL16IS014	GAGANA G R N
16	4AL16IS015	GIRIJA R
17	4AL16IS016	GOWTHAMI H R
18	4AL16IS017	HANVITAA G
19	4AL16IS018	HEGDE AKSHAY R
20	4AL16IS021	K S VEDA
21	4AL16IS023	KRITHI K SHETTY
22	4AL16IS024	LIKITHA P
23	4AL16IS026	M RAMAKRISHNA
24	4AL16IS027	MANOHAR M GOWDA
25	4AL16IS029	MEGHANA NAIK
26	4AL16IS030	MOULYA M
27	4AL16IS031	NAGENDRA PRASAD S
28	4AL16IS033	NIKSHITA
29	4AL16IS034	PARINITHA K P
30	4AL16IS035	POOJA N
31	4AL16IS036	PRATHIKSHA
32	4AL16IS037	PRATHVI P SHETTY
33	4AL16IS038	PRIYANKA
34	4AL16IS039	PRIYANKA N
35	4AL16IS041	RAKESH KUMAR S R
36	4AL16IS042	RAKESH M R
37	4AL16IS046	SAILEELA R
38	4AL16IS047	SAMRUDDI SHETTY
39	4AL16IS048	SANJANA S SHETTY
40	4AL16IS050	SHETTY ASHIKA C
41	4AL16IS051	SHETTY TANVI S
42	4AL16IS052	SHREESHA BHAT
43	4AL16IS053	SUSHANTH S

(P.T.O)

44	4AL16IS054	TANAZ J SHAIKH
45	4AL16IS056	THARUNYA U P
46	4AL16IS057	TRUPTHI C
47	4AL16IS059	M MANJUSHA
48	4AL16IS060	NITHIN M
49	4AL16IS061	RACHANA T
50	4AL16IS062	TANUJA H B
51	4AL16IS063	MOUNA R
52	4AL17IS400	SAINATH B ACHARYA

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Mijar, MOODBIDRI - 574 22

6 . Course Information

6 . 2

Semester : 7 **Section : A** **Course : UNIX SYSTEM PROGRAMMING**

Period	Planned			Execution		
	Date	Topic	Source material to be referred	Date	Topic	Source material to be referred
			1			
1	2019-08-19	UNIX and ANSI Standards, The ANSI C Standard	Text 1, Text 2,	2019-08-19	UNIX and ANSI Standards, The ANSI C Standard	Text 1, Text 2,
2	2019-08-20	The ANSI/ISO C++ Standards, Difference between ANSI C and C++	Text 1, Text 2,	2019-08-20	The ANSI/ISO C++ Standards, Difference between ANSI C and C++	Text 1, Text 2,
3	2019-08-21	The POSIX Standards	Text 1, Text 2,	2019-08-21	The POSIX Standards	Text 1, Text 2,
4	2019-08-22	The POSIX.1 FIPS Standard	Text 1, Text 2,	2019-08-22	The POSIX.1 FIPS Standard	Text 1, Text 2,
5	2019-08-23	The X/Open Standards	Text 1, Text 2,	2019-08-23	The X/Open Standards	Text 1, Text 2,
6	2019-08-26	UNIX and POSIX APIs - The POSIX APIs	Text 1, Text 2,	2019-08-26	UNIX and POSIX APIs - The POSIX APIs	Text 1, Text 2,
7	2019-08-27	The UNIX and POSIX Development Environment	Text 1, Text 2,	2019-08-27	The UNIX and POSIX Development Environment	Text 1, Text 2,
8	2019-08-28	API Common Characteristics.	Text 1, Text 2,	2019-08-28	API Common Characteristics.	Text 1, Text 2,
			2			
9	2019-08-30	File Types, The UNIX and POSIX File System	Text 1, Text 2,	2019-08-29	File Types, The UNIX and POSIX File System	Text 1, Text 2,
10	2019-09-03	The UNIX and POSIX File Attributes, Inodes in UNIX System V	Text 2, Text 1,	2019-08-30	The UNIX and POSIX File Attributes, Inodes in UNIX System V	Text 2, Text 1,
11	2019-09-04	Application Program Interface to Files, UNIX Kernel Support for Files	Text 1, Text 2,	2019-09-03	Application Program Interface to Files, UNIX Kernel Support for Files	Text 1, Text 2,
12	2019-09-05	Relationship of C Stream Pointers and File Descriptors, Directory Files	Text 1, Text 2,	2019-09-04	Relationship of C Stream Pointers and File Descriptors, Directory Files	Text 1, Text 2,
13	2019-09-06	Hard and Symbolic Links, UNIX File APIs - General File APIs	Text 1, Text 2,	2019-09-05	Relationship of C Stream Pointers and File Descriptors, Directory Files	Text 1, Text 2,
14	2019-09-09	File and Record Locking, Directory File APIs	Text 1, Text 2,	2019-09-06	Hard and Symbolic Links, UNIX File APIs - General File APIs	Text 1, Text 2,

15	2019-09-11	Device File APIs, FIFO File APIs	Text 1, Text 2,	2019-09-09	File and Record Locking, Directory File APIs	Text 1, Text 2,
16	2019-09-12	Symbolic Link File APIs.	Text 1, Text 2,	2019-09-11	Device File APIs, FIFO File APIs	Text 1, Text 2,
			3			
17	2019-09-16	The Environment of a UNIX Process: Introduction, main function, Process Termination, Command-Line Arguments, Environment List, Memory Layout of a C Program	Text 2, Text 1,	2019-09-12	Symbolic Link File APIs.	Text 1, Text 2,
18	2019-09-17	Shared Libraries, Memory Allocation, Environment Variables, setjmp and longjmp Functions, getrlimit	Text 1, Text 2,	2019-09-13	The Environment of a UNIX Process: Introduction, main function, Process Termination, Command-Line Arguments, Environment List, Memory Layout of a C Program	Text 2, Text 1,
19	2019-09-18	setrlimit Functions, UNIX Kernel Support for Processes, Process Control: Introduction, Process Identifiers, fork	Text 1, Text 2,	2019-09-16	Shared Libraries, Memory Allocation, Environment Variables, setjmp and longjmp Functions, getrlimit	Text 1, Text 2,
20	2019-09-23	vfork, exit, wait, waitpid, wait3	Text 1, Text 2,	2019-09-17	setrlimit Functions, UNIX Kernel Support for Processes, Process Control: Introduction, Process Identifiers, fork	Text 1, Text 2,
21	2019-09-24	wait4 Functions, Race Conditions, exec Functions, Changing User IDs and Group IDs, Interpreter Files	Text 1, Text 2,	2019-09-18	vfork, exit, wait, waitpid, wait3	Text 1, Text 2,
22	2019-09-25	system Function, Process Accounting, User Identification, Process Times, I/O Redirection	Text 1, Text 2,	2019-09-23	wait4 Functions, Race Conditions, exec Functions, Changing User IDs and Group IDs, Interpreter Files	Text 1, Text 2,
23	2019-09-26	Process Relationships: Introduction, Terminal Logins, Network Logins, Process Groups, Sessions	Text 1, Text 2,	2019-09-24	system Function, Process Accounting, User Identification, Process Times, I/O Redirection	Text 1, Text 2,
24	2019-09-27	Controlling Terminal, tcgetpgrp and tcsetpgrp Functions, Job Control, Shell Execution of Programs, Orphaned Process Groups.	Text 1, Text 2,	2019-09-25	system Function, Process Accounting, User Identification, Process Times, I/O Redirection	Text 1, Text 2,

			4			
25	2019-10-01	Signals - The UNIX Kernel Support for Signals, signal	Text 1, Text 2,	2019-09-26	Process Relationships: Introduction, Terminal Logins, Network Logins, Process Groups, Sessions	Text 1, Text 2,
26	2019-10-03	Signal Mask, sigaction	Text 1, Text 2,	2019-09-27	Process Relationships: Introduction, Terminal Logins, Network Logins, Process Groups, Sessions	Text 1, Text 2,
27	2019-10-04	The SIGCHLD Signal and the waitpid Function, The sigsetjmp and siglongjmp Functions	Text 1, Text 2,	2019-09-30	Controlling Terminal, tcgetpgrp and tcsetpgrp Functions, Job Control, Shell Execution of Programs, Orphaned Process Groups.	Text 1, Text 2,
28	2019-10-09	Kill, Alarm	Text 1, Text 2,	2019-10-01	Signals - The UNIX Kernel Support for Signals, signal	Text 1, Text 2,
29	2019-10-10	Interval Timers, POSIX.lb Timers	Text 1, Text 2,	2019-10-03	Signal Mask, sigaction	Text 1, Text 2,
30	2019-10-11	Daemon Processes: Introduction, Daemon Characteristics	Text 1, Text 2,	2019-10-09	The SIGCHLD Signal and the waitpid Function, The sigsetjmp and siglongjmp Functions	Text 1, Text 2,
31	2019-10-14	Coding Rules, Error Logging	Text 1, Text 2,	2019-10-10	Kill, Alarm	Text 1, Text 2,
32	2019-10-15	Client-Server Model.	Text 1, Text 2,	2019-10-14	Interval Timers, POSIX.lb Timers	Text 1, Text 2,
			5			
33	2019-10-17	Overview of IPC Methods, Pipes	Text 1, Text 2,	2019-10-15	Daemon Processes: Introduction, Daemon Characteristics	Text 1, Text 2,
34	2019-10-18	popen, pclose Functions	Text 1, Text 2,	2019-10-16	Coding Rules, Error Logging	Text 1, Text 2,
35	2019-10-21	Coprocesses, FIFOs	Text 1, Text 2,	2019-10-17	Client-Server Model.	Text 1, Text 2,
36	2019-10-22	System V IPC, Message Queues	Text 1, Text 2,	2019-10-18	Overview of IPC Methods, Pipes	Text 1, Text 2,
37	2019-10-23	Semaphores, Shared Memory	Text 1, Text 2,	2019-10-21	popen, pclose Functions	Text 1, Text 2,
38	2019-10-29	Client-Server Properties, Stream Pipes	Text 1, Text 2,	2019-10-22	Coprocesses, FIFOs	Text 1, Text 2,
39	2019-10-30	Passing File Descriptors, An Open Server-Version 1	Text 1, Text 2,	2019-10-23	System V IPC, Message Queues	Text 1, Text 2,
40	2019-10-31	Client-Server Connection Functions.	Text 1, Text 2,	2019-10-28	Semaphores, Shared Memory	Text 1, Text 2,
41	2019-11-01	Client-Server Connection Functions.	Text 1, Text 2,	2019-10-30	Semaphores, Shared Memory	Text 1, Text 2,
42	-	-		2019-10-31	Semaphores, Shared Memory	Text 1, Text 2,

43	-	-		2019-11-04	Client-Server Properties, Stream Pipes	Text 1, Text 2,
44	-	-		2019-11-05	Client-Server Properties, Stream Pipes	Text 1, Text 2,
45	-	-		2019-11-06	Client-Server Properties, Stream Pipes	Text 1, Text 2,
46	-	-		2019-11-07	Passing File Descriptors, An Open Server-Version 1	Text 1, Text 2,
47	-	-		2019-11-08	Passing File Descriptors, An Open Server-Version 1	Text 1, Text 2,
48	-	-		2019-11-08	Passing File Descriptors, An Open Server-Version 1	Text 1, Text 2,
49	-	-		2019-11-11	Client-Server Connection Functions.	Text 1, Text 2,
50	-	-		2019-11-12	Client-Server Connection Functions.	Text 1, Text 2,
51	-	-		2019-11-13	Revision Seminars	Text 1, Text 2,
52	-	-		2019-11-14	Revision Seminars	Text 1, Text 2,
53	-	-		2019-11-15	Revision Seminars	Text 1, Text 2,
54	-	-		2019-11-18	Revision Seminars	Text 1, Text 2,
55	-	-		2019-11-19	Revision Seminars	Text 1, Text 2,

6 . Course Information

6 . 2 . 2 CO PO Mapping

Slight (Low) = 1 , Moderate (Medium) = 2 , Substantial (High) = 3 .

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	1									
CO 2	2	1	2	1	1							
CO 3	2	1	2	1	1							
CO 4	2		2	2	1							
CO 5	2		2	1	1							

HOD

6 . Course

6 . 2 . 3 CO-PSO Mapping

Slight (Low) = 1 , Moderate (Medium) = 2 , Substantial (High) = 3 .

CO/PSO	PSO 2	PSO 3	PSO 1
CO 1			1
CO 2			1
CO 3	2	1	1
CO 4	1		2
CO 5	1		2

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
A unit of Alva's Education Foundation (R) Moodbidri
(Affiliated to VTU-Belagavi, Approved by AICTE-New Delhi, Recognised by Govt. of Karnataka)
ALVA'S Education Foundation
DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

SUBJECT / CODE : 15CS744 – UNIX System Programming

FACULTY INCHARGE: Mr. Sharan Lional Pais

ASSIGNMENT No. : 03

SL NO	QUESTIONS / TOPIC	CO ASSIGNED	B
1	What are Daemon processes? Explain with a heat diagram the error logging facility for a daemon process.	CO4	L2,
2	Explain Daemon Characteristics and Coding rules.	CO4	L2,
3	Write a C / C++ program to show the use of Alarm API.	CO4	L2,

4 : 5
2019-11-28 : -
: -
: Assignment-3

USN	Name	Assignment/quiz/ presentation/ seminar 1	Assignment/quiz/ presentation/ seminar 2	Assignment/quiz/ presentation/ seminar 3	Assignment/quiz/ presentation/ seminar 4
4AL15IS002	Aishwarya M B	5	5	5	5
4AL15IS003	Akshay Shenoy	5	5	5	5
4AL15IS004	Akshay Shenoy	5	5	5	5
4AL15IS010	H M Milana	5	5	5	5
4AL15IS021	Pavan R	5	5	5	5
4AL16IS002	Amulya	5	5	5	5
4AL16IS005	ANKITHA P	5	5	5	5
4AL16IS006	Anusha	5	5	5	5
4AL16IS007	APARNASHREE R	5	5	5	5
4AL16IS008	APOORVA R	5	5	5	5
4AL16IS009	CHANDANA N S	5	5	5	5
4AL16IS012	DARSHAN P B	5	5	5	5
4AL16IS013	DHEERAJ SHETTY	5	5	5	5
4AL16IS014	GAGANA G R NAYAKA	5	5	5	5
4AL16IS015	GIRIJA R	5	5	5	5
4AL16IS016	GOWTHAMI H R	5	5	5	5
4AL16IS017	Hanvitaa	5	5	5	5
4AL16IS018	HEGDE AKSHAY RAGHURAM	5	5	5	5
4AL16IS021	K S VEDA	5	5	5	5
4AL16IS023	KRITHI K SHETTY	5	5	5	5
4AL16IS024	LIKITHA P	5	5	5	5
4AL16IS026	M RAMAKRISHNA	5	5	5	5

USN	Name	Assignment/quiz/ presentation/ seminar 1	Assignment/quiz/ presentation/ seminar 2	Assignment/quiz/ presentation/ seminar 3	Assignment/quiz/ presentation/ seminar 4
4AL16IS027	MANOHAR M GOWDA Y K	5	5	5	5
4AL16IS029	MEGHANA NAIK	5	5	5	5
4AL16IS030	MOULYA M	5	5	5	5
4AL16IS031	NAGENDRA PRASAD S	5	5	5	5
4AL16IS033	NIKSHITA	5	5	5	5
4AL16IS034	PARINITHA K P	5	5	5	5
4AL16IS035	POOJA N	5	5	5	5
4AL16IS036	PRATHIKSHA	5	5	5	5
4AL16IS037	PRATHVI P SHETTY	5	5	5	5
4AL16IS038	PRIYANKA	5	5	5	5
4AL16IS039	PRIYANKA NINGARADDI	5	5	5	5
4AL16IS041	RAKESH KUMAR S R	5	5	5	5
4AL16IS042	RAKESH M R	5	5	5	5
4AL16IS046	SAILEELA R	5	5	5	5
4AL16IS047	SAMRUDDI SHETTY	5	5	5	5
4AL16IS048	SANJANA SHEKHAR SHETTY	5	5	5	5
4AL16IS050	SHETTY ASHIKA C	5	5	5	5
4AL16IS051	Shetty Tanvi Shridhar	5	5	5	5
4AL16IS052	SHREESHA B	5	5	5	5
4AL16IS053	SUSHANTH S	5	5	5	5

USN	Name	Assignment/quiz/ presentation/ seminar 1	Assignment/quiz/ presentation/ seminar 2	Assignment/quiz/ presentation/ seminar 3	Assignment/quiz/ presentation/ seminar 4
4AL16IS054	TANAZ JAMAL SHAIKH	5	5	5	5
4AL16IS056	THARUNYA U P	5	5	5	5
4AL16IS057	TRUPTHI C	5	5	5	5
4AL16IS059	M Manjusha	5	5	5	5
4AL16IS060	Nithin M	5	5	5	5
4AL16IS061	Rachana T	5	5	5	5
4AL16IS062	TANUJA H BENAKATTI	5	5	5	5
4AL16IS063	Mouna R	5	5	5	5
4AL17IS400	Acharya Sainath Balakrishna	5	5	5	5

HOD

6 . Course Information

6 . 4 Internal Assessment

Internal : 1

Semester:7-CBCS

Subject : UNIX SYSTEM PROGRAMMING (15CS744)

Faculty : Sharan Lional

Date : 19/09/2019

Time : 09:30 - 11:00

Max Marks: 30

		Answer Any 2 Questions			
1	a	What are the major difference between ANSI C and K&R C? Explain with Examples.	8	1	L2
1	b	Write a C++ program to check and dispaly the POSIX version constant of the system on which it is run.	7	1	L3
		OR			
2	a	Write a C/C++ POSIX compliant program to check the following limits: Number of clock ticks Number of real time signals Maximum number of operations in one listio Maximum size of a block of data that may be automatically read from or written to a pipe file	8	1	L3
2	b	List all the feature test macros along with their meaning and also list Error status code with their meaning	7	1	L2
3	a	Explain different file types available in UNIX/POSIX with different commands that operate on the files.	8	2	L2
3	b	Differentiate between hard links and symbolic links with examples.	7	2	L2
		OR			
4	a	Explain UNIX Kernel support for files with a neat diagram.	8	2	L2
4	b	List all the attributes of UNIX or POSIX file along with their meaning. Which are the attributes that remains unchanged for the entire life of the file.	7	2	L2

			Q1		Q2		Q3		Q4			
			a	b	a	b	a	b	a	b		
4AL16IS057	TRUPTHI C	P	8	7	0	0	0	0	8	7	30	Apply
4AL16IS036	PRATHIKSHA	P	8	5	0	0	6	5	0	0	24	Apply

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Information Science and Engineering (IS)

Internal : 2

Semester:7-CBCS

Subject : UNIX SYSTEM PROGRAMMING (15CS744)

Faculty : Sharan Lional

Date : 25/10/2019

Time : 15:00 - 16:30

Max Marks: 30

Answer Any 2 Questions

1	a	Write a C/C++ program to emulate the ln Command in UNIX.	8	2	L3
1	b	Explain the importance of file and record locking in UNIX. Show how "fcntl" API can be used for file and record locking.	7	2	L2
		OR			
2	a	Write a C/C++ program to emulate mv command in UNIX.	8	2	L3
2	b	Write the prototypes of the following : i) open ii) read iii) stat	7	2	L2
3	a	Explain the use of setjmp and longjmp functions with example.	8	3	L3
3	b	With related data structure explain the UNIX kernel support for process.	7	3	L2
		OR			
4	a	Explain the following: i) Memory layout of C program. ii) exit , _exit and _Exit .	8	3	L2
4	b	Explain how child process will be created using fork( ). Explain with example.	7	3	L3

			Q1		Q2		Q3		Q4			
			a	b	a	b	a	b	a	b		
4AL16IS057	TRUPTHI C	P	0	0	6	7	0	0	8	7	28	Apply
4AL16IS036	PRATHIKSHA	P	0	0	8	7	8	7	0	0	30	Apply
4AL16IS012	DARSHAN P B	P	8	7	0	0	8	7	0	0	30	Apply
4AL16IS016	GOWTHAMI H R	Ab	0	0	0	0	0	0	0	0	0	No Level
4AL16IS052	SHREESHA B	P	0	0	6	6	7	7	0	0	26	Apply
4AL17IS400	Acharya Sainath Balakrishna	P	6	7	0	0	8	7	0	0	28	Apply
4AL15IS003	Akshay Shenoy	P	0	0	8	7	8	7	0	0	30	Apply
4AL16IS018	HEGDE AKSHAY RAGHURAM	Ab	0	0	0	0	0	0	0	0	0	No Level

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Information Science and Engineering (IS)

Internal : 3

Semester:7-CBCS

Subject : UNIX SYSTEM PROGRAMMING (15CS744)

Faculty : Sharan Lional

Date : 27/11/2019

Time : 15:00 - 16:30

Max Marks: 30

Answer Any 2 Questions

1	a	What are signals? List any four signals along with brief explanation.Write a program to setup signal handler for SIGALRM and SIGINT signals.	7	4	L3
1	b	Discuss with an example,the client-server communication using FIFO.	8	5	L2
		OR			
2	a	Write a C/C++ program to illustrate the implementation of the Unix kill command using the Kill API.	7	4	L3
2	b	Explain Popen and Pclose functions.	8	5	L2
3	a	Define daemon process.Discuss the basic coding rues of the daemon process.	7	4	L2
3	b	What are pipes?Explain the diffrent ways to view a half duplex pipe.Write a program to create a pipe between a parent and its child and to send data down the pipe.	8	5	L3
		OR			
4	a	Explain sigaction function by giving the prototype and discuss the features.	7	4	L2
4	b	What are semaphores?What is their purpose?List and explain the API used to create and control the semaphores.	8	5	L2

			Q1		Q2		Q3		Q4			
			a	b	a	b	a	b	a	b		
4AL16IS057	TRUPTHI C	P	0	0	6	6	6	4	0	0	22	Apply
4AL16IS036	PRATHIKSHA	P	7	8	0	0	7	8	0	0	30	Apply
4AL16IS012	DARSHAN P B	P	0	0	6	6	6	7	0	0	25	Apply
4AL16IS016	GOWTHAMI H R	P	0	0	5	8	6	8	0	0	27	Apply
4AL16IS052	SHREESHA B	P	0	0	6	8	7	7	0	0	28	Apply

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Seventh semester B.E(ISE) – Internal - I

SCHEME OF EVALUATION

19th September - 2019

UNIX SYSTEM PROGRAMMING - 15CS744

1.	a)	2*4=8 Marks The major differences between ANSI C and K&R C [Kernighan and Ritchie] are as follows: • Function prototyping • Support of the const and volatile data type qualifiers. • Support wide characters and internationalization. • Permit function pointers to be used without dereferencing. **1. Function prototyping :** ANSI C adopts C++ function prototype technique where function definition and declaration include function names, arguments' data types, and return value data types. This enables ANSI C compilers to check for function calls in user programs that pass invalid number of arguments or incompatible arguments' data type. These fix a major weakness of K&R C compilers: invalid function calls in user programs often pass compilation but cause programs to crash when they are executed. Eg: ***unsigned long foo(char * fmt, double data)*** ***{ /*body of foo*/*** ***}*** External declaration of this function foo is unsigned long foo(char * fmt, double data); **2. Support of the const and volatile data type qualifiers:** The const keyword declares that some data cannot be changed. Eg: ***int printf(const char* fmt,.....);*** Declares a fmt argument that is of a const char * data type, meaning that the function printf cannot modify data in any character array that is passed as an actual argument value to fmt. Volatile keyword specifies that the values of some variables may change asynchronously, giving an hint to the compiler's optimization algorithm not to remove any "redundant" statements that involve "volatile" objects. eg: ***char get_io()*** ***{*** ***volatile char* io_port = 0x7777;*** ***char ch = *io_port; /*read first byte of data*/*** ***ch = *io_port; /*read second byte of data*/ }*** **3. Support wide characters and internationalisation :** ANSI C supports internationalisation by allowing C-program to use wide characters. Wide characters use more than one byte of storage per character. ANSI C defines the setlocale function, which allows users to specify the format of date, monetary and real number	8	CO1 L2

representations. For eg: most countries display the date in dd/mm/yyyy format whereas US displays it in mm/dd/yyyy format. Function prototype of setlocale function is:

#include<locale.h>

char setlocale (int category, const char* locale);

The setlocale function prototype and possible values of the category argument are declared in the <locale.h> header. The category values specify what format class(es) is to be changed. Some of the possible values of the category argument are: category value effect on standard C functions/macros .

4. Permit function pointers without dereferencing:

ANSI C specifies that a function pointer may be used like a function name. No referencing is needed when calling a function whose address is contained in the pointer.For Example, the following statement given below defines a function pointer funptr, which contains the address of the function foo.

extern void foo(double xyz,const int *ptr);
void (*funptr)(double,const int *)=foo;

The function foo may be invoked by either directly calling foo or via the funptr.

foo(12.78,"Hello world");
funptr(12.78,"Hello world");

K&R C requires funptr be dereferenced to call foo.

(* funptr) (13.48,"Hello usp");

1.	b)	7marks	7	CO1 L2

```
#define _POSIX_SOURCE
#define _POSIX_C_SOURCE 199309L
#include<iostream.h>
#include<unistd.h>
int main()
 {
  #ifdef _POSIX_VERSION
   cout << "System conforms to POSIX" << _POSIX_VERSION << endl;
  #else
   cout<<"_POSIX_VERSION undefined\n";
  #endif
  return 0;
 }
```

2	a	OR		
			8	CO1 L3

```
#define _POSIX_SOURCE
#define _POSIX_C_SOURCE 199309L
#include<stdio.h>
#include<iostream.h>
#include<unistd.h>

int main()
 {
  int res;

  if((res=sysconf(_SC_CLK_TCK))== -1)
    perror("sysconf");
  else
    cout << "CLK_TCK:" << res << endl;

  if((res=sysconf(_SC_RTSIG_MAX))== -1)
     perror("sysconf");
  else
     cout << "RTSIG_MAX:" << res << endl;

  if((res=sysconf(_SC_AIO_LISTIO_MAX))== -1)
     perror("sysconf");
  else
     cout << "AIO_LISTIO_MAX:" << res << endl;

  if((res=pathconf("/",_PC_PIPE_BUF))== -1)
     perror("pathconf");
  else
     cout << " Maximum size of a block of data:" << (res+1) << endl;

  return 0;
 }
```

2	b	3.5*2=7 Marks	7	CO L2

Various Feature Test Macros:

Feature test macro	Effects if defined
_POSIX_JOB_CONTROL	The system supports the BSD style job control.
_POSIX_SAVED_IDS	Each process running on the system keeps the saved set UID and the set-GID, so that they can change its effective user-ID and group-ID to those values via seteuid and setegid API's.
_POSIX_CHOWN_RESTRICTED	If the defined value is -1, users may change ownership of files owned by them, otherwise only users with special privilege may change ownership of any file on the system.
_POSIX_NO_TRUNC	If the defined value is -1, any long pathname passed to an API is silently truncated to NAME_MAX bytes, otherwise error is generated.
_POSIX_VDISABLE	If defined value is -1, there is no disabling character for special characters for all terminal device files. Otherwise the value is the disabling character value.

List of commonly occur error status codes

Error status code	Meaning
EACCESS	A process does not have access permission to perform an operation via a API
EPERM	A API was aborted because the calling process does not have the super user privilege

ENOENT	An invalid filename was specified to an API.
BADF	A API was called with invalid file descriptor.
EINTR	A API execution was aborted due to a signal interruption
EAGAIN	A API was aborted because some system resource it requested was temporarily unavailable. The API should be called again later
ENOMEM	A API was aborted because it could not allocate dynamic memory.
EIO	I/O error occurred in a API execution.
EPIPE	A API attempted to write data to a pipe which has no reader
EFAULT	A API was passed an invalid address in one of its argument.
ENOEXEC	A API could not execute a program via one of the exec API
ECHILD	A process does not have any child process which it can wait on.

3 a **0.5+1.5*5=8Marks** 8 CO2 L2

Different types of File Types:

- Regular file
- Directory file
- FIFO file
- Character device file
- Block device file

Regular file :

- A regular file may be either **a text file** or **a binary file**
- These files may be read or written to by users with the appropriate access permission
- Regular files may be created, browsed through and modified by various means such as text editors or compilers, and they can be removed by specific system commands

Directory file :

- It is like a folder that contains other files, including sub-directory files.
- It provides a means for users to organise their files into some hierarchical structure

3. b 1*7=7M arks 7 CO2 L2

HARD LINKS	SYMBOLIC LINKS
Do not create new inode	Create a new inode
Cannot link directories unless super user privileges	Can link directories
Cannot link file across file systems	Can link files across file systems
Increase the hard link count	Does not change the hard link count
Always refer to the old file only means hard links can be broken by removal of one or more links.	Always reference to the latest version of the files to which they link.
Can be created using ln command	Craeted using ln command with –s option
ln /usr/cse/abc /usr/cse/xyz	ln –s /usr/cse/abc /usr/cse/xyz

OR

4 a 4*2=8Marks 8 CO2 L2

UNIX Kernel supports for file / Kernel Data structure for file manipulation:
If open call succeeds, kernel establish the path between preprocess table to inode table through file table .

The Steps involved in this process are:
Step 1: The kernel will search the process file descriptor table and look for first unused entry, if an entry is found, that entry will be designated to reference the file.
Step 2:The kernel scan the file table in its kernel space to find an unused entry that can be assigned to reference the file.
If an unused entry is found, the following events will occur:

- The process's file table entry will be set to point to this file table entry.
- The file table entry will be set to point to the inode table entry where the inode record of the file is stored.
- The file table entry will contain the current file pointer of the open file.
- The file table entry will contain open mode that specifies that the file is open for read-only, write-only or read-write etc.

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4 b) 6+1=7 Marks 7 CO2 L2

ATTRIBUTES	USE
1) File type	Specifies what type of file it is.
2) Access permission	The file access permission for owner, group and others.
3) Hard link count	Number of hard link of the file
4) Uid	The file owner user id
5) Gid	The file group id
6) File size	The file size in bytes.
7) Inode no	the system inode no of the file.
8) File system id	the file system id where the file is stored
9) Last access time	the time, the file was last accessed.
10) Last modified time	the file, the file was last modified
11) Last change time	the time, the file was last changed.

The attributes that are constant for any file are:

- File type
- File inode number
- File system ID
- Major and minor device number

Sharan

Name & Signature of Staff

Mr. Sharan Pais

Signature of HOD

15CS744

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Unix System Programming

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. What are major differences between ANSI C and K and R C? Explain width examples. **(08 Marks)**

b. Mention the prototypes of sysconf, pathconf, and fpathconf functions. Write a program to demonstrate querying of limits by using above functions. **(08 Marks)**

OR

2 a. Differentiate between ANSI C and C++. **(03 Marks)**

b. Explain the ANSI C CPP symbols. And also write a program to demonstrate these symbols. **(05 Marks)**

c. Define API. Explain the common characteristic of APIs. **(08 Marks)**

Module-2

3 a. With a neat diagram, explain how UNIX Kernel supports for file manipulation. **(10 Marks)**

b. Explain the following APIs. i) lseek iii) access. **(06 Marks)**

OR

4 a. What is the relationship between file stream pointer and file descriptor? Which functions are used to convert them one from each other and mention their prototypes. **(06 Marks)**

b. Explain fcntl API. Give an example to demonstrate file locking using fcntl API. **(10 Marks)**

Module-3

5 a. Explain with a neat diagram, how a process can be initiated and how it can be terminated. **(08 Marks)**

b. Explain wait and waitpid APIs with their prototype. Mention the differences between wait and waitpid. **(08 Marks)**

OR

6 a. Explain setjmp and longjmp APISs, with an example. **(08 Marks)**

b. Explain BSDs job control mechanism with a neat diagram. **(08 Marks)**

Module-4

7 a. Explain sigaction API with a demonstrating program. **(08 Marks)**

b. What are daemon processes? Explain with a neat diagram the error logging facility for a daemon process. **(08 Marks)**

OR

8 a. Write a C/C++ program to show the use of alarm API. **(06 Marks)**

b. Explain daemon characteristics and coding rules. **(10 Marks)**

Module-5

9 a. What are pipes? Explain different ways to view a half-duplex pipe. Write a program to send data from parent process to child process using pipes. **(08 Marks)**

b. What is a FIFO? With a neat diagram explain client server communication using a FIFO. **(08 Marks)**

OR

10 a. Explain message queue APIs wih their prototypes. **(08 Marks)**

b. Explain semctl and semop APIs with their prototypes. **(08 Marks)**

15CS744

Seventh Semester B.E. Degree Examination, June/July 2019

UNIX System Programming

me: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

a. What do you understand by the term feature test macros? List all the five feature test macros along with their meanings. (08 Marks)

b. Write C/C++ program to check the following limit using function defined by POSIX.1
   i) Number of clock ticks per second
   ii) Maximum number of child process
   iii) Maximum path length
   iv) Maximum number of character in a filename (08 Marks)

OR

2 a. Write notes on: i) POSIX.1 FIPS standard ii) X/open standard (08 Marks)

b. Explain the common characteristics of API and describe the error status code and their meaning. (08 Marks)

Module-2

3 a. What is a file? Explain different file types available in UNIX or POSIX systems. Also write the commands to create all the files. (08 Marks)

b. Explain the UNIX Kernel support for files with a neat diagram. (08 Marks)

OR

4 a. Explain the following API's along with prototypes:
   i) open ii) fcntl iii) lseek iv) stat & fstat (08 Marks)

b. Explain directory file API's and FIFO file API's. (08 Marks)

Module-3

5 a. Explain with a neat diagram how a C-program is started and terminated in various ways. (08 Marks)

b. Describe the UNIX Kernel support for a process. Show the related data structure. (08 Marks)

OR

6 a. Explain the following functions: i) waitid ii) wait3( ) iii) wait4( ) (08 Marks)

b. What is job control? What are the three forms of support from OS required for job control mechanism? Explain with the help of neat diagram. (08 Marks)

Module-4

7 a. What is signal? Discuss any five POSIX defined signals. Explain how to set up a signal handler. (08 Marks)

b. What is signal mask of a process? Explain sigprocmask function along with its prototype. (08 Marks)

OR

8 a. Briefly explain the Kill( )API and alarm( )API. (08 Marks)

b. What is daemon? Explain coding rules and error logging. (08 Marks)

Module-5

9 a. What are pipes? What are its limitations? Write a program to send data from parent to child over a pipe. (08 Marks)

b. What is FIFO? Explain how it is used in IPC. Discuss with an example, the client server communications using FIFO's. (08 Marks)

OR

10 a. What are message queues? Write the structure of the message queue and explain each member in detail. (08 Marks)

b. Write short notes on:

i) Stream pipes

ii) Passing File Descriptors (08 Marks)

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
(A Unit of Alva's Education Foundation)
Shobhavana Campus, Mijar-574225, Moodbidri, D.K
Phone: 08258-262725, Fax: 08258-262726
Affiliated to VTU Belagavi and Approved by AICTE, New Delhi, Recognized by Govt. of Karnataka

ATTENDANCE BOOK

Academic Year : 2019 - 20

Semester : VII Section A

Period of the Semester : From 29/07/2019 to 30/11/2019

Subject with Code : 15CS744 - Unix System Programming

Name of the Faculty : Mr. Sharan Lional Pais

Department : Information Science & Engg.

VISION OF THE INSTITUTE

"Transformative education by pursuing excellence in Engineering and Management through enhancing skills to meet the evolving needs of the community"

MISSION OF THE INSTITUTE

- To bestow quality technical education to imbibe knowledge, creativity and ethos to students community.
- To inculcate the best engineering practices through transformative education.
- To develop a knowledgeable individual for a dynamic industrial scenario.
- To inculcate research, entrepreneurial skills and human values in order to cater the needs of the society.

AIET	Lesson Plan & Execution	Format No.	ACD 08
		Issue No.	01
		Rev. No.	00

Name of the faculty	Mr. Sharan Lional Pais
Semester and Section	VII - A.
Date of Commencement	29-07-2019
Last Working Day of the Semester	30-11-2019
Source Materials List	
1. Unix system Programming using C++	Terrence Chan, PHI, 1999
2. Advanced Programming in the UNIX environment	W. Richard Stevens, Stephen A. Rago, 3rd Ed, Pearson, PHI, 2005.
3. Advanced Unix Programming	Marc J. Rochkind, 2nd Ed, Pearson, 2005.
4. The Design of Unix - OS	Maurice J. Bach, Pearson/PHI, 1987
5. Unix Internals	Uresh Vahalia, Pearson, 2001
Subject Name	15CS744 - Unix System Programming.

Period	Plan			Execution		
	Date	Topics to be covered	Source Material needed	Topics Covered	Date	Source Material Referred
01	19/8/19	Introduction class, Syllabus, Planning.	T1, T2	Introduction.	19/8/19	T1
02	20/8/19	Module-1: The ANSI C Standard, The ANSI/ISO C++ Standard.	T1, T2	ANSI C, ANSI/ISO C++	20/8/19	T1
03	21/8/19	Difference b/w ANSI C & C++	T1, T2	Diff b/w. ANSI C & C++	21/8/19	T1
04	22/8/19	The POSIX standards.	T1, T2	POSIX standards.	22/8/19	T1

Others	Planned	Actual	Remarks :
Special Classes	01	15	to complete the syllabus.
Tutorials	00	00	—
Assignments	04	04	—
Seminars	00	01	Revision of Syllabus.
IA Tests	03	03	—
Portions Covered in the entire Semester	100 % - All 5 modules		

Course Effectiveness			
Students Feedback	Good.		
Students Responce	Good.		
Result	No. of Students AP	No. of Students Passed	% of Result
	51	51	100%

Faculty in Charge Sharan

HOD's Signature

Signature of Principal (& Remarks if any)

ALVA'S INSTITUTE OF ENGINEERING D TECHNOLOGY

MIJAR, ODBIDRI - 574 225

ATTENDANCE CUM INTERNAL

Class : VII Sem ISE - A

Subject : 15CS744 - USP

No. of Classes held : 55

Sl. No.	USN.	Name	19/8	20/8	21/8	22/8	23/8	26/8	27/8	28/8	29/8	30/8	3/9	4/9	5/9	6/9	9/9	12/9	13/9	16/9	17/9	18/9	23/9	24/9	25/9	26/9	27/9	30/9	1/10	3/10	9/10	Students Attendence Conducted		Internal Assessment (20) I	II	III	Avg (15)	O.A. (5)	Average Marks
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	28	29	30	48	60						(20)
1	15IS002	Aishwarya M.B.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	17	18	19	20	21	22	23	24	25	A	A	26			10	14	14	14	5	19
2	15IS003	Akshay Shenoy.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	28	A	A			12	15	15	15	5	20
3	15IS004	Akshaya Shenoy.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	A	17	18	19	20	21	22	23	24	25	A	26			09	13	10	12	5	17
4	15IS010	H.M. Milana	1	2	3	4	5	6	7	8	A	A	9	10	11	12	13	15	16	17	18	19	20	21	22	23	24	25	26	A	A			09	14	15	15	5	20
5	15IS021	Pavan R.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	A	17	18	19	20	21	22	23	24	25	A	A			09	13	14	14	5	19
~~6~~	~~15IS034~~	~~Rekha Halli~~ YB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	A	A	A			—	—	—	—	—	—
7	16IS002	Amulya	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	A	A	A			AB	14	14	14	5	19
8	16IS005	Ankitha P.	1	2	3	4	5	6	7	8	9	A	10	11	12	13	14	16	17	18	19	20	21	22	23	24	25	26	A	A	A			05	14	15	15	5	20
9	16IS006	Anusha	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	28	A	29			15	14	15	15	5	20
10	16IS007	Aparnashree R.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	A	A	A			09	13	15	14	5	19
11	16IS008	Apoorva R.	A	A	A	A	A	1	2	3	4	A	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	A	23			12	AB	15	14	5	19
12	16IS009	Chandana N.S.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	17	18	19	20	21	22	23	24	25	A	A	26			AB	13	15	14	5	19
13	16IS012	Darshan P. B.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	A	A	28			AB	15	13	14	5	19
14	16IS013	Dheeraj Shetty.	1	2	3	A	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	20	21	22	23	24	25	26	27	A	28			08	15	14	15	5	20
15	16IS014	Gagana G.R. Nayaka	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	A	A	28			09	14	14	14	5	19
16	16IS015	Girija R.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	A	A	A			14	14	15	15	5	20
17	16IS016	Gowthami H.R.	A	A	A	A	1	2	A	A	A	A	A	A	3	4	5	7	8	9	10	11	12	13	14	15	16	17	A	A	A			12	AB	14	13	5	18
18	16IS017	Hanritaa G.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	A	17	18	19	20	21	22	23	24	A	A	25			11	15	15	15	5	20
19	16IS018	Hegde Akshay R.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	A	19	20	21	22	23	24	25	26	27	28	29			05	AB	13	09	5	14
20	16IS021	K.S. Veda	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	17	18	19	20	21	22	23	24	25	26	A	27			AB	15	15	15	5	20
21	16IS023	Krithi K. Shetty.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	28	A	29			09	15	15	15	5	20
22	16IS024	Likitha P.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	17	18	19	20	21	22	23	24	25	26	A	A			10	14	14	14	5	19
23	16IS026	M. Ramakrishna	1	2	3	4	5	6	7	8	9	A	10	11	12	13	14	16	17	18	19	20	21	22	23	24	25	26	27	A	A			07	13	15	14	5	19
24	16IS027	Manohar M. Gowda	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	A	19	20	21	22	23	24	25	26	27	A	28			11	10	15	13	5	18
25	16IS029	Meghana Naik	1	2	3	A	4	5	6	7	8	A	9	10	11	12	13	15	16	17	18	19	20	21	22	23	24	25	26	A	27			AB	14	14	14	5	19
26	16IS030	Moulya M.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	17	18	19	20	21	22	23	24	25	A	A	26			14	14	12	14	5	19
27	16IS031	Nagendra Prasad S.	1	2	3	4	5	6	7	8	9	A	10	11	12	13	14	16	17	18	19	20	21	22	23	24	25	26	27	28	29			09	14	14	14	5	19
28	16IS033	Nikshita	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25	26	27	28	A	29			13	14	15	15	5	20
29	16IS034	Parinitha K. P.	1	2	3	4	5	6	7	8	9	10	11	A	12	13	14	16	17	18	19	20	21	22	23	24	25	26	27	A	A			07	11	13	12	5	17
30	16IS035	Pooja N.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13	15	16	17	18	19	20	21	22	23	24	25	A	A	26			14	14	15	15	5	20
Staff Initials		SLP :	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP	SLP			SLP	SLP	SLP	SLP	SLP	SLP

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

MIJAR, MOODBIDRI - 574 225

ATTENDANCE CUM INTERNAL

Class : VII Sem ISE-A

Subject : 15CS744

No. of Classes held : 55

Sl. No.	U.S.N. 4AL	Name	19/8	20/8	21/8	22/8	23/8	26/8	27/8	28/8	29/8	30/8	3/9	4/9	5/9	6/9	9/9
		Date / Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16IS036	Prathiksha	1	2	3	4	5	6	7	8	9	A	A	A	10	11	12
2	16IS037	Prathvi P. Shetty	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3	16IS038	Priyanka	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4	16IS039	Priyanka N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
5	16IS041	Rakesh Kumar S. R.	A	A	A	A	1	2	3	4	5	A	6	7	8	9	10
6	16IS042	Rakesh M.R.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7	16IS046	Saileela R.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13
8	16IS047	Samruddi Shetty	1	2	3	A	4	5	6	7	8	9	10	11	12	13	14
9	16IS048	Sanjana S. Shetty	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10	16IS050	Shetty Ashika C.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
11	16IS051	Shetty Tanvi S.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
12	16IS052	Shreesha Bhat	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
13	16IS053	Sushanth S.	1	2	3	4	5	6	A	7	8	9	10	11	12	13	14
14	16IS054	Tanaz J. Shaikh	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
15	16IS056	Tharunya U.P.	1	2	3	4	5	6	7	8	9	10	A	A	11	12	13
16	16IS057	Trupthi G	A	A	1	2	3	4	5	6	7	8	A	A	9	10	11
17	16IS059	M. Manjusha	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
18	16IS060	Nithin M.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
19	16IS061	Rachana T.	1	2	3	4	5	6	7	A	8	9	10	11	12	13	14
20	16IS062	Tanuja H.B.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
21	16IS063	Mouna R.	1	2	3	4	5	6	A	7	8	9	10	11	12	13	14
22	17IS400	Sainath B. Acharya	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
23																	
24																	
25																	
26																	
27																	
28																	
29																	
30																	
Staff Initials		SLP.	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY

Sl. No.	19/9	12/9	13/9	16/9	17/9	18/9	23/9	24/9	25/9	26/9	27/9	30/9	1/10	3/10	9/10
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	13	14	15	16	17	18	19	20	21	22	23	24	25	A	26
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5	11	12	13	14	15	16	17	18	19	20	21	22	A	A	A
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13	15	16	17	18	19	20	21	22	23	24	25	26	27	A	28
14	16	17	18	19	20	21	22	23	24	25	26	27	A	A	28
15	14	15	16	17	18	19	20	21	22	23	24	25	26	A	A
16	12	13	14	15	16	17	18	19	20	21	22	23	A	A	24
17	16	17	18	19	20	21	22	23	24	25	26	27	28	A	A
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19	15	16	17	18	19	20	21	22	23	24	25	26	27	A	28
20	16	17	18	19	20	21	22	23	24	25	26	27	28	A	A
21	15	16	17	18	19	20	21	22	23	24	25	26	27	A	28
22	16	17	18	19	20	21	22	23	24	25	26	27	A	A	28
23															
24															
25															
26															
27															
28															
29															
30															
Staff Initials	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY	SY

AIET	ASSIGNMENTS	Format No. Issue No. Rev. No.	ACD 10 01 00
Department	Information Science & Engg	Academic Year Semester	2019-20 VII

Sl.No.	Title	Books / Journals / Magazines referred	Date of Announcement	Date of Submission	Signature of the faculty
01	Assignment-1 on. Module1 & Module 2	TextBook & Ref. Books.	17/9/2019	1/10/2019	SH
02.	Assignment-2. on. Module 3.	TextBook & Ref. Books.	3/10/19	23/10/19	SH
03.	Assignment-3. on. Module-4.	TextBook & Ref. Books.	16/10/19	29/10/19.	SH
04.	Assignment-4 on Module-5.	TextBook & Ref Books.	04/11/19.	28/11/19.	SH

AIET	INTERNAL EXAM RESULT ANALYSIS	Format No.	ACD 12
		Issue No.	01
		Rev. No.	00

Department	Information Science & Engg	Semester	VII
		Subject Code	15CS744
Total No. of Students	51	Academic Year	2019-20

Test	Date	Number of Students				Signature		Remarks
		Attended	Absent	Pass	Fail	Faculty	HOD	
T_1	19/9/2019	45	06	39	07	SHL	Jay	Needs Improvement
T_2	25/10/19	47	04	47	00	SHL	Jay	Good
T_3	27/11/19	50	01	50	00	SHL	Jay	Good
T_4								
T_5								

Sharan

Signature of Staff in - charge

HOD's Signature