Ref No:

SKIT, BANGALORE



COURSE PLAN

Academic Year 2019-20

Program:	B E – Information Science & Engineering	
Semester: 6		
Course Code:	17ISL67	
Course Title: SOFTWARE TESTING LABORATORY		
Credit / L-T-P: 2 /1-0-2		
Total Contact Hours:40		
Course Plan Author: Mrs. Veena M. Naik		

Academic Evaluation and Monitoring Cell

No. 29, Chimney hills, Hesaraghatta Road, Chikkabanavara BANGALORE-5600990, KARNATAKA , INDIA Phone / Fax :+91-08023721315/23721477 www.skit.org.in

INSTRUCTIONS TO TEACHERS

- Classroom / Lab activity shall be started after taking attendance. •
- Attendance shall only be signed in the classroom by students.
- Three hours attendance should be given to each Lab. •
- Use only Blue or Black Pen to fill the attendance. •
- Attendance shall be updated on-line & status discussed in DUGC. •
- No attendance should be added to late comers. •
- Modification of any attendance, over writings, etc is strictly prohibited. •
- Updated register is to be brought to every academic review meeting as per the COE. •

Table of Contents

A. LABORATORY INFORMATION		1
1. Laboratory Overview		
2. Laboratory Content		
3. Laboratory Material		
5 , · · · · · · · · · · · · · · · · ·	,	2
SL67	Copyright ©2017. cAAS. All rights reserved.	

4. Laboratory Prerequisites:	
5. Content for Placement, Profession, HE and GATE	5
B. Laboratory Instructions	
1. General Instructions	6
2. Laboratory Specific Instructions	6
C. OBE PARAMETERS	6
1. Laboratory Outcomes	6
2. Laboratory Applications	7
3. Mapping And Justification	
4. Articulation Matrix	9
5. Curricular Gap and Experiments	9
6. Experiments Beyond Syllabus	9
D. COURSE ASSESSMENT	10
1. Laboratory Coverage	
2. Continuous Internal Assessment (CIA)	11
E. EXPERIMENTS	
Experiment 01 : Boundary Value Analysis For Triangle Problem	11
Experiment 02 : Boundary Value Testing For Commission Problem	12
Experiment 03 :Boundary Value Testing For Next Date Problem	13
Experiment 04 :Equivalence Class Partitioning Test For Different Types Of	
Triangles	
Experiment 05: Equivalence Class Testing For Commission Problem	
Experiment 06:Equivalence Class Testing For Next Date Function	
Experiment 07: Decision Table Approach For Triangle Problem	
Experiment 08:Decision Based Testing For Commission Problem	
Experiment 09:Data Flow Testing For Commission Problem	
Experiment 10: Binary Search Algorithm	
Experiment 11: Quick Sort Algorithm	
Experiment 12: Absolute Letter Grading	
F. Content to Experiment Outcomes	
1. TLPA Parameters	
2. Concepts and Outcomes:	27

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

Each Laboratory Plan shall be printed and made into a book with cover page Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

A. LABORATORY INFORMATION

1. Laboratory Overview

Degree:	B.E	Program:	IS
Year / Semester :	5	Academic Year:	2019-20
Course Title:	Software Testing Laboratory	Course Code:	17ISL67
Credit / L-T-P:	2 / 1-0-2	SEE Duration:	180 Minutes
Total Contact Hours:	40 Hrs	SEE Marks:	60 Marks
CIA Marks:	40	Assignment	
-Lab. Plan Author:	Veena M. Naik	Sign	Dt : 22/01/2020
Checked By:		Sign	Dt :

2. Laboratory Content

Expl. The of the Experiments Lab Concept Blooms	Event	Title of the Drug outpo	Lala	Concept	Discusso
	Expt.	Title of the Experiments	Lab	Concept	Blooms

		Hours		Level
1	Design and develop a program in a language of your choice to solve the triangle problem	3	boundary value	L5 evaluate
2	Design, develop, code and run the program in any suitable language to solve the commission problem	3	boundary value	L5 evaluate
3	Design, develop, code and run the program in any suitable language to implement the NextDate function	3	boundary value	L5 evaluate
4	Design and develop a program in a language of your choice to solve the triangle problem	3	Equivalenc e class	L5 evaluate
5	Design, develop, code and run the program in any suitable language to solve the commission problem	3	Equivalenc e class	L5 evaluate
6	Design, develop, code and run the program in any suitable language to implement the NextDate function	3	Equivalenc e class	L5 evaluate
7	Design and develop a program in a language of your choice to solve the Triangle problem	3	Decision table	L5 evaluate
8	Design, develop, code and run the program in any suitable language to solve the commission problem	3	Decision table	L5 evaluate
9	Design, develop, code and run the program in any suitable language to solve the commission problem	4	Decision table	L5 evaluate
10	Design, develop, code and run the program in any suitable language to implement the binary search algorithm	4	binary search algorithm	L5 evaluate
11	Design, develop, code and run the program in any suitable language to implement the quicksort algorithm	4	quick sort algorithm	L5 evaluate
12	Design, develop, code and run the program in any suitable language to implement an absolute letter grading procedure, making suitable assumptions	4	absolute letter grading	L5 evaluate

3. Laboratory Material

Books & other material as recommended by university (A, B) and additional resources used by Laboratory teacher (C).

Expt.	Details	Expt. in book	Availability
1	Text books		
	Paul C. Jorgensen: Software Testing, A Craftsman's Approach,3rd Edition, Auerbach Publications,2008	1-12	In Lib
	Mauro Pezze, Michal Young :Software Testing and Analysis- Process, Principles and Techniques, Wiley India,2008	1-12	In Lib
2	Reference books		
3	Others (Web, Video, Simulation, Notes etc.)		Available
	https://www.guru99.com/software-testing-interview-questions.html		
D	Software Tools for Design	-	Available
	Excel worksheet		
	Automation testing tools		
Е	Recent Developments for Research	-	-
1			
2			
		-	In lib
F	Others (Web, Video, Simulation, Notes etc.)	-	-
1	https://www.softwaretestingmaterial.com/boundary-value-analysis-		

	testing-technique/	
2	https://www.youtube.com/watch?v=zDMxb13ibqc	
3	https://www.guru99.com/decision-table-testing.html	
4	https://www.globalapptesting.com/blog/regression-testing-while-	
	<u>cooking-a-curry</u>	
5	https://www.softwaretestingmaterial.com/software-testing/	
6	https://www.youtube.com/watch?v=w1h2xmEhWQE	
7	https://www.youtube.com/watch?v=21wOCNHsSU4	

4. Laboratory Prerequisites:

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

Students must have team the following courses? Topics with described content						
Exp	ot. Lab.	Lab. Name	Topic / Description	Sem	Remarks	Blooms
	Code					Level
1	15IS63	Software	Basic software testing	6	Learned as part of	L3
		Testing			theory subject in the	
					current semester	

Students must have learnt the following Courses / Topics with described Content

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.

Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Expt.	Topic / Description	Area	Remarks	Blooms
LAPL.	TOPIC / Description	Alea	Remains	DIOOTTIS
				Level
1-12	Different types	Placement	Seminar will be conducted to	Understa
	of software testing techniques		discuss these topics	nd L2

B. Laboratory Instructions

1. General Instructions

SNo	Instructions	Remarks
1	Observation book and Lab record are compulsory.	Instructed to students
2	Students should report to the concerned lab as per the time table.	Instructed to students
3	After completion of the program, certification of the concerned staff in- charge in the observation book is necessary.	Instructed to students
4	Student should bring a notebook of 100 pages and should enter the readings /observations into the notebook while performing the experiment.	Instructed to students
5	The record of observations along with the detailed experimental procedure of the experiment in the Immediate last session should be submitted and certified staff member in-charge.	
6	Should attempt all problems / assignments given in the list session wise.	Instructed to students
	It is responsibility to create a separate directory to store all the programs, so that nobody else can read or copy.	Instructed to students
	When the experiment is completed, should disconnect the setup made by them, and should return all the components/instruments taken for the purpose.	
9	Any damage of the equipment or burn-out components will be viewed seriously either by putting penalty or by dismissing the total group of students from the lab for the semester/year	
10	Completed lab assignments should be submitted in the form of a Lab Record in which you have to write the algorithm, program code along with	

	comments and output for various inputs given	

2. Laboratory Specific Instructions

SNo	Specific Instructions	Remarks
1	Login to fedora	Guided
2	Create a folder in roots home	Guided
3	Open the terminal and enter into the folder	Guided
4	Type vi filename.c then enter	Guided
		Guided
6	Compile the program using cc filename.c	Guided
7	Run the program using ./a.out	Guided

C. OBE PARAMETERS

1. Laboratory Outcomes

Expt.	Lab Code #	COs / Experiment Outcome	Teach.	Concept	Instr	Assessment	Blooms'
			Hours		Method	Method	Level
-	-	At the end of the experiment, the student should be able to	-	_	-	-	-
1		Design and evaluate test cases for boundary value	9	boundary value	Demons trate	Viva and slip test	L5 evaluat e
2		Design and evaluate test cases for equivalence class	10	Equivalence class	Demons trate	Viva and slip test	L5 evaluat e
3		Design and evaluate test cases for decision table	9	Decision table	Demons trate	Viva and slip test	L5 evaluat e
4		Design and evaluate test cases for binary search algorithm		binary search algorithm	Demons trate	Viva and slip test	L Analyze
5		Design and evaluate test cases for quick sort algorithm	4	quick sort algorithm	Demons trate	Viva and slip test	L5 evaluat e
6		Design and evaluate test cases for absolute letter grading		absolute letter grading	Demons trate	Viva and slip test	L5 evaluat e
	-	Total	40	-	-	-	-

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

2. Laboratory Applications

Expt.	Application Area	CO	Level
1	To test the errors at boundaries of input domain	CO1	L5
2	System behavior testing	CO2	L5
3	Calculation of physical quantities	CO3	L5
4	Library, DNA sequences	CO4	L5
5	Image processing	CO5	L5
6	Developing web-based application using database for business requirements.	CO6	L3

Note: Write 1 or 2 applications per CO.

3. Mapping And Justification

CO – PO Mapping with mapping Level along with justification for each CO-PO pair.

To attain competency required (as defined in POs) in a specified area and the knowledge & ability required to accomplish it.

Expt	Мар	ping	Mapping Level	Justification for each CO-PO pair	Le e
	со	PO	Level	'Area': 'Competency' and 'Knowledge' for specified 'Accomplishment'	-
L,2,3	CO1	PO1	L3	Knowledge of boundary value test cases is required to solve the different	
.,2,3	COI	PUI	L3	problem	
	CO1	PO2	L4	Analysing the types of problems requires the knowledge of boundary	
	001	102		value testing	
	CO1	PO3	L5	Design test cases for different problem	
	CO1	PO4		No investigation and interpretation content. No mapping.	
	CO1	PO5	L3	Boundary value testing is done using different testing tools	
	CO1		L3	Boundary value testing is used in individual project management	
	CO1		L3	No engineer and society content. No mapping.	
	CO1	-	L3	Error free product is produced to the different domains	
	CO1		<u></u>	No individual and team work. No mapping.	
		PO10		No usage for communication. No mapping.	-
		PO10 PO11		No project management and finance. No mapping	
		PO11 PO12	1.2	Boundary value Testing is a life long learning for real world application	
- 6					
,5,0	CO2	PO1		Knowledge of equivalence class value test cases is required to solve the different problem	
	CO2	PO2		Analysing the types of problems requires the knowledge of equivalence	-
	002	FUZ		class testing	
	CO2	PO3	L5	Design test cases for different problem	
		PO4		No investigation and interpretation content. No mapping.	\vdash
	CO2	-	L3	Equivalence class testing is done using different testing tools	
		PO6		Equivalence class testing is used in individual project management	\vdash
	CO2		L3	No engineer and society content. No mapping.	\vdash
	CO2	-	L3	Error free product is produced to the different domains	
		PO9	<u></u>	No individual and team work. No mapping.	\vdash
		PO10		No usage for communication. No mapping.	\vdash
		PO11		No project management and finance. No mapping	\vdash
		PO11 PO12	10	Equivalence class Testing is a life long learning for real world application	-
0 0	CO2			Knowledge of decision table is required to solve the different problem	
,0,9				Analysing the types of problems requires the knowledge of decision	L
	CO3	PO2	L4	table testing	L
	CO3	PO3		Design test cases for different problem	$\left \right $
			L5	-	
		PO4 PO5		No investigation and interpretation content. No mapping.	
	-	•		decision table testing is done using different testing tools	
		P06	L3	decision table testing is used in individual project management	L
		PO7		No engineer and society content. No mapping.	L
		PO8		Error free product is produced to the different domains	
	-	PO9		No individual and team work. No mapping.	
		PO10		No usage for communication. No mapping.	L
		PO11		No project management and finance. No mapping	L
10		PO12	L3	decision table Testing is a life long learning for real world application	L
10	CO4			Knowledge of test cases is required to solve the binary search problem	L
	CO4			Analysing the binary search problem requires the knowledge of testing	L
		PO3	L5	Design test cases for binary search problem requires the test cases	L
		PO4		No investigation and interpretation content. No mapping.	L
	CO4	_	L3	Testing is done using different testing tools	
	CO4		L3	Testing is used in individual project management	
	CO4			No engineer and society content. No mapping.	L
		PO8	L3	Error free product is produced to the different domains	L
		PO9		No individual and team work. No mapping.	L
		PO10		No usage for communication. No mapping.	L
	CO4	PO11		No project management and finance. No mapping	L

		PO12	L3	Testing is a life long learning for real world application	L3
11	CO5	PO1	L3	Knowledge of test cases is required to solve the binary search problem	L3
	CO5	PO2	L4	Analyzing the quick sort problem requires the knowledge of testing	L5
	CO5	PO3	L5	Design test cases for quick sort problem requires the test cases	L6
	CO5	PO4		No investigation and interpretation content. No mapping.	L6
	CO5	PO5	L3	Testing is done using different testing tools	L6
	CO5	PO6	L3	Testing is used in individual project management	L2
	CO5	PO7		No engineer and society content. No mapping.	L4
	CO5	PO8	L3	Error free product is produced to the different domains	L3
	CO5	PO9		No individual and team work. No mapping.	L3
	CO5 F	PO10		No usage for communication. No mapping.	L6
	CO5 F	PO11		No project management and finance. No mapping	L6
	CO5 F	PO12	L3	Testing is a life long learning for real world application	L6
12	CO6	PO1	L3	Knowledge of test cases is required to solve the letter grading problem	L6
	CO6	PO2	L4	Analysing the letter grading problem requires the knowledge of testing	L2
	CO6	PO3	L5	Design test cases for binary search problem requires the test cases	L4
	CO6	PO4		No investigation and interpretation content. No mapping.	L3
	CO6	PO5	L3	Testing is done using different testing tools	L3
	CO6	P06	L3	Testing is used in individual project management	L6
	CO6	PO7		No engineer and society content. No mapping.	L6
	CO6	PO8	L3	Error free product is produced to the different domains	L6
	CO6	PO9		No individual and team work. No mapping.	L6
	CO6 F	PO10		No usage for communication. No mapping.	
	CO6	PO11		No project management and finance. No mapping	
	CO6 F	PO12	L3	Testing is a life long learning for real world application	

4. Articulation Matrix

CO – PO Mapping with mapping level for each CO-PO pair, with course average attainment.

											<u> </u>							
-	-	Experiment Outcomes					Ρ	rog	ram	ו Ou	utco	ome	es					-
Expt.	CO.#	At the end of the experiment	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PS	PS	PS	Lev
		student should be able to	1	2	3	4	5	6	7	8	9	10	11	12	01	02	03	el
1	17 SL67.1	Design and evaluate test cases	3	3	3	-	3	3	-	-	-	-	-	3	3	3	3	L5
		for boundary value																
2	17 SL67.2	Design and evaluate test cases	3	3	3	-	3	3	-	-	-	-	-	3	3	3	3	L5
		for equivalence class																
3	17ISL67.3	Design and evaluate test cases	3	3	3	-	3	3	-	-	-	-	-	3	3	3	3	L5
		for decision table																
4	17ISL67.4	Design and evaluate test cases	3	3	3	-	3	3	-	-	-	-	-	3	3	3	3	L5
		for binary search algorithm																
5		Design and evaluate test cases	3	3	3	-	3	3	-	-	-	-	-	3	3	3	3	L5
		for quick sort algorithm																
6			3	3	3	-	3	3	-	-	-	-	-	3	3	3	3	L6
		for absolute letter grading																
-	17ISL67	Average attainment (1, 2, or 3)	3	3	3	-	3	3	-	-	-	-	-	3	3	3	3	
-	PO, PSO	1.Engineering Knowledge; 2.Prob	lem	Ar	naly	sis;	<u>3</u> .[Des	ign	/	Dev	/elo	pm	ient	of	S	oluti	ions;
		4.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and																
		Society; 7.Environment and Sustainability; 8.Ethics; 9.Individual and Teamwork;																
		10.Communication; 11.Project Management and Finance; 12.Life-long Learning;																
		S1.Software Engineering; S2.Data Base Management; S3.Web Design																

5. Curricular Gap and Experiments

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs.

Expt	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping

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

6. Experiments Beyond Syllabus

Topics & contents required (from A.5) not addressed, but help students for Placement, GATE, Higher Education, Entrepreneurship, etc.

Expt	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping

D. COURSE ASSESSMENT

1. Laboratory Coverage

Assessment of learning outcomes for Internal and end semester evaluation. Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

	student. I Assignment per chapter			. 301111			Jei stu	ucm.			
Unit	Title	Teachi		Nc	o. of qu	lestior	in Exa	am		CO	Levels
		ng						Asg-3	SEE		
		Hours	0071	01/ 12	01/13	/ .5g I	/ Jg 2	/ Jg J	JLL		
-	Designs and develop a test second									004	
1	Design and develop a test cases	3	1	-	-	-	-	-	1	CO1	L4
	for										
	triangle problem using boundary										
	value analysis										
2	Design and develop a test cases	3	1						1	CO1	L4
2		3	1	-	-	-	-	-	T		L4
	for										
	commission problem using										
	boundary										
	value analysis										
3	Design and develop a test cases	3	1	_	_	_	-	_	1	CO1	L4
	for	5	-						-	001	
	next date function using boundary										
	value analysis										
4	Design and develop a test cases	3	1	-	-	-	-	-	1	CO2	L4
	for										
	triangle problem using										
	equivalence										
	class testing										
5	Design and develop a test cases	3		1	-	-	-	-	1	CO2	L4
	for										
	commission problem using										
	equivalence class testing										
6	· · · · ·	2		1					1	CO2	10
0	Design and develop a test cases	3		1	-	-	-	-	1	002	L3
	for										
	next date function using										
	equivalence class testing										
7	Design and develop a test cases	3		1	-	-	-	-	1	CO3	L3
′	for	5		-					-		
	triangle problem using decision										
	table testing										
8	Design and develop a test cases	3		1	-	-	-	-	1	CO3	L3
	for										
	commission problem using										
	decision table testing										
		4								<u> </u>	
9	Design and develop a test cases	4		-	1	-	-	-	1	CO3	L3
	for										
	next date function using decision										
	table testing										
10	Design, develop test cases for	4		-	1	-	-	-	1	CO4	L3
	binary search algorithm	т			-				-		
11	, ,	A							1	COF	10
11	Design, develop test cases for	4		-	1	-	-	-	1	CO5	L3

	quick sort algorithm										
	Design, develop, code and run the	4		-	1	-	-	-	1	CO6	L3
	program in any suitable language										
	to implement an absolute letter										
	grading procedure, making										
	suitable assumptions										
-	Total	40	4	4	4	-	-	-	12	-	-

2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Evaluation	Weightage in Marks	СО	Levels
CIA Exam – 1	40	CO1, CO2	L5
CIA Exam – 2	40	CO2, CO3	L5
CIA Exam – 3	40	CO4,CO5,CO6	L5,L6
Assignment - 1	_	-	-
Assignment - 2	-	-	-
Assignment - 3	-	-	-
Seminar - 1	-	-	-
Seminar - 2	-	-	-
Seminar - 3	-	-	-
Other Activities – define – Slip test			
Final CIA Marks	40	-	-

SNo	Description	Marks						
1	Observation and Weekly Laboratory Activities	5 Marks						
2		15 Marks for each experiment						
3	Internal Exam Assessment	20 Marks						
4	Internal Assessment	40 Marks						
5	SEE	60 Marks						
-	Total	100 Marks						

E. EXPERIMENTS

Experiment 01 : Boundary Value Analysis For Triangle Problem

-	Experiment No.:	1	Marks		Date		Date					
					Planned		Conducted					
1	Title	Βοι	oundary value analysis for triangle problem									
2	Course Outcomes	Des	sign and eval	uate test cas	ses for Bound	dary value						
3	Aim	Der	ive a Bounda	ary value ana	lysis for triar	igle problem	1					
4	Material /	′Lab	Manual									
	Equipment Required											
5	Theory, Formula	,Βοι	undary value analysis									
	Principle, Concept											
6	Procedure, Program											
	, , ,	,Ste	p 1: Input a, k	% c i.e three	integer valu	es which rep	present three	sides of the				
	Pseudo Code		ngle.									
			•		(a + c)) and (c	< (a + b) ther	n do step 3 el	se print not				
			riangle. do step 6.									
			tep 3: if (a=b) and (b=c) then Print triangle formed is equilateral. do step 6. ep 4: if (a \neq b) and (a \neq c) and (b \neq c) then Print triangle formed is scalene. do									
		Ste	p 4: if (a ≠ b) a	and (a ≠ c) an	d (b ≠ c) then	Print triangle	e formed is s	calene. do				

	ste	ep 6.											
		ep 5: Print triangle f	orm	ed i	s Is	osce	eles						
		ep 6: stop											
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph	Bound		у \	/al	ue		nal		S			
8	Observation Table,	Bour	ndry				j.	Bour		•			
	Look-up Table, Output												
9	Sample Calculations												
10	Graphs, Outputs	c1: a <b+c?< td=""><td>F</td><td>T</td><td>T</td><td>T</td><td>T</td><td>Т</td><td>Т</td><td>т</td><td>Т</td><td>Т</td><td>Т</td></b+c?<>	F	T	T	T	T	Т	Т	т	Т	Т	Т
		c2: b <a+c?< td=""><td></td><td>F</td><td>T</td><td>T</td><td>T</td><td>T</td><td>Ť</td><td>Ť</td><td>Ť</td><td>T</td><td>T</td></a+c?<>		F	T	T	T	T	Ť	Ť	Ť	T	T
		c3: c <a+b?< td=""><td>-</td><td>-</td><td>F</td><td>T</td><td>Ť</td><td>T</td><td>T</td><td>Ť</td><td>T</td><td>T</td><td>T</td></a+b?<>	-	-	F	T	Ť	T	T	Ť	T	T	T
		c4: a = b?	-	-	-	T	T	T	T	F	F	F	F
		c5: a = c?	-	-		T	T	F	F	T	T	F	F
		c6: b = c?	-	-	-	T	F	T	F	T	F	T	F
		a1: Not a Triangle	X	X	X								
		a2: Scalene											X
		a3: Isosceles							Х		Х	χ	
		a4: Equilateral				Х							
		a5: Impossible		3		C. N.	X	Х		Х			
11	Results & Analysis												
12	Application Areas	To test the er	rors	at b	our	ndar	ries	of ir	nput	do	mai	n	
	Remarks												
14	Faculty Signature with Date												

Experiment 02 : Boundary Value Testing For Commission Problem

Experiment No.:	2	Marks		Date Planned		Date Conducted				
Title	Boun	dary value te	esting for cor		blem					
Course Outcomes	Desig	Design and evaluate test cases for Boundary value								
Aim	Deriv									
Material / Equipment Required	Lab N	Manual								
Theory, Formula, Principle, Concept	Boun	idary value a	nalysis							
Program, Activity, Algorithm, Pseudo Code	STEP STEP goto STEP STEP STEP	2 1: Define loc 2: Input lock 3: while(lock STEP 12 4:input (stock 5: compute l 6: output("To	s s!=-1) "input c ks, barrels) ockSales, sto tal sales:" sal	levice uses - ockSales, bar es)	1 to indicate	end of data				
	Title Course Outcomes Aim Material / Equipment Required Theory, Formula, Principle, Concept Procedure, Program, Activity, Algorithm, Pseudo Code	Title Boun Course Outcomes Desig Aim Deriv Material / Lab N Equipment Required Theory, Formula, Boun Principle, Concept Procedure, ALGC Program, Activity, STEP Algorithm, Pseudo STEP Gode STEP STEP STEP	Title Boundary value to Course Outcomes Design and evalue Aim Derive a boundary Material / Lab Manual Equipment Lab Manual Required Principle, Concept Procedure, ALGORITHM Program, Activity, STEP 1: Define lock Algorithm, Pseudo STEP3: while(lock goto STEP 12 STEP4:input (stoch STEP6: output("To	Title Boundary value testing for cor Course Outcomes Design and evaluate test cases Aim Derive a boundary value test for Material / Equipment Lab Manual Required - Principle, Concept - Procedure, ALGORITHM Program, Activity, STEP 1: Define lockPrice=45.0, state Algorithm, Pseudo STEP3: while(locks!=-1) "input or goto STEP 12 STEP4:input (stocks, barrels) STEP5: compute lockSales, stor STEP6: output("Total sales:" sale	TitleBoundary value testing for commission proCourse OutcomesDesign and evaluate test cases for BoundardAimDerive a boundary value test for commissionMaterial/EquipmentLab ManualRequiredImage: State of the sta	TitleBoundary value testing for commission problemCourse OutcomesDesign and evaluate test cases for Boundary valueAimDerive a boundary value test for commission problemMaterial/Lab ManualEquipmentRequiredTheory, Formula, Boundary value analysisPrinciple, ConceptProcedure,Program, Activity,STEP 1: Define lockPrice=45.0, stockPrice=30.0, barrelPrivicAlgorithm, PseudoSTEP2: Input locksCodeSTEP3: while(locks!=-1) "input device uses -1 to indicate goto STEP 12 STEP4:input (stocks, barrels) STEP5: compute lockSales, stockSales, barrelSales and	TitleBoundary value testing for commission problemCourse OutcomesDesign and evaluate test cases for Boundary valueAimDerive a boundary value test for commission problemMaterialLab ManualEquipment RequiredBoundary value analysisPrinciple, ConceptALGORITHMProcedure, Procedure, CodeALGORITHMSTEP2: Input locks CodeSTEP2: Input locks STEP1: Define lockPrice=45.0, stockPrice=30.0, barrelPrice=25.0STEP3: while(locks!=-1) "input device uses -1 to indicate end of data goto STEP12 STEP4:input (stocks, barrels) STEP5: compute lockSales, stockSales, barrelSales and sales STEP6: output("Total sales:" sales)			

	Block, Circuit,	comm STEPg STEP1 (sales·	nissio 9: if (s 10: cc -1000 11: Ou	itput("Commiss	1 + 0.20 goto S * 1000	0 * (sale TEP 10 .0; con	es-180 else g nmissio	0.0) Joto ST on=cor	ГЕР 11		
	Model Diagram, Reaction Equation, Expected Graph		•	Boundry Boundry	ue A	Bound Bound Bound Value	dry dry				
	Observation Table, Look-up Table, Output										
9	Sample Calculations										
10	Graphs, Outputs	+ TC	ID	Test case description		Input Dat	а	Sales	Expected output	Actual output	status
		1		Input test cases for L=1	Locks 1	Stocks 1	Barrels 1	100	10	10	pass
		2		,S=1 ,B=1 Input test cases for L=1	1	1	2	125	10	10	pass
				,S=1,B=2							
		3		Input test cases for L=1 ,S=2 ,B=1	1	2	1	130	13	13	pass
		4		Input test cases for L=2 ,S=1,B=1	2	1	1	145	14.5	14.5	pass
		5		Input test cases for L= 5 ,S=5 ,B=5	5	5	5	500	50	50	pass
		6		Input test cases for L=10 ,S=10,B=9	10	10	9	975	97.5	97.5	pass
		7		Input test cases for L=10 ,S=9 ,B=10	10	9	10	970	97	97	pass
		8		Input test cases for L= 9	9	10	10	955	95.5	95.5	pass
		9		,S=10 ,B=10 Input test cases for L=10 ,S= 10,B=10	10	10	10	1000	100	100	pass
						-			•	-	b
11	Results & Analysis										
12	Application Areas	To tes	st the	errors at bound	daries	of inp	ut dom	nain			
13	Remarks										
	Faculty Signature										
	with Date										

Experiment 03 :Boundary Value Testing For Next Date Problem

-	Experiment No.:	3	Marks		Date		Date			
	-				Planned		Conducted			
1	Title	Boun	dary value te	esting for ne>	t date proble	em				
2	Course Outcomes	Desig	n and evalua	ate test case	s for Bounda	ry value				
3	Aim	Deriv	erive a Boundary value testing for next date problem							
4	Material /	Lab N	1anual							
	Equipment									
	Required									
5	Theory, Formula,	Boun	dary value a	nalysis						
	Principle, Concept									
6	Procedure,	STEP	1: Input date	in format DE	D.MM.YYYY					
	Program, Activity,	STEP	2: if MM is 01	, 03, 05,07,08	,10 do STEP	3 else STEP6	5			

		STEP3:if DD < 31 then do STEP4 else if DD=31 do STEP5 else
		output(Invalid Date);
		STEP4: tomorrowday=DD+1 goto STEP18
		STEP5: tomorrowday=1; tomorrowmonth=month + 1 goto STEP18
		STEP6: if MM is 04, 06, 09, 11 do STEP7
		STEP7: if DD<30 then do STEP4 else if DD=30 do STEP5 else
		output(Invalid Date);
		STEP8: if MM is 12
		STEP9: if DD<31 then STEP4 else STEP10
		STEP10: tomorrowday=1, tommorowmonth=1,
		tommorowyear=YYYY+1; goto STEP18
		STEP11: if MM is 2
		STEP12: if DD<28 do STEP4 else do STEP13
		STEP13: if DD=28 & YYYY is a leap do STEP14 else STEP15
		STEP14: tommorowday=29 goto STEP18 STEP15: tommorowday=1, tomorrowmonth=3, goto STEP18;
		STEP 15. tormotowday=1, tornotrowmonth=3, goto STEP 18, STEP 16: if DD=29 then do STEP 15 else STEP 17
		STEP10. II DD=29 then do STEP15 else STEP17 STEP17: output("Cannot have feb", DD); STEP19
		STEP17. output Cannot have led , DD), STEP19 STEP18: output(tomorrowday, tomorrowmonth, tomorrowyear);
		STEP10. bulpulliononowday, tomorrownonin, tomorrowyean, STEP19: exit
7	Block, Circuit,	
'	Model Diagram,	
	Reaction Equation,	Boundary Value Analysis
	Expected Graph	Boundry Boundry
		Boundry Boundry Values Values
8	Observation Table,	
	Look-up Table,	
	Output	
9	Sample Calculations	
10		
10	Graphs, Outputs	
11	Results & Analysis	
-	Application Areas	
		To test the errors at boundaries of input domain
13	Remarks	
	Faculty Signature	
	with Date	
·		

Experiment 04 : Equivalence Class Partitioning Test For Different Types Of Triangles

-	Experiment No.:	4	Marks		Date		Date		
					Planned		Conducted		
1	Title	Equiv	uivalence class partitioning test for different types of triangles						
2	Course Outcomes	Desig	esign and evaluate test cases for equivalence class						
3	Aim	Deriv	Derive a test case for different types of triangles						
4	Material /	(Lab N	_ab Manual						

	Equipment									
	Required									
5	Theory, Formula,	Fau	ivalon		tocti	ina				
S	Principle, Concept	Lqu	ivaterr		1031	ing				
ò		ALG		IM:						
		Ster	5 1: Inp	ut a, b &	c i.e	e thr	ree	integer values which repre-	sent three si	des of
	Algorithm, Pseudo									
) and	d (b	< (a + c)) and (c < (a + b) then		
			step 3							
		else								
		prin	t not a	triangle	do	ste	o 6.			
		Ster	5 3: if (a	a=b) and	(b=c) th	en			
		Prin	t triang	gle forme	ed is	eq	uila	iteral. do step 6.		
		Step	5 4: if (a	a ≠ b) and	d (a ≠	₄ C)	and	d (b ≠ c) then		
		Prin	t triang	gle forme	ed is	SC	alei	ne. do step 6.		
		Step	o 5: Pri	nt triangl	le fo	rme	ed i	s Isosceles.		
		· · ·	o 6: sto	р						
7	Block, Circuit,									
	Model Diagram,									
	Reaction Equation,									
	Expected Graph									
8	Observation Table,									
	Look-up Table,	,								
	Output									
9	Sample									
	Calculations	Mar I								
10	Graphs, Outputs	[TC ID	Test case description	a	b	c	Expected output	Actual output	status
		l t	1	WN1	5	5	5	Equilateral	Equilateral	Pass
			2	WN2 WN3	2	2	3	Pass Scalene	Isosceles	Pass Pass
			4	WN4	4	4	2	Not a triangle	Scalene Not a triangle	Pass
			5	WR1	-1	5	5	Value of a is not in the range of permitted	Not in a range	Pass
			6	WR2	5	-1	5	values Value of b is not in the range of permitted	Not in a range	Pass
								values		
			7	WR3	5	5	-1	Value of is not in the range of permitted values	Not in a range	Pass
			8	WR4	11	5	5	Value of a is not in the range of permitted values	Not in a range	Pass
			9	WS1	-1	5	5	Values Value of a is not in the range of permitted values	Not in a range	Pass
			10	WS2	5	-1	5	Values Value of b is not in the range of permitted values	Not in a range	Pass
			11	WS3	5	5	-1	Value of c is not in the range of permitted values	Not in a range	Pass
			12	WS4	-1	-1	5	Value of a and b is not in the range of permitted values	Not in a range	Pass
				1		L	L		I	
11	Results & Analysis									
		Syst	tem be	ehavior te	estir	ng				
	Remarks			-		<u> </u>				
	Faculty Signature									
-т	with Date									
مام	required experimer	ata								

Add required experiments

Experiment 05: Equivalence Class Testing For Commission Problem

-	Experiment No.:	5	Marks		Date	Date	;			
					Planned	Conduc	ted			
1	Title	Equiv	ivalence class testing for commission problem							
2	Course Outcomes	Desig	esign and evaluate test cases for equivalence class							
3	Aim	Deriv	erive test cases for commission problem							
4	Material /	Lab N	ab Manual							
	Equipment									

	Required	
-	•	Equivalence class testing
	Principle, Concept	
66	Procedure, ALGORI	ТНМ
	Program, Activity,	STEP 1: Define lockPrice=45.0, stockPrice=30.0, barrelPrice=25.0
	Algorithm, Pseudo	STEP2: Input locks
	Code	STEP3: while(locks!=-1) "input device uses -1 to indicate end of data goto
		STEP 12
		STEP4:input (stocks, barrels)
		STEP5: compute lockSales, stockSales, barrelSales and sales
		STEP6: output("Total sales:" sales)
		STEP7: if (sales > 1800.0) goto STEP 8 else goto STEP 9 STEP8: commission=0.10*1000.0; commission=commission+0.15 * 800.0;
		commission = commission + 0.20 * (sales-1800.0)
		STEP9: if (sales > 1000.0) goto STEP 10 else goto STEP 11
		STEP10: commission=0.10* 1000.0; commission=commission + 0.15 *
		(sales-1000.0)
		STEP11: Output("Commission is \$", commission)
	STEP12:	exit
	Block, Circuit,	
	Model Diagram,	
	Reaction Equation,	,
	Expected Graph	
	Observation Table,	
	Look-up Table, Output	,
	Sample	
9	Calculations	
10	Graphs, Outputs	
10		TCID Test case description Input Data Sales Expected output Actual output status Locks Stoc Barrels Input Data Input Data <t< td=""></t<>
		ks 0 10 10 10 5100 10 10 pass 2 WR2 -1 40 45 Program Program Program pass
		WR3 -2 40 45 Value of locks not Value of locks Invalid pass in the range 1-70 not in the not no
		4 WR4 71 40 45 Value of locks not Value of locks 954.0 pass in the range1-70 not in the
		S WRS 35 -1 45 Value of stocks not in the range1-not not in the range1-not 394 pass
		6 WR6 35 81 45 Value of stocks not in the range1- not in
		7 WR7 10 9 10 970 97 97 pass 8 WR8 9 10 10 955 95.5 95.5 pass
		0 000 7 10 10 733 73.3 73.3 P355
	Results & Analysis	
12	Application Areas	System behavior testing
13	Remarks	
	Faculty Signature	3
-4	with Date	
		1

Experiment 06:Equivalence Class Testing For Next Date Function

-	Experiment No.:	6	Marks		Date		Date	
					Planned		Conducted	
1	Title	Equiv	alence class	s testing for r	ext date fund	ction		
2	Course Outcomes	Desig	gn and evalu	ate test case	s for equivale	ence class		
3	Aim	Deriv	e an Equival	ence class te	sting for nex	t date function	on	
4	Material /	Lab N	Manual					
	Equipment							
	Required							
5	Theory, Formula,	Equiv	valence class	s testing				
	Principle, Concept							
66	Procedure, ALGORI ⁻	ТНМ						
	Program, Activity,	STEF	1: Input date	e in format DE	D.MM.YYYY			
	Algorithm, Pseudo	STEF	2: if MM is 01	, 03, 05,07,08	3,10 do STEP3	3 else STEP6	5	
	Code	STEF	'3:if DD < 31 tl	hen do STEP.	4 else if DD=3	1 do STEP5 (else	

		output(Invalid Date);
		STEP4: tomorrowday=DD+1 goto STEP18
		STEP5: tomorrowday=1; tomorrowmonth=month + 1 goto STEP18
		STEP6: if MM is 04, 06, 09, 11 do STEP7
		STEP7: if DD<30 then do STEP4 else if DD=30 do STEP5 else
		output(Invalid Date);
		STEP8: if MM is 12
		STEP9: if DD<31 then STEP4 else STEP10
		STEP10: tomorrowday=1, tommorowmonth=1, tommorowyear=YYYY+1;
		goto STEP18
		STEP11: if MM is 2
		STEP12: if DD<28 do STEP4 else do STEP13
		STEP13: if DD=28 & YYYY is a leap do STEP14 else STEP15
		STEP14: tommorowday=29 goto STEP18
		STEP15: tommorowday=1, tomorrowmonth=3, goto STEP18;
		STEP16: if DD=29 then do STEP15 else STEP17
		STEP17: output("Cannot have feb", DD); STEP19
		STEP18: output(tomorrowday, tomorrowmonth, tomorrowyear);
	STEP19:	exit
	Block, Circuit,	
	Model Diagram,	
	Reaction Equation,	
	Expected Graph	
	Observation Table,	
	Look-up Table,	
	Output	
	Sample	
	Calculations	
10	Graphs, Outputs	
<u> </u>		
-	Results & Analysis	
		System behavior testing
	Remarks	
	Faculty Signature	
	with Date	
L	1	· · · · · · · · · · · · · · · · · · ·

Experiment 07: Decision Table Approach For Triangle Problem

-	Experiment No.:	7	Marks		Date		Date			
					Planned		Conducted			
1	Title	Decisio	on table appr	oach for triai	ngle problen	า				
2	Course	Design	sign and evaluate test cases using decision table							
	Outcomes									
3	Aim	Design	ign test cases for triangle problem using decision table							
4	Material /	Lab Ma	Manual							
	Equipment									
	Required									
5	Theory, Formula,	Decisio	on table							
	Principle,									
	Concept									
							ee sides of th	e triangle.		
	Program, Activity,	Step 2:	if (a < (b + c))	and (b < (a +	c)) and (c < (a	a + b) then				
	Algorithm,	do step	o 3							
	Pseudo Code	else								
			ot a triangle.							
		Step 3:	if (a=b) and (b=c) then						

		Step	4: if (a	le formed is equilater ≠ b) and (a ≠ c) and (b	≠ C)	the	en.	6.		
				le formed is scalene.						
			5: Prir	It triangle formed is Is	OSC	eles	5.			
		stop								
7	Block, Circuit, Model Diagram,									
	Model Diagram, Reaction									
	Equation,									
	Expected Graph									
8	Observation									
	Table, Look-up									
	Table, Output									
9	Sample									
	Calculations									
10	Create Custor to									
10	Graphs, Outputs	r								
			TC ID	Test case description	а	b	c	Expected output	Actual output	status
			1	Testing for requirement 1	4	1	2	Not a triangle	Not a triangle	Pass
			2	Testing for requirement 2	1	4	2	Not a triangle	Not a triangle	Pass
			3	Testing for requirement 3	1	2	4	Not a triangle	Not a triangle	Pass
			4	Testing for requirement 4	5	5	5	Equilateral	Equilateral	Pass
			5	Testing for requirement 5	2	2	3	Isosceles	Isosceles	Pass
			6	Testing for requirement 6	2	3	2	Isosceles	Isosceles	Pass
			7	Testing for requirement 7	3	2	2	Isosceles	Isosceles	Pass
			8	Testing for requirement 8	3	4	5	Scalene	Scalene	Pass
			I						•	
11	Results &									
	Analysis									
		Calci	ulatior	n of physical quantitie	S					
					-					
13	Remarks									
-	Faculty Signature									
	with Date									

Experiment 08:Decision Based Testing For Commission Problem

-	Experiment No.:	8	Marks		Date Plann	-		Date Conducted	
1	Title	Decisi	ion based te	esting for com				oonduoted	
2								Decision table	<u>,</u>
3	Aim	<u> </u>		table based t					-
			lanual		001 040	00101		prostorii	
4	Equipment Required	Lub	landat						
5	Theory, Formula, Principle, Concept								
6	Procedure,		RITHM						
	Program, Activity, Algorithm, Pseudo Code	Step 1 and B Step 2 Stock Step 2 then c comm do ste Step 8 comm step 6 Step 7	2: Input 3 inte arrels sold. 2: compute t s sold *30) + 3: if a totals s commission 4: else if tota commission 5: else commission 5: else commission 5: else commission 1: commission = com	he total sales (Number of E sale in dollars = 0.10* total S I sale is less t 1 = 0.10* 1000 nmission1 + (0 mmission1 = 0.10 mmission2 + (0	=(Numł arrels s is less t ales do nan \$18 .15 * (toł * 1000 0.15 * 80	ber of old *29 han of step 6 300 tal sale	Locks sold * 5) r equal to \$1 5 es – 1000))		
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph								
	Observation Table, Look-up Table, Output								
9	Sample	TCID	Test case descri	ption Lock	s Stocks	barrels	Expected output	Actual output	status
	Calculations	1	Testing for requ Condition 1(c1)	irement 1 -2	40	45	Out of range	Out of range	Pass
		2	Testing for requ Condition 1(c1)		40	45	Out of range	Out of range	Pass
		3	Testing for requ Condition 2(c2)	virement 1 35	-3	45	Out of range	Out of range	Pass
		4	Testing for requ Condition 2(c2)	irement 1 35	100	45	Out of range	Out of range	Pass
			Testing for requ		40	-10	Out of range	Out of range	Pass
		5	Condition 3(c3)						
		6		virement 1 35	40	150	Out of range	Out of range	Pass
		6	Condition 3(c3) Testing for requ Condition 3(c3) Testing for requ	irement 1 35	5	5	100	a1:50	Pass
		6	Condition 3(c3) Testing for requ Condition 3(c3)	irement 1 35 irement 2 5 irement 2 15				-	

10	Graphs, Outputs	conditions			Conditio	on entries(ru	les)		
		C1:A<=LOCKS<=70	F	Т	Т	Т	Т	Т	
		C1:A<=STOCKS<=70	-	F	Т	Т	Т	Т	
		C1:A<=BARRELSS<=90	-	-	F	Т	Т	Т	
		C4:Sales<=1800	-	-	-	Т	F	F	
		C5: Sales<=1000	-	-	-	-	Т	F	
		C6: Sales<=1000	-	-	-	-	-	Т	
		ACTIONS			ACT	ION ENTRIES	(
		A1: com1=0.10*sales						x	
		A2:com2=com1+0.15*(sales-					×		
		1000)							
		A3:com3=com2+0.20*(sales-				x			
		1800)							
		A4:out of range	x	x	x				
11	Results & Analysis								
12	Application Areas	Calculation of physical qu	uantiti	es					
13	Remarks								-
14	Faculty Signature								
	with Date								

Experiment 09:Data Flow Testing For Commission Problem

-	Experiment No.:	9	Marks		Date Planned		Date Conducted					
1	Title	Data	flow testing	for commissi	on problem							
2					, g for commis	sion problen	n					
3	Aim	Deriv	ive a Decision table testing for commission problem Manual									
·	Equipment Required											
	Theory, Formula, Principle, Concept											
	Program, Activity, Algorithm, Pseudo Code	STEP STEP STEP STEP STEP STEP STEP STEP	2: Input lock 23: while(lock 24:input (stoc 25: compute 26: output("Tc 27: if (sales > : 28: commission 29: if (sales > : 20: commiss 5-1000.0)	s s!=-1) "input c ockSales, sto tal sales:" sal 1800.0) goto on=0.10*1000 nmission + 0. 1000.0) goto ion=0.10* 100	device uses -: ockSales, bar .es) STEP 8 else g	1 to indicate relSales and goto STEP 9 on=commiss 00.0) goto STEP 1 sion=commis	end of data goto I sales ion+0.15 * 800.0; 11					
	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph		12. EXIL									
	Observation Table, Look-up Table, Output											
	Sample Calculations											
10	Graphs, Outputs											

11	Results & Analysis	
12	Application Areas	Calculation of physical quantities
13	Remarks	
14	Faculty Signature	
	with Date	

Experiment 10: Binary Search Algorithm

-	Experiment No.:	10	Marks		Date		Date	
					Planned		Conducted	
1	Title				arch algorith			
		<u> </u>			s for binary s	<u>v</u>	thm	
-	Aim			for binary se	arch algorithr	ท		
		Lab M	1anual					
	Equipment Required							
	Theory, Formula,							
	Principle, Concept							
			Indep	penden	t Paths			
			-		lodes=9			
					= 11-9+2			
			v(G)=	E-IN+2P	= 11-9+2	2 = 4		
			P1 · 1-1	2-3-8-9				
				2-3-4-5-	7-2			
			P3: 1-2	2-3-4-6-7	7-2			
			P4: 1-2		_			
	Algorithm, Pseudo Code	Step 2 Step 2 mid = if (aln then 0 else if then 0 high = else low = Step 2 Step 9	2: Initialize lo 3: until (low + (low + high) nid] == key) do Step 5 (a[mid] > ke do mid - 1 mid + 1 4: Print unsue	w = 0, high = <= high) do / 2 ey) ccessful sear	",,n" integer n n -1 rch do step 6. 1. Element fou			
7	Block, Circuit,	+ · · · · · · · · · · · · · · · · · · ·						
	Model Diagram,	,						
	Reaction Equation,	,						
	Expected Graph							
	Observation Table,							
	Look-up Table,	,						
	Output							
9	Sample Calculations							
	Calculations							

	TC ID	Test case description Testing for requirement 1 path p1	Locks 0	Stocks	barrels	Expected output	Actual output	status
	1		0					
	-	haruht		-	5	Key not found	Wronginput	Pass
	2	Testing for requirement 2 Path p2	4	2,3,5,6,7	5	Key found at pos3	Successful search	Pass
	3	Testing for requirement 2 Path p3	3	1,2,5	6	Key not found	Successful search	Pass
	4	Testing for requirement 2 Path p4	3	1,2,5	1	Key not found	Successful search	Fail
	5	Testing for requirement 2 Path p4+p2-p1	5	1,2,4,6,7	2	Key found at pos2	Successful search	Pass
	6	Testing for requirement 2 Path p3+p2-p1	5	4,5,7,8,9	8	Key found at pos4	Successful search	Pass
Results & Analysis								
Application Areas	DNA se	quences						
Remarks								
aculty Signature								
2	pplication Areas emarks aculty Signature <i>r</i> ith Date	esults & Analysis pplication Areas DNA se emarks aculty Signature <i>i</i> th Date	3 Testing for requirement 2 Path p3 4 4 Testing for requirement 2 Path p4 5 5 Testing for requirement 2 Path p4+p2-p1 6 6 Testing for requirement 2 Path p4+p2-p1 6 7 Testing for requirement 2 Path p4+p2-p1 6 7 Testing for requirement 2 Path p4+p2-p1 6 7 Testing for requirement 2 Path p3+p2-p1 6 9 Testing for requirement 2 Path p3+p2-p1 6 emarks 0NA sequences emarks 6 aculty Signature	3 Testing for requirement 2 3 4 Testing for requirement 2 3 4 Testing for requirement 2 3 9ath p4 5 Testing for requirement 2 5 Path p4+p2-p1 6 Testing for requirement 2 5 Path p3+p2-p1 7 7 7 Path p3+p2 7 7 7<	3 Testing for requirement 2 3 1,2,5 Path p3 4 Testing for requirement 2 3 1,2,5 4 Testing for requirement 2 3 1,2,6,7 Path p4 5 Testing for requirement 2 5 1,2,4,6,7 6 Testing for requirement 2 5 4,5,7,8,9 Path p3+p2-p1 6 Testing for requirement 2 5 4,5,7,8,9 Pesults & Analysis	3 Testing for requirement 2 3 1,2,5 6 4 Testing for requirement 2 3 1,2,5 1 4 Testing for requirement 2 3 1,2,6,7 2 Path p4 5 Testing for requirement 2 5 1,2,4,6,7 2 Path p4+p2-p1 6 Testing for requirement 2 5 4,5,7,8,9 8 Path p3+p2-p1 6 Testing for requirement 2 5 4,5,7,8,9 8 Peath p3+p2-p1 5 1,2,4,6,7 2 1 1 6 Testing for requirement 2 5 4,5,7,8,9 8 Peath p3+p2-p1 5 4,5,7,8,9 8 Poplication Areas DNA sequences 5 5 remarks aculty Signature 7 rith Date 7 7 7	3 Testing for requirement 2 3 1,2,5 6 Key not found 4 Testing for requirement 2 3 1,2,5 1 Key not found 4 Testing for requirement 2 3 1,2,5 1 Key not found 5 Testing for requirement 2 5 1,2,4,6,7 2 Key found at pos2 9 Path p4+p2-p1 6 Testing for requirement 2 5 4,5,7,8,9 8 Key found at pos4 9 Path p3+p2-p1 5 4,5,7,8,9 8 Key found at pos4 9 Path p3+p2-p1 5 4,5,7,8,9 8 Key found at pos4 9 Path p3+p2-p1 5 4,5,7,8,9 8 Key found at pos4 9 Path p3+p2-p1 5 4,5,7,8,9 8 Key found at pos4 9 Path p3+p2-p1 5 4,5,7,8,9 8 Key found at pos4 9 Path p3+p2-p1 5 4,5,7,8,9 8 Key found at pos4 9 Path p3+p2-p1 5 1 1 1 1 9 Path p3+p2-p1 5	3 Testing for requirement 2 3 1,2,5 6 Key not found Successful search 4 Testing for requirement 2 3 1,2,5 1 Key not found Successful search 5 Testing for requirement 2 5 1,2,4,6,7 2 Key found at pos2 Successful search 6 Testing for requirement 2 5 4,5,7,8,9 8 Key found at pos4 Successful search 6 Testing for requirement 2 5 4,5,7,8,9 8 Key found at pos4 Successful search 9 Path p3+p2-p1 5 4,5,7,8,9 8 Key found at pos4 Successful search 9 Successful search 5 9 4,5,7,8,9 8 Key found at pos4 Successful search 9 Successful search 5 5 4,5,7,8,9 8 Key found at pos4 Successful search 9 Successful search 5 1 1 1 1 1 9 Successful search 5 5 1 1 1 1 1 9 Successful search

Experiment 11: Quick Sort Algorithm

-	Experiment No.:	11	Marks			ate nned			ate uctec	i
1	Title	Derive	e a basis pat	hs for quicl	k sort al	gorithm	า			
2	Course Outcomes	Evalu	ate basis pa	ths for quid	ck sort a	lgorithi	m			
3	Aim	Derive	e a basis pat	hs for quicl	k sort al	gorithm	۱			
4	Material /	Lab №	1anual							
	Equipment									
	Required									
-	Theory, Formula,									
<u> </u>	Principle, Concept									
6	Procedure, Program, Activity,									
	Algorithm, Pseudo									
	Code									
7	Block, Circuit,									
	Model Diagram,									
	Reaction Equation,									
	Expected Graph									
8	Observation Table,	*								
	Look-up Table,	TC	ID Test case de	scription Arr	ay elements	Expec	ted output	Actual output		status
	Output	1	Testing for p	oath p1 5,7	,4,2,1,3	2,1,3,	5,7,4	Key not found		Pass
		2	Testing for F		,8,2,7	5,4,2,		Key not found		Pass
		3	Testing for F	Path p3 5,4	,6,7,3	3,4,6,	7,5	Key not found		Pass
	Comercia	_								
9	Sample Calculations									
10	Graphs, Outputs									
10	Graphs, Outputs				_					_
		т	CID Test case des	scription	Array elements	Expected array	output Value of j	Actual output	status	
		1	Testing for p	ath p1	5	5	0	Keynot	Pass	1
		2	Testing for P	ath p2	5,4,6,2,7	5,4,6,2,7	4	found Key not	Pass	
			_	-				found		
		3	Testing for P	ath p3	5,4,6,7,5	5,4,6,7,5	0	Key not found	Pass	
			1		1				1	
	Results & Analysis									
	Application Areas	Image	e processing							
	Remarks									
14	Faculty Signature									
	with Date									

Experiment 12:	Absolute	Letter	Grading
----------------	----------	--------	---------

-	Experiment No.:	12	Marks		Date Planned	I	Date Conduc	
	Title			solute letter g				·
						ute letter gradii		
-	Aim			ate test cases	for absol	ute letter gradi	ng	
·	Material / Equipment Required	Lab N	Manual					
5	Theory, Formula, Principle, Concept							
6	Procedure, Program, Activity, Algorithm, Pseudo Code							
	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph	,		#Edges=25, #1 V(G)= E-N+2				
				P1: 1-2-4-6-	8-10-11-1	7-19-20	E Grade	:
				P2: 1-2-4-6-			D Grade	
				P3: 1-2-4-6-			C Grade	
				P4: 1-2-4-5-			B Grade	
				P5: 1-2-3-11			A Grade	
				P6: 1-2-4-6-			.)	
				P7: 1-2-4-6-				
				P8: 1-2-4-6-				
8	Observation Table,			P9 : 1-2-4-6-	8-10-11-1	6-19-20		
	Look-up Table,							
	Output							
9	Sample							
	Calculations							
10	Graphs, Outputs							
				atha	Input	Expected		Downska
			•	aths	Per	Output		Remarks
			P1: 1-2-4-6-8-	10-11-17-19-20	< 60	E Grade, Satisfac	tory	Pass
			P2: 1-2-4-6-8-	9-11-16-19-20	60-69	D Grade, Above	Average	Pass
			P3: 1-2-4-6-7-	11-15-19-20	70-79	C Grade, Good		Pass
			P4: 1-2-4-5-11	L-14-19-20	80-89	B Grade, Very Go	bod	Pass
			P5 : 1-2-3-11-1	13-19-20	>= 90	A Grade, Excelle	nt	Pass
			P6: 1-2-4-6-8-	10-11-13-19-20	< 60	Excellent		Fail
				10-11-14-19-20	< 60	Very Good		Fail
				10-11-14-19-20 10-11-15-19-20	< 60 < 60	Very Good Good		Fail Fail
			P8: 1-2-4-6-8-					
11	Results & Analysis		P8: 1-2-4-6-8-	10-11-15-19-20	< 60	Good		Fail
	Results & Analysis Application Areas		P8: 1-2-4-6-8-	10-11-15-19-20	< 60	Good		Fail
12 13	Application Areas Remarks		P8: 1-2-4-6-8-	10-11-15-19-20	< 60	Good		Fail
12 13	Application Areas		P8: 1-2-4-6-8-	10-11-15-19-20	< 60	Good		Fail

F. Content to Experiment Outcomes

1. TLPA Parameters

	Table 1: TLP/	A – SI LA	B Course	9			
Expt-	Course Content or Syllabus	Content	Blooms'	Final	Identified	Instructi	Assessment
#	(Split module content into 2 parts which	Teachin	Learning	Bloo	Action	on	Methods to
	have similar concepts)	g Hours	Levels	ms'	Verbs for	Methods	Measure
			for	Leve	Learning	for	Learning
			Content	l		Learning	
Α	В	С	D	Ε	F	G	Н
1	Design and develop a program in a	3	L5	L5	Design	Demons	Small group
	language of your choice to solve		evaluate			trate	discussions.
	the triangle problem			ate	develop	process	Q & A
2	Design, develop, code and run the	3	L5		Design		Small group
	program in any suitable		evaluate			trate	discussions.
	language to solve the commission problem			ate	develop	process	Q & A
3	Design, develop, code and run the program	3	L5		Design		Small group
	in any suitable language		evaluate			trate	discussions.
-	to implement the NextDate function				develop	process	Q & A
4	Design and develop a program in a language	3	L5		Design		Small group
	of your choice to solve		evaluate			trate	discussions.
	the triangle problem				develop	process	Q&A
5	Design, develop, code and run the program	3	L5		Design		Small group
	in any suitable		evaluate			trate	discussions.
	language to solve the commission problem				develop	process	Q&A
6	Design, develop, code and run the program	3	L5		Design		Small group
	in any suitable language		evaluate			trate	discussions.
	to implement the NextDate function				develop	process	Q&A
7	Design and develop a program in a language	3	L5		Design		Small group
	of your choice to solve		evaluate			trate	discussions.
	the Triangle problem				develop	process	Q & A
8	Design, develop, code and run the program	3	L5		Design		Small group
	in any suitable language		evaluate			trate	discussions.
	to solve the commission problem	4			develop Decign	process	Q & A Small group
9	Design, develop, code and run the program	4	L5 evaluate		Design	trate	discussions.
	in any suitable language to solve the commission problem		evaluale		develop	process	Q & A
	Design, develop, code and run the program	4	L5		Design		Small group
10	in any suitable language	4	⊔-5 evaluate			trate	discussions.
	to implement the binary search algorithm		c valuale		develop	process	Q & A
	Design, develop, code and run the program	4	L5		Design		Small group
1 11	in any suitable language	4	⊔⊃ evaluate			trate	discussions.
	to implement the quicksort algorithm		ovaluate		develop	process	Q & A
	Design, develop, code and run the program	4	L5		Design		Small group
	in any suitable language to implement an		evaluate			trate	discussions.
	absolute letter grading procedure, making				develop	process	Q & A
	suitable assumptions						
L	1				I		

Table 1: TLPA – ST LAB Course

2. Concepts and Outcomes:

Table 2: Concept to Outcome – ST Course

E	xpt Le	earning or	Identified	Final Concept	Concept	CO Components	Course Outcome
-	·# O	Dutcome	Concepts		Justification	(1.Action Verb,	
	fro	om study	from		(What all Learning	2.Knowledge,	
		of the	Content		Happened from the	3.Condition /	Student Should be
	Co	ontent or			study of Content /	Methodology,	able to

	Syllabus			Syllabus. A short	4.Benchmark)	
	Syllabus			word for learning or		
				outcome)		
				oucome)		
A	1	J	K	L	M	N
		Boundary		Testing Technique	Design and develop	Design and evaluate
	value	value	value		Testing Technique	test cases for
					Boundary value	boundary value
2	Equivalence	Equivalen	Equivalence	Testing Technique	Design and develop	Design and evaluate
	class	ce class	class		Testing Technique	test cases for
					Equivalence class	equivalence class
3	Decision	Decision	Decision	Testing Technique	Design and develop	Design and evaluate
	table	table	table	0 1	Testing Technique	test cases for
					Decision table	decision table
4	binary	binary	binary search	Testing Technique	Design and develop	Design and evaluate
			algorithm		Testing Technique	test cases for binary
		algorithm	augonann		binary search	search algorithm
	argonann	argonann			algorithm	search argonann
5	quick sort	auick sort	quick sort	Testing Technique	- U	Design and evaluate
		algorithm		resung reeningue	Testing Technique	test cases for quick
	algontinn	algontinn	algontinn		quick sort algorithm	
6	abcaluta	abcaluta	abcaluta	Tacting Tachnissia		<u> </u>
6			absolute	Testing Technique	Design and develop	Design and evaluate
	letter		letter grading		Testing Technique	test cases for
	grading	grading			absolute letter	absolute letter
					grading	grading