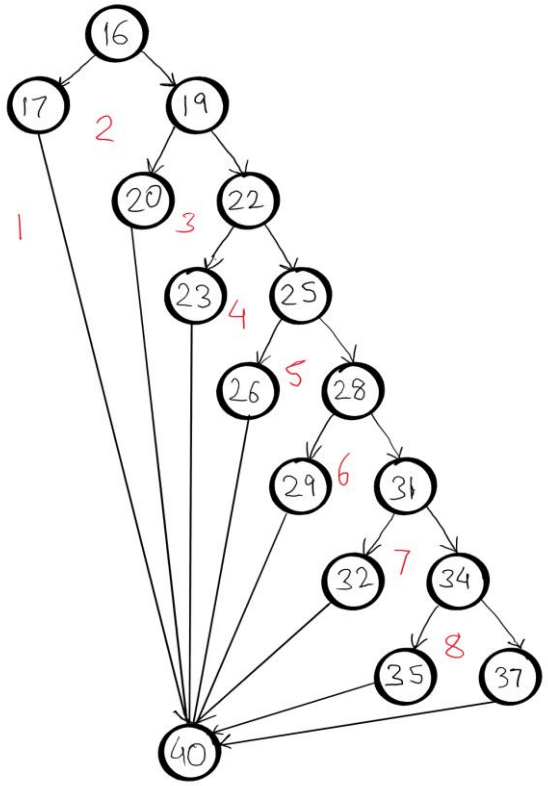
FNU Gauravdeep Singh
1001827248
CSE 5321-001 Homework 03

1.1

Conditions (all AGL measurements are in feet)	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8
0.0 = AGL	Y							
0.1 <= AGL <= 250.0		Y						
250.1 <= AGL <= 400.1			Y					
400.2 <= AGL <= 1,100.1				Y				
1,100.2 <= AGL <= 2,250.0					Y			
2,250.1 <= AGL <= 4,100.1						Y		
4,100.2 <= AGL <= 7,500.1							Y	
7,500.2 <= AGL <= 10,000.0								Y
Actions								
motorState	OFF	RB1	RB2	RB2	RB3	RB4	RB5	OFF
chuteState	Released	Released	Released	Deployed	OFF	OFF	OFF	OFF

1.2

Test Case	Input	Expected Output		Basis Path
	AGL(feet)	motorState	chuteState	
1	7_500.2	OFF	OFF	16-17-40
2	4_100.2	RB5	OFF	16-19-20-40
3	2_250.1	RB4	OFF	16-19-22-23-40
4	1_100.2	RB3	OFF	16-19-22-25-26-40
5	400.2	RB2	Deployed	16-19-22-25-28-29-40
6	250.1	RB2	Released	16-19-22-25-28-31-32-40
7	0.1	RB1	Released	16-19-22-25-28-31-34-35-40
8	0.0	OFF	Released	16-19-22-25-28-31-34-37-40
9	10_000.0	OFF	OFF	-
10	7_500.1	RB5	OFF	-
11	4_100.1	RB4	OFF	-
12	2_250.0	RB3	OFF	-
13	1_100.1	RB2	Deployed	-
14	400.1	RB2	Deployed	-
15	250.0	RB1	Released	-



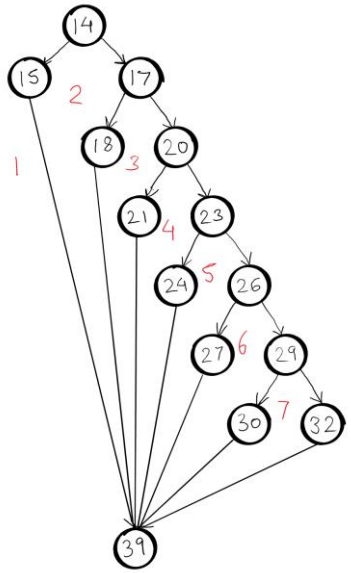
Decision coverage, Statement Coverage, Full Boundary Values and Extreme range Test Cases Support the description

2.1

Conditions (battery level in watts)	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7
0.0 = battery	Y						
0.1 <= battery <= 35.1		Y					
35.2 <= battery <= 60.0			Y				
60.1 <= battery <= 99.7				Y			
99.8 <= battery <=99.9					Y		
100.0 <= battery <= 200.1						Y	
200.2 <= battery <= 1,000.0							Y
Actions							
red light	TRUE	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE
yellow light	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE	FALSE
green light	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	FALSE
strobe	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE
bell	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE

2.2

Test Case Number	Input	Expected Output					Basis path
	battery level (watts)	red	yellow	green	strobe	bell	
1	0.0	TRUE	TRUE	TRUE	FALSE	TRUE	14-15-39
2	35.1	TRUE	TRUE	TRUE	TRUE	FALSE	14-17-18-39
3	60.0	FALSE	TRUE	TRUE	FALSE	TRUE	14-17-20-21-39
4	99.7	FALSE	FALSE	TRUE	FALSE	TRUE	14-17-20-23-24-39
5	99.9	FALSE	FALSE	FALSE	FALSE	TRUE	14-17-20-23-26-27-39
6	200.1	TRUE	TRUE	TRUE	FALSE	TRUE	14-17-20-23-26-29-30-39
7	1_000.0	FALSE	FALSE	FALSE	FALSE	TRUE	14-17-20-23-26-29-32-33
8	0.1	TRUE	TRUE	TRUE	TRUE	FALSE	-
9	35.2	FALSE	TRUE	TRUE	FALSE	TRUE	-
10	60.1	FALSE	FALSE	TRUE	FALSE	TRUE	-
11	99.8	FALSE	FALSE	FALSE	FALSE	TRUE	-
12	100.0	TRUE	TRUE	TRUE	FALSE	TRUE	-
13	200.2	FALSE	FALSE	FALSE	FALSE	TRUE	-



Decision coverage, Statement Coverage, Full Boundary Values and Extreme range values achieved.
Test Cases support the description

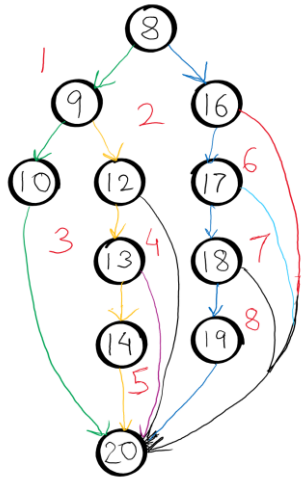
3

Test Case	Inputs			Exp. Out	Basis Path	Comments
	prime	memberPoints	total	Return		
1	TRUE	1001	$2,500.00	TRUE	8-9-10-20	stmts 9-14 TTF
2	FALSE	551	$6,500.01	TRUE	8-16-17-18-19-20	stmts 16-19 TTT
3	TRUE	1000	$2,500.01	TRUE	8-9-12-13-14-20	stmts 9-14 FTT
4	FALSE	550	$6,500.01	FALSE	8-16-20	stmts 16-19 FTT
5	TRUE	1000	$6,500.01	FALSE	8-9-12-20	stmts 9-14 FFT
6	FALSE	551	$9,000.00	FALSE	8-16-17-20	stmts 16-19 TFT
7	TRUE	1000	$2,500.00	FALSE	8-9-12-13-20	stmts 9-14 FTF
8	FALSE	551	$6,500.00	FALSE	8-16-17-18-20	stmts 16-19 TTF
9	TRUE	0	$2,500.00	FALSE	-	Extreme range memberPoints
10	TRUE	9999	$2,500.00	FALSE	-	Extreme range memberPoints
11	TRUE	551	$0.00	FALSE	-	Extreme range total
12	TRUE	551	$20,000.00	FALSE	-	Extreme range total
13	TRUE	551	$9,000.01	TRUE	-	Boundary value
14	TRUE	1001	$6,500.01	TRUE	-	9-14 TFT, observed from MCDC

Logical Expression

a+bc	if (memberPoints > 1000 || total <= 6500 && total > 2500)	
FFT	1000, 6500.01	Test Case 5
FTT	1000, 2500.01	Test Case 3
FTF	1000, 2500.00	Test Case 7
TFT	1001, 6500.01	
TTF	1001, 2500.00	Test Case 1

abc	if (memberPoints >= 551 && total < 9000 && total > 6500)	
TTT	551, 6500.01	Test Case 2
TTF	551, 6500.00	Test Case 8
TFT	551, 9000.00	Test Case 6
FTT	550, 6500.01	Test Case 4



Test Cases support the description

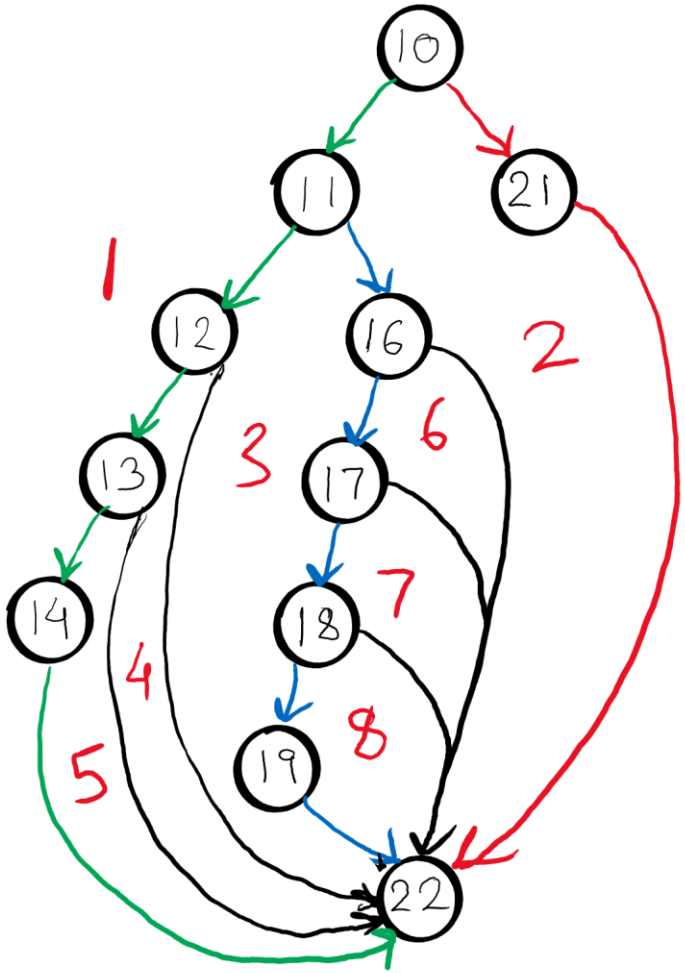
Decision coverage, Statement Coverage, Full Boundary Values and Extreme range values achieved.

4

Test Case	Inputs			Exp. Out	Basis Path	Comments
	autoClave	temperature (degree F)	pressure (psi)	return		
1	TRUE	212.1	4,999.9	FullySterilized	10-11-12-13-14-22	stmts 10-13: TTTT
2	FALSE	212.1	4,999.9	SomeSterilized	10-21-22	stmts 10-13: **F**TTT
3	TRUE	100.1	3,499.9	PartialSterilized	10-11-16-17-18-19-22	stmts 15-18: TTTT
4	TRUE	212.1	3,499.9	NoSterilized	**10-11-12-22**	stmts 10-13: TT**F**T, stmts 15-18: **F**TTT
5	TRUE	100.0	3,499.9	NoSterilized	**10-11-16-22**	stmts 15-18: T**F**TT
6	TRUE	212.1	5,000.0	NoSterilized	**10-11-12-13-22**	stmts 10-13: TTT**F**
7	TRUE	100.1	1,900.0	NoSterilized	**10-11-16-17-22**	stmts 15-18: TT**F**T
8	TRUE	100.1	3,500.0	NoSterilized	**10-11-16-17-18-22**	stmts 15-18: TTT**F**
9	TRUE	0.0	3,500.0	NoSterilized	-	Extreme range temperature
10	TRUE	500.0	3,500.0	NoSterilized	-	Extreme range temperature
11	TRUE	100.0	0.0	NoSterilized	-	Extreme range pressure
12	TRUE	100.0	10000.0	NoSterilized	-	Extreme range pressure
13	TRUE	212.0	4,999.9	NoSterilized	-	stmts 10-13: T**F**TT
14	TRUE	212.0	3,500.0	NoSterilized	-	boundary values
15	TRUE	100.1	1,900.1	NoSterilized	-	boundary values

abcd	if (autoClave && temperature > 212.0 && pressure >= 3_500.0 && pressure < 5_000.0)	
TTTT	T, 212.1, 4_999.9	Test Case 1
TTTF	T, 212.1, 5_000.0	Test Case 6
TTFT	T, 212.1, 3_499.9	Test Case 4
TFTT	T, 212.0, 4_999.9	
FTTT	F, 212.1, 4_999.9	Test Case 2

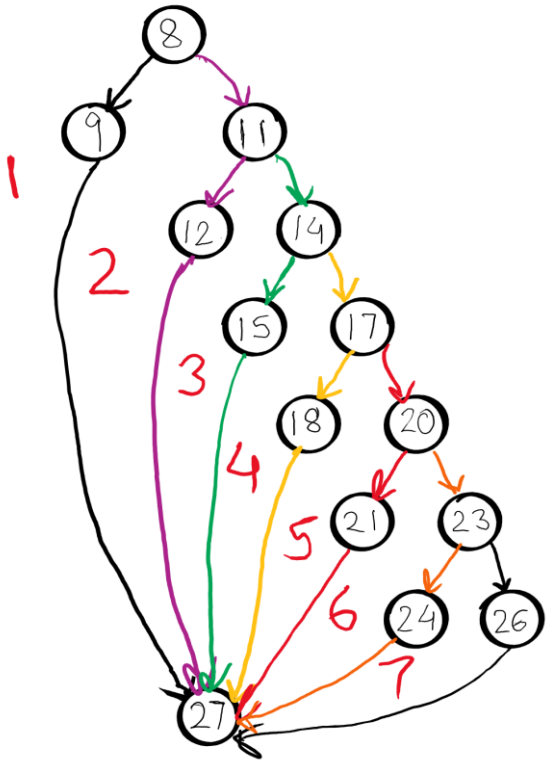
abcd	if (temperature <= 212.0 && temperature > 100.0 && pressure > 1_900.0 && pressure < 3_500.0)	
TTTT	100.1, 3_499.9	Test Case 3
TTTF	100.1, 3_500.0	Test Case 8
TTFT	100.1, 1_900.0	Test Case 7
TFTT	100.0, 3_499.9	Test Case 5
FTTT	212.1, 3_499.9	Test Case 4

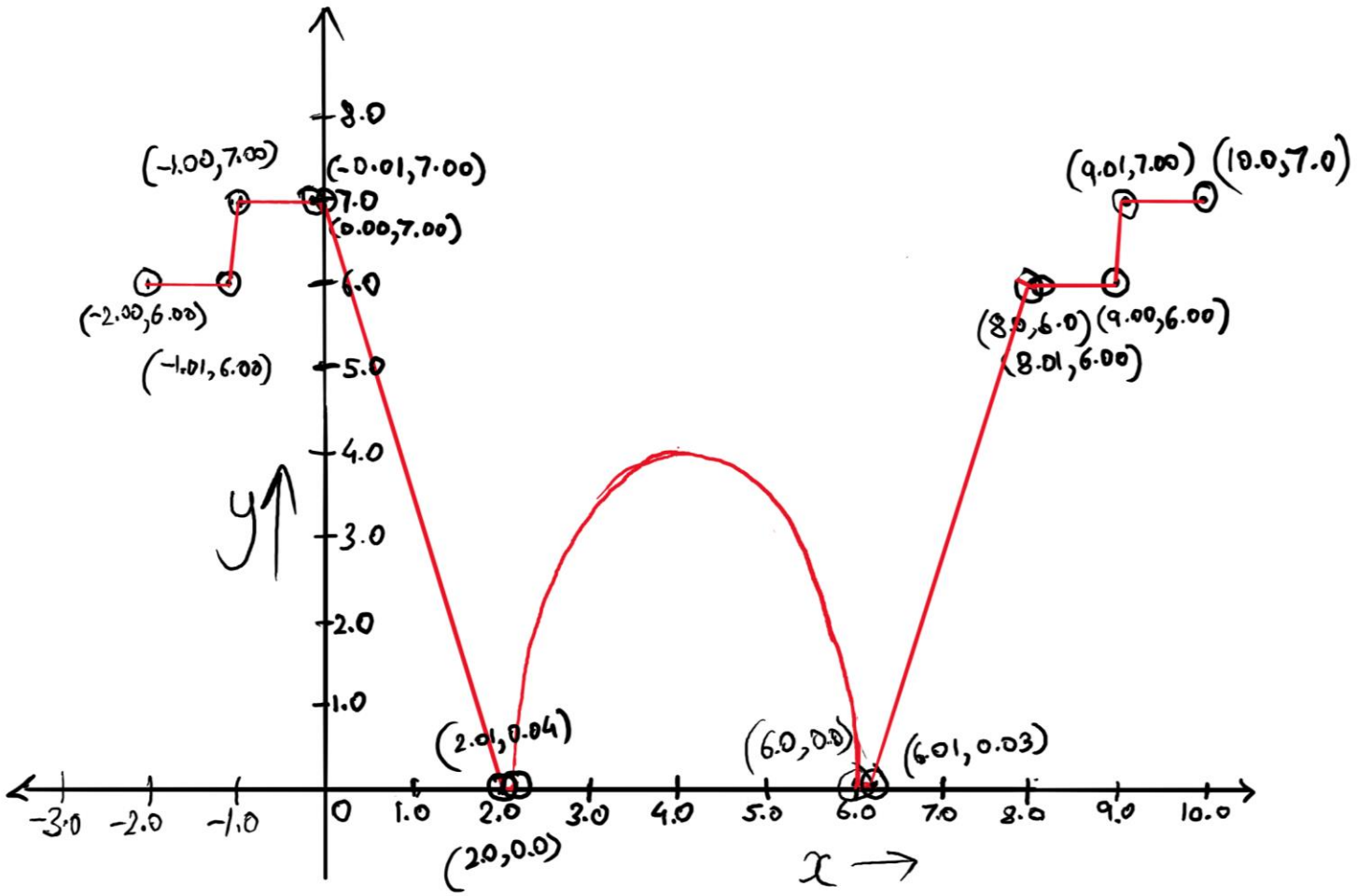


Decision coverage, Statement Coverage, Full Boundary Values and Extreme range values achieved.
Test Cases Support the description.

5

Test Case	Inputs x	Output y	Basis Path	Comments	a + b + c + d + e + f	if (x < -1.00 || x < 0.0 || x <= 2.0 || x <= 6.0 || x <= 8.0 || x <= 9.0)
1	-1.01	6.00	**8-9-27**	**MCDC: T**FFFFF	FFFFFF	x=9.01, y=7.00
2	-0.01	7.00	**8-11-12-27**	**MCDC:** F**T**FFFF	FFFFF**T**	x=9.00, y=6.00
3	2.00	0.00	**8-11-14-15-27**	**MCDC:** FF**T**FFF	FFFF**T**F	x=8.00, y=6.00
4	6.00	0.00	**8-11-14-17-18-27**	**MCDC:** FFF**T**FF, parabola max. value	FFF**T**FF	x=6.00, y=8.00
5	8.00	6.00	**8-11-14-17-20-21-27**	**MCDC:** FFFF**T**F	FF**T**FFF	x=2.00, y=0.00
6	9.00	6.00	**8-11-14-17-20-23-24-27**	**MCDC:** FFFFF**T**	F**T**FFFF	x= -0.01, y=7.00
7	9.01	7.00	**8-11-14-17-20-23-26-27**	**MCDC:** FFFFFF	**T**FFFFF	x= -1.01, y=6.00
8	-2.00	6.00	-	Extreme range for x		
9	10.00	7.00	-	Extreme range for x		
10	-1.00	7.00	-	Boundary value		
11	0.00	7.00	-	Boundary value		
12	2.01	0.04	-	Boundary value, parabola min value		
13	6.01	0.03	-	Boundary value		
14	8.01	6.00	-	Boundary value		
15	4.01	4.00	-	middle value of parabolic region		
16	1.00	3.50	-	middle of ECP in linear region		
17	7.01	3.03	-	middle of ECP in linear region		
18	-0.51	7.00	-	middle of ECP in linear region		
19	8.55	6.00	-	middle of ECP in linear region		





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