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Note: Remove "Table of Content" before including in CP Book

17CSL57: COMPUTER NETWORK LABORATORY

A. LABORATORY INFORMATION

1. Lab Overview

Degree:	B.E	Program:	CS
Year / Semester :	5	Academic Year:	2018-19
Course Title:	Computer Network Laboratory	Course Code:	17CSL57
Credit / L-T-P:	2/2-0-0	SEE Duration:	180 Minutes

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Total Contact Hours:	40 Hrs	SEE Marks:	80 Marks	
CIA Marks:	20	Assignment	1 / Module	
Course Plan Author:	Chandana L S	Sign	Dt:	
Chachad Pur		Cian	D+ :	

2. Lab Content

Uni	Title of the Experiments	Lab	Concept	Blooms
t		Hou		Level
		rs		
1	Implement three nodes point – to – point	8	Network	L4
	network with duplex links between them.Set		Commu	Analyze
	the queue size, vary the bandwidth and find the		nication	
	number of packets dropped.			
	Implement transmission of ping			
	messages/trace route over a network topology			
	consisting of 6 nodes and find the number of			
	packets dropped due to congestion.			
2	Implement an Ethernet LAN using n nodes and	8	Congesti	L4
	set multiple traffic nodes and plot congestion		on	Analyze
	window for different source / destination.		control	
	Implement simple ESS and with transmitting			
	nodes in wire-less LAN by simulation and			
	determine the performance with respect to			
	transmission of packets.			
	Write a program for congestion control using leaky bucket algorithm			

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Copyright ©2017. cAAS. All rights reserved Implement and study the performance of GSM Wireless 8 1.4 on NS2/NS3 (Using MAC layer) or equivalent protocol Analyze environment. S Implement and study the performance of CDMA on NS2/NS3 (Using stack called Call net) or equivalent environment. Write a program for error detecting code using 8 Error L3 CRC-CCITT (16- bits). detection Apply Write a program to find the shortest path correctio between vertices using bellman-ford algorithm. n Write a program for simple RSA algorithm to encrypt and decrypt the data Using TCP/IP sockets, write a client – server Client L4 8 program to make the client send the file name Analyze server and to make the server send back the contents commun of the requested file if present. Implement the ication above program using as message queues or FIFOs as IPC channels. Write a program on datagram socket for client/ server to display the messages on client side, typed at the server side.

3. Lab Material

Uni	Details	Available
t		

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1	Text books	
	James F Kurose and Keith W Ross, Computer	In Lib
	Networking, A Top-Down Approach,	
	Sixth edition, Pearson, 2017.	
2	Reference books	
		In dept
3	Others (Web, Video, Simulation, Notes etc.)	
	https://www.tutorialspoint.com/	Available
	vtuplanet.com/	

4. Lab Prerequisites:

-	-	Base Course:		_	-
SN	Course	Course Name	Topic / Description	Se	Remarks
0	Code			m	
1	17CSIM	PUTER NETWORK LABORATORY	Modify the topology and	5	
	57	LABORATORT	parameters set for the		
			experiment and		
			take multiple rounds of		
			reading and analyze the		
			results available in log files		

Note: If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

5. General Instructions

SN	Instructions	Remarks
0		

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Copyright ©2017. cAAS. All rights reserved. Students should come with thorough preparation for the experiment to be conducted. Students will not be permitted to attend the laboratory unless they bring the practical record fully completed in all respects pertaining to the experiment conducted in the previous class. Practical record should be neatly maintained. They should obtain the signature of the staff-in-charge in the observation book after completing each experiment. Theory regarding each experiment should be written in the practical record before procedure in your own words. Ask lab technician for assistance if you have any problem. Save your class work, assignments in system. Do not download or install software without the assistance of the laboratory technician. Do not alter the configuration of the system. 10 Turnoff the systems after use.

6. Lab Specific Instructions

SN	Specific Instructions	Remarks
O		
1	Start computer	
2	Open the terminal	
3	Write tcl program	
4	Write awk program	
5	Save the program with .tcl and .awk extension.	
6	Run the simulation program	
7	Run the awk file	

B. OBE PARAMETERS

1. Lab / Course Outcomes

#	COs	Teac	Concept	Instr	Assessm	Bloo
		h.		Meth	ent	ms'
		Hour		od	Method	Level
		S				
1	Learn TCL script and	8	Network	Tutori	Slip Test	L4

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Copyright ©2017. cAAS. All rights reserved. Simulate the protocols Communi Analy al cation ze Analyze the wired and Congesti Demo Assignm 8 L4 wireless networks nstrat ent and Analy on Slip Test control ze 3 Interpret the different Wireless Interp Slip Test 8 L4 protocols retati technologies on NS2/NS3 Analy ze on 4 Calculate the error detection Illustr Slip Test 8 L3 Error and correction over the detection/ ate Appl network correctio y n 5 Analyze the behaviour of Client Demo Assignm L4 8 client server computations Analy nstrat ent server communi ze e cation **Total**

Note: Identify a max of 2 Concepts per unit. Write 1 CO per concept.

2. Lab Applications

SNo	Application Area	CO	Leve
			1
1	Analyzes the different networking protocol used in	CO1	L4
	application layer		
2	Able to analyze the protocols and services used in TCP and UDP	CO1	L4

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3	Acquires the knowledge of various types of concepts in	CO2	L4
	Application layer		
4	Able to apply wireless networking in wireless network	CO2	L4
5	Compare Routers internet protocol in network layer	CO2	L4
6	Analyzes the concept of multimedia network	CO3	L4
7	Able to compare the routing algorithms for routing of	CO ₄	L3
	packets.		
8	Able to analyze the security issue in network management	CO ₄	L4
9	Analyzes the delivery of data beteween end to end system	CO5	L4

Note: Write 1 or 2 applications per CO.

3. Articulation Matrix

(CO – PO MAPPING)

_	Course Outcomes	Program Outcomes												
#									P	Lev				
 	COs	P	r	r	P	P	P	r	P	P	P	P	P	Lev
		O	O	O	O	O	O	O	O	O	O	O	O	el
		1	2	3	4	5	6	7	8	9	10	11	12	
CS501PC.1	Learn TCL script and	1	2	3	-	5	-	-	-	-	-	-	12	L4
	Simulate the protocols													Ana
														lyze
CS501PC.2	Analyze the wired and	1	-	3	-	5	-	-	-	-	-	-	12	L4
	wireless networks													Ana
														lyze
CS501PC.3	Interpret the different	1	2	3	-	5	-	-	-	-	-	-	12	L4
	technologies on													Ana
	NS2/NS3													lyze
CS501PC.4	Calculate the error	1	2	3	-	-	-	-	-	-	-	-	-	L3

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	detection and correction													App
	over the network													ly
CS501PC.5	Analyze the behaviour	1	2	-	-	-	-	1	-	-	10	-	-	L4
	of client server													Ana
	computations													lyze
CS501PC.	Average													

Note: Mention the mapping strength as 1, 2, or 3

4. Mapping Justification

Mapp	Mapping		Justification
		ng	
CO	РО	-	-
CO1	PO1		Students will acquire knowledge network topologies and protocols
CO1	PO2		Studies about the analysis of different network protocols helps in the network designing.
CO1	PO3		Students will be able to understand how these LAN Configuaration and IP addressing is done in simulation mode of packet tracer tool
CO1	PO5		Static and dynamic routing protocols simulation will be familiarized by the students
CO1	PO12		Information for protocol evaluation gives lifelong learning in the design of the network
CO2	PO1		Students will be obtaining the basic knowledge of wireless networking concepts
CO2	PO ₃		To design a Xgraph the knowledge of wireless technologies is required
CO2	PO5		For simulation purpose the NS2 is used
CO2	PO12		The knowledge of wireless networking concept is required for life long learning in the concept of technological change
C03	PO1		Students will be obtaining the basic knowledge of wireless networking concepts
C03	PO2		Understand the implementation of GSM and CDMA in a network by creating a environment
Co3	PO3		To design a Xgraph the knowledge of wireless technologies is required
C03	PO ₅		For simulation purpose the NS2 is used
C03	PO12		The knowledge of wireless networking concept is required for life long learning in the concept of technological change
CO4	PO1		To solve a problem basic knowledge of routing algorithms is required
CO4	PO2		To analyze the complex problem the knowledge of routing protocols is required
CO4	PO3		To design a solution for a problem the baisc knowledge of the routing algorithms is required
CO5	PO2		The knowledge of networking components helps to understand the basic functionalities specially switch and router configuaration

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CO5 PO10 To communicate effictively for engineering activities the knowledge of client server computation is required

Note: Write justification for each CO-PO mapping.

5. Curricular Gap and Content

SN	Gap Topic	Actions	Schedule	Resources	PO
O		Planned	Planned	Person	Mapping
1					
2					
3					

Note: Write Gap topics from A.4 and add others also.

6. Content Beyond Syllabus

SN	Gap Topic	Actions	Schedule	Resources	PO
O		Planned	Planned	Person	Mapping
1					
2					
3					
4					
5					
6					
7					

Note: Anything not covered above is included here.

C. COURSE ASSESSMENT

1. Course Coverage

Un	Title	Teac	No. of question in Exam			n	CO	Leve			
it		hing	CIA	CIA	CIA	Asg	Asg	Asg	SE		ls
		Hou	-1	-2	-3	-1	-2	-3	E		
		rs									
1	Three node point to	03	1	-	-	-	-	-	1	CO1	L4
	point network										
2	Transmission of Ping	03	1	-	-	-	-	-	1	CO2	L4
	messages										
3	Ethernet Lan using n-	03	1	-	-	-	-	-	1	CO3	L4

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	nodes with multiple										
	traffic										
4	Simple ESS with	03	1	-	_	-	-	-	1	CO3	L4
	wireless Lan										
5	Performance of GSM	03	1	-	_	-	-	-	1	CO3	L4
	using MAC layer										
6	Performance of CDMA	03	1	-	_	_	-	-	1	CO3	L4
7	CRC-CCITT	03	1	-	-	-	_	-	1	CO4	L3
8	Bellman-Ford Algorithm	03	-	1	-	-	_	_	1	CO5	L4
9	Client server using TCP/	03	-	1	-	-	-	-	1	CO2	L4
	IP sockets										
10	Client-Server	03	-	1	-	-	-	-	1	CO5	L4
	Communication										
11	RSA Algorithm to	03	-	1	-	-	-	-	1	CO5	L4
	Encrypt and Decrypt the										
	Data										
12	Congestion Control	03	-	1	-	-	-	-	1	CO4	L3
	Using Leaky Bucket										
	Algorithm										
-	Total	40	7	8	5	5	5	5	20	-	-

Note: Write CO based on the theory course.

2. Continuous Internal Assessment (CIA)

Evaluation	Weightage in	CO	Levels
	Marks		
CIA Exam – 1	15	CO1, CO2,	L4,L4
CIA Exam – 2	15	CO3, CO4	L4, L3
CIA Exam – 3	15	CO ₅	L4
Assignment - 1	05	CO1, CO2,	L4,L4
Assignment - 2	05	CO3, CO4	L4, L3
Assignment - 3	05	CO ₅	L4
0			

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_
D5 L3, L4
L4
L4, L3
L4,L4
-

SN	Description	Marks
0		
1	Observation and Weekly Laboratory Activities	05 Marks
2	Record Writing	10 Marks for each
		Expt
3	Internal Exam Assessment	20 Marks
4	Internal Assessment	80 Marks
5	SEE	600 Marks
-	Total	100 Marks

D. EXPERIMENTS

Experiment 01: Three node point to point network

-	Experiment	1	Marks		Date		Date	
	No.:				Planned		Conduc	
							ted	
1	Title	Th	ree node	point to	point nety	work		
2	Course	Learn TCL script and Simulate the protocols						
	Outcomes							
3	Aim	Im	plement	three noo	les point -	- to - po	int netwo	rk with
		duplex links between them. Set the queue size, vary the						
		bandwidth and find the number of packets dropped.						
4	Material /	Lab Manual						
	Equipment							

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	Required	
5	Theory,	Basic structure of TCL script to writing the NS2
	Formula,	program
	Principle,	
	Concept	
6	Procedure,	 Open gedit editor and type program. Program
	Program,	name should have the extension" .tcl"
	Activity,	[root@localhost ~]# gedit lab1.tcl
	Algorithm,	 Save the program and close the file.
	Pseudo Code	• Open gedit editor and type awk program. Program
		name should have the
		• extension ".awk"
		[root@localhost ~]# gedit lab1.awk
		 Save the program and close the file.
		 Run the simulation program
		[root@localhost~]# ns lab1.tcl
		 Now press the play button in the simulation
		window and the simulation will begins.
		 After simulation is completed run awk file to see
		the output,
		[root@localhost~]# awk -f lab1.awk lab1.tr
		• To see the trace file contents open the file as,
		[root@localhost~]# gedit lab1.tr
7	Block, Circuit,	 point to point network
	Model	• -
	Diagram,	• -
	Reaction	
	Equation,	

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Convri	ght ©2017. cAAS. All rights reserved		
Соруп	Expected		
	Graph		
8	Observation		
	Table, Look-	 this is the first program in CN lab 	
	up Table,		
	Output		
9	Sample	• -	
	Calculations	• -	
		• -	
10	Graphs,	• -	
	Outputs	• -	
11	Results &	• set the queue size	
	Analysis	 vary the bandwidth 	
12	Application	Analyzes the different networking protocol used	in
	Areas	application layer	
	Remarks		
14	Faculty		
	Signature with		
	Date		

Experiment 02: Transmission of ping message

-	Experiment	2	Marks		Date	Date	
	No.:				Planned	Conduc	
						ted	
1	Title	Trai	Fransmission of ping message				
2	Course	Lea	Learn TCL script and Simulate the protocols				
	Outcomes						
3	Aim	Imp	implement transmission of ping messages/trace route				

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		over a network topology
		consisting of 6 nodes and find the number of packets
		dropped due to congestion.
4	Material /	Lab Manual
	Equipment	
	Required	
5	Theory,	To identify the packets dropped
	Formula,	
	Principle,	
	Concept	
6	Procedure,	• Open gedit editor and type program. Program name
	Program,	should have the extension" .tcl"
	Activity,	[root@localhost ~]# gedit lab2.tcl
	Algorithm,	 Save the program and close the file.
	Pseudo Code	 Open gedit editor and type awk program. Program
		name should have the
		• extension ".awk"
		[root@localhost ~]# gedit lab2.awk
		 Save the program and close the file.
		 Run the simulation program
		[root@localhost~]# ns lab2.tcl
		 Now press the play button in the simulation
		window and the simulation will begins.
		 After simulation is completed run awk file to see
		the output,
		[root@localhost~]# awk –f lab2.awk lab1.tr
		• To see the trace file contents open the file as,
		[root@localhost~]# gedit lab2.tr

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Convri	ght ©2017. cAAS. All rights reserv	ed Course Euro Munuar Tage. 13/31
	Block,	• topology
	Circuit,	
	Model	
	Diagram,	
	Reaction	
	Equation,	
	Expected	
	Graph	
8	Observation	 Number of packets dropped at the nodes are 12
	Table, Look-	
	up Table,	
	Output	
9	Sample	
	Calculations	
10	Graphs,	
	Outputs	
11	Results &	
	Analysis	
12	Application	Acquires the knowledge of various types of concepts in
	Areas	Application layer
13	Remarks	
14	Faculty	
	Signature	
	with Date	

Experiment o3: Ethernet LAN using N-nodes with multiple traffic

-	Experiment	3	Marks	Date	Date	
	No.:			Planned	Conduc	

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		ted
1	Title	Ethernet LAN using N-nodes with multiple traffic
2	Course	Analyze the wired and wireless networks
	Outcomes	
3	Aim	Implement an Ethernet LAN using n nodes and set
		multiple traffic nodes and plot congestion window for
		different source / destination
4	Material /	Lab Manual
	Equipment	
	Required	
5	Theory,	Plot congestion window
	Formula,	
	Principle,	
	Concept	
6	Procedure,	Open gedit editor and type program. Program name
	Program,	should have the extension" .tcl "
	Activity,	[root@localhost ~]# gedit lab3.tcl
	Algorithm,	 Save the program and close the file.
	Pseudo Code	• Open gedit editor and type awk program. Program
		name should have the
		• extension ".awk"
		[root@localhost ~]# gedit lab3.awk
		 Save the program and close the file.
		Run the simulation program
		[root@localhost~]# ns lab3.tcl
		 Now press the play button in the simulation
		window and the simulation will begins.
		 After simulation is completed run awk file to see
		the output,
		the output,

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Соруп	gnit ©2017. CAAS. All rights reserv	[root@localhost~]# awk -f lab3.awk lab1.tr
		• To see the trace file contents open the file as,
		[root@localhost~]# gedit lab3.tr
7	Block,	 Topology and x-graph
	Circuit,	
	Model	
	Diagram,	
	Reaction	
	Equation,	
	Expected	
	Graph	
8	Observation	 Plot congestion window for different source and
	Table, Look-	destination
	up Table,	
	Output	
	Sample	
	Calculations	
	Graphs,	
	Outputs	
	Results &	
12	Analysis Application	Analyzes the delivery of data beteween end to end system
12	Application Areas	
13	Remarks	
	Faculty	
	Signature	
	with Date	
	l	

Experiment 04 : Simple ESS with wireless LAN

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Copyright ©2017. cAAS. All rights reserved **Experiment** Marks **Date Date** 4 No.: Planned Conduc ted Simple ESS with wireless LAN 1 Title 2 Course Analyze the wired and wireless networks Outcomes 3 Aim Implement simple ESS and with transmitting nodes in wire-less LAN by simulation and determine the performance with respect to transmission of packets. Lab Manual 4 Material / Equipment Required To identify the performance 5 Theory, Formula, Principle, Concept Open gedit editor and type program. Program name 6 Procedure, extension" tcl" Program, should have the [root@localhost ~]# gedit lab24.tcl Activity, Algorithm, Save the program and close the file. Open gedit editor and type awk program. Program Pseudo Code name should have the extension "awk" [root@localhost ~]# gedit lab4.awk Save the program and close the file. Run the simulation program [root@localhost~]# ns lab4.tcl Now press the play button in the simulation window and the simulation will begins.

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<u> </u>	, 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10	• After simulation is completed run awk file to see the output,
		[root@localhost~]# awk -f lab4.awk lab4.tr
		• To see the trace file contents open the file as,
		[root@localhost~]# gedit lab4.tr
7	Block,	• Topology
	Circuit,	
	Model	
	Diagram,	
	Reaction	
	Equation,	
	Expected	
	Graph	
8	Observation	 Calculates the throughput
	Table, Look-	
	up Table,	
	Output	
9	Sample	
	Calculations	
10	Graphs,	
	Outputs	
11	Results &	
	Analysis	
12	Application	Analyzes the concept of multimedia network
	Areas	
	Remarks	
14	Faculty	
	Signature	
	with Date	

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Experiment 05: Performance of using GSM for MAC layer

-	Experiment	5	Marks		Date		Date	
	No.:				Planned		Conduc	
							ted	
1	Title	Per	formance	of using	GSM for	MAC la	yer	
2	Course	Inte	rpret the	different	technolog	gies on N	IS2/NS3	
	Outcomes							
3	Aim	Imp	lement a	nd study	the perfor	rmance o	of GSM of	n
			`	sing MA	C layer) o	or equiva	lent envii	ronment.
4	Material /	Lab	Manual					
	Equipment							
	Required							
5	Theory,	Per	formance	of GSM				
	Formula,							
	Principle,							
	Concept							
6	Procedure,	•	Open g	edit edito	or and typ	1	•	am name
	Program,		should	have the	exte	nsion" .tc	21 "	
	Activity,		[ro	oot@loca	ılhost ~]#	gedit lab	5.tcl	
	Algorithm,	•	Save th	e progra	m and clo	se the fil	e.	
	Pseudo Code	•	Open g	edit edito	or and typ	e awk pr	rogram. P	rogram
			name s	hould ha	ve the			
		•	extensi	on ".awk	. >>			
			[root(@localho	ost ~]# ge	dit lab5.a	ıwk	
		•	Save th	e progra	m and clo	se the fil	e.	
		•	Run the	e simulat	ion progra	am		
			[root	alocalh	ost~]# ns	lab5.tcl		

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Сорун	,	Now press the play button in the simulation
		window and the simulation will begins.
		 After simulation is completed run awk file to see
		the output,
		[root@localhost~]# awk –f lab5.awk lab5.tr
		• To see the trace file contents open the file as,
		•
7	Block,	[root@localhost~]# gedit lab5.tr • X graph
		A graph
	Circuit,	
	Model	
	Diagram,	
	Reaction	
	Equation,	
	Expected	
	Graph	
8	Observation	X graph showing the performance
	Table, Look-	
	up Table,	
	Output	
9	Sample	
	Calculations	
10	Graphs,	
	Outputs	
11	Results &	
	Analysis	
12	Application	Able to apply wireless networking in wireless network
	Areas	
13	Remarks	
14	Faculty	

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	Signature	
	with Date	

Experiment o6: Performance of CDMA

-	Experiment	6	Marks		Date		Date	
	No.:				Planned		Conduc	
							ted	
1	Title	Per	formance	of CDM	Ā			
2	Course	Inte	erpret the	different	technologi	ies on N	IS2/NS3	
	Outcomes							
3	Aim	Imp	olement a	nd study	the perforn	nance o	of CDMA	on NS2/
		NS:	3 (Using	stack call	led Call net	t) or equ	uivalent	
		env	ironment	•				
4	Material /	Lab	Manual					
	Equipment							
	Required							
5	Theory,	Per	formance	of CDM	A			
	Formula,							
	Principle,							
	Concept							
6	Procedure,	•			or and type		•	ım name
	Program,		should	have the	extens	sion" .tc	21 "	
	Activity,		[re	oot@loca	ılhost ~]# g	gedit lab	o6.tcl	
	Algorithm,	•	=Save	the prog	gram and cl	ose the	file.	
	Pseudo Code	•	₌ Ope₁	n gedit ed	litor and ty	pe awk	program.	
			Prograi	m name s	should have	e the		
		•	extensi	on ".awk	. **			
			[root(@localho	ost ~]# gedi	it lab6.a	ıwk	

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Соруп	gitt 92017. GAAS. Att rights reserv	• =Save the program and close the file.
		• Run the simulation program
		[root@localhost~]# ns lab6.tcl
		• Now press the play button in the simulation
		window and the simulation will begins.
		• After simulation is completed run awk file to see
		the output,
		[root@localhost~]# awk -f lab6.awk lab6.tr
		• To see the trace file contents open the file as,
		[root@localhost~]# gedit lab6.tr
7	Block,	• X graph
	Circuit,	
	Model	
	Diagram,	
	Reaction	
	Equation,	
	Expected	
	Graph	
8	Observation	 X graph showing the performance
	Table, Look-	
	up Table,	
	Output	
9	Sample	
4.0	Calculations	
10	Graphs,	
1 1	Outputs	
	Results &	
12	Analysis	Abla to apply windless networking in windless network
12	Application	Able to apply wireless networking in wireless network

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Areas

13 Remarks

14 Faculty

Signature

with Date

Experiment 07: Error Detecting Code Using CRC-CCITT (16-bit)

-	Experiment	7	Marks		Date		Date	
	No.:				Planned		Conduc	
							ted	
1	Title	Erro	or Detecti	ing Code	Using CR	.C-CCIT	TT (16-bit	<u>.</u>)
2	Course	Cal	culate the	e error de	tection and	d correc	tion over	the
		netv	work					
3	Aim	Wri	te a Prog	ram for I	ERROR de	etecting	code usin	g CRC-
			ITT (16b)	it).				
4	Material /	Lab	Manual					
	Equipment							
	Required							
5	Theory,	Per	formance	of CDM	A			
	Formula,							
	Principle,							
	Concept							
6	Procedure,	step	1: start[s	source co	de]			
	Program,	step	2: create	e a class (Crc			
	Activity,	step	3: code	for CRC	generation	ı		
	Algorithm,	step	step 4: write a code for error detection					
	Pseudo Code	step	5:end					
7	Block,							
	Circuit,							

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Copyright ©2017. cAAS. All rights reserved Model Diagram, Reaction Equation, Expected Graph 8 Observation Enter number of data bits: 1 0 1 1 0 0 1 Table, Lookenter the number of bits in divisor: 3 enter divisor bits: 1 0 1 up Table, Output dividend are:101100111 enter CRC code of 9bits:101100101 error thank you..... 9 Sample Calculations 10 Graphs, Outputs 11 Results & Analysis 12 Application Compare Routers internet protocol in network layer Areas 13 Remarks 14 Faculty Signature with Date

Experiment 08: Bellman-ford Algorithm

Experiment 1 Marks Date Date	-]	ent 1 Marks	Date	Date
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Copyright ©2017. cAAS. All rights reserved.				DI -			
	No.:			Planned		Conduc	
						ted	
	Title	Bellman-ford					
2	Course	Calculate the	e error de	tection ar	nd correct	tion over	the
		network					
3	Aim	Write a prog	ram to fin	nd the sho	ortest patl	n between	1
		vertices usin	g bellmaı	n-ford			
		algorithm.					
4	Material /	Lab Manual					
	Equipment						
	Required						
5	Theory,	Shortest path	1				
	Formula,						
	Principle,						
	Concept						
6	Procedustep 1	start[source	code]				
	Programstep 2	create a clas	ss Bellma	ın ford			
	Activitystep 3	code for sho	ortest patl	h			
	Algorithmen 4	end					
	Pseudo Code						
7	Block,						
	Circuit,						
	Model						
	Diagram,						
	Reaction						
	Equation,						
	Expected						
	Graph						
8	Observation	Enter numbe	r of verti	ces 4			

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Copyright ©2017. cAAS. All rights reserved. Table, Look- enter the adjacency matrix 0500 up Table, Output 5034 0302 0420 enter the source vertex 2 distance of source 2 to 1 is 5 distance of source 2 to 2 is 0 distance of source 2 to 3 is 3 distance of source 2 to 4 is 4 9 Sample Calculations 10 Graphs, Outputs 11 Results & Analysis Able to compare the routing algorithms for routing of 12 Application Areas packets. 13 Remarks 14 Faculty Signature with Date

Experiment og: Client-server using TCP/IP sockets

-	Experiment	9	Marks		Date	Date	
	No.:				Planned	Conduc	
						ted	
1	Title	Clie	lient-server using TCP/IP sockets				

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Copyri	ght ©2017. cAAS. All rights reserv	ed.
		Analyze the behaviour of client server computations
	Outcomes	
3	Aim	Using TCP/IP Sockets, write a client-server program to
		make client sending the file name and the server to send
		back the contents of the requested file if present.
		Implement the above program using as message queues
		or FIFOs as IPC channels.
4	Material /	Lab Manual
	Equipment	
	Required	
5	Theory,	client server communication
	Formula,	
	Principle,	
	Concept	
6	Procedustep 1	start[source code]
	Program,	step 2: open TCP Client
	Activityștep 2	create a class client
	Algorithmen 3	end
	Pseudo Stope4	open TCP server
		step 5:create class server
		step 6: end.
7	Block,	
	Circuit,	
	Model	
	Diagram,	
	Reaction	
	Equation,	

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Convri	ght ©2017. cAAS. All rights reserv	od .
Соруп	Expected	64.
	Graph	
8	Observation	Client should send the request
	Table, Look-	server will send back the requested file to the client
	up Table,	
	Output	
9	Sample	
	Calculations	
10	Graphs,	
	Outputs	
11	Results &	
	Analysis	
12	Application	Able to analyze the protocols and services used in TCP and UDP
	Areas	
13	Remarks	
14	Faculty	
	Signature	
	with Date	

Experiment 10: Client-Server communication

-	Experiment	10	Marks		Date	Date	
	No.:				Planned	Conduc	
						ted	
1	Title	Client server communication					
2	Course	Analyze the behaviour of client server computations					
	Outcomes						
3	Aim	Write a program on datagram socket for client/server to					
		display the messages on client side, typed at the server					
		side	side.				

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Copyright ©2017. cAAS. All rights reserved Lab Manual 4 Material / Equipment Required Server to client communication 5 Theory, Formula, Principle, Concept 6 Procedustep 1 start[source code] step 2: open UDP Client Program, Activityștep 2 create a class UDPC Algorithmen 3: end Pseudo Stope4: open UDP server step 5:create class UDPS step 6: end. 7 Block, Circuit, Model Diagram, Reaction Equation, Expected Graph Client should display the message which is typed at the 8 Observation Table, Look- server side up Table, Output 9 Sample

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Convri	ght ©2017. cAAS. All rights reserve	
	Calculations	va.
10	Graphs,	
	Outputs	
11	Results &	
	Analysis	
12	Application	 Able to analyze the protocols and services used in TCP and UDP
	Areas	
13	Remarks	
14	Faculty	
	Signature	
	with Date	

Experiment 11: RSA Algorithm to Encrypt and Decrypt the Data

-	Experiment	11	Marks		Date		Date	
	No.:				Planned		Conduc	
							ted	
1	Title	RSA	A Algorit	hm to En	crypt and	Decrypt	the Data	
2	Course	Cal	culate the	e error de	tection an	d correct	tion over	the
	Outcomes	netv	work					
3	Aim	C P	rogram fo	or Simple	RSA Alg	gorithm t	o encryp	t and
		dec	rypt the d	lata				
4	Material /	Lab	Manual					
	Equipment							
	Required							
5	Theory, RSA al	gorit	hm					
	Formula,							
	Principle,							
	Concept							
6	Procedustep 1	: sta	rt[source	code]				

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Соруп	Program,	step 2: open RSA key generation
	Activityștep 2	create a class RSA Keygen
	Algorithmen 3	end
	Pseudo & ope4	open RSA Encryption and Decryption
		step 5:create class RSAEncDec
		step 6: end.
7	Block,	
	Circuit,	
	Model	
	Diagram,	
	Reaction	
	Equation,	
	Expected	
	Graph	
8	Observation	Key generation
	Table, Look-	RSA key generation 20
	up Table,	Public key :54367
	Output	Private key: 789534,3214657
9	Sample	
1.0	Calculations	
10	Graphs,	
1 1	Outputs	
	Results &	
12	Analysis	Able to analyze the security issue in network
12	Application	Tible to unaryze the security issue in network
13	Areas Remarks	management
	Faculty	
	1 J	

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	Signature	
	with Date	

Experiment 12: Congestion Control Using Leaky Bucket Algorithm

-	Experiment	12	Marks		Date		Date	
	No.:				Planned		Conduc	
							ted	
1	Title	Con	gestion (Control U	Jsing Leak	y Bucke	et Algoritl	hm
2	Course	Ana	lyze the	wired an	d wireless	network	KS	
	Outcomes							
3	Aim	C P	rogram fo	or Conge	stion cont	rol using	g Leaky B	Bucket
		_	orithm					
4	Material /	Lab	Manual					
	Equipment							
	Required							
5	Theory, Leaky I	buck	et algorithm	1				
	Formula,							
	Principle,							
	Concept							
6	Proceduste, p 1	sta	rt[source	code]				
	Programstep2	crea	ate a clas	s queue				
	Activitystep 3	wr	ite insert	delete fu	nctions			
	Algorithmen 4	cre	ate aclas	s leaky				
	Pseudo Code	step	5: end.					
7	Block,							
	Circuit,							
	Model							

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СОРУП	Diagram,	
	Reaction	
	Equation,	
	Expected	
	Graph	
8	Observation	
	Table, Look-	
	up Table,	
	Output	
9	Sample	
	Calculations	
10	Graphs,	
	Outputs	
11	Results &	
	Analysis	
12	Application	Analyze the concept of higher layer protocols in mobility management
	Areas	
13	Remarks	
14	Faculty	
	Signature	
	with Date	