Contents

Q1 :

Question No: 01

This is a subjective question, hence you have to write your answer in the Text-Field given below.

Consider an office email system which is designed based on the following specifications:

- Send email when recipient address has been mentioned, subject is present, and time is before 5:00 pm.
- If recipient address is missing or subject is missing, give warning message.
- If time is after 5:00 pm, then put the email in outbox folder.

a)Identify the conditions and actions for the given case. Also, derive the decision table for the problem.
b)Design the test cases with values of inputs and outputs.   [5+2 = 7 Marks]

A :

C1 : recipient address present
C2 : subject is present
C3 : time < 5:00 PM

A1 : send email
A2 : warning message
A3 : outbox folder
A4 : impossible

Conditions	Rule1	Rule2	Rule3	Rule4	Rule5	Rule6	Rule7	Rule8
C1	F	T	T	T	T	F	F	F
C2	F	T	F	F	T	T	F	T
C3	F	T	F	T	F	T	T	F
Actions								
A1		T						
A2			T	T		T	T	T
A3			T		T			T
A4	T							

2^n – n is rules
2^3(conditions) = 2*2*2= 8 (Rules)

B :

TC 1: Email should be valid email address
TC 2: Mail should sent before 5:00PM
Tc 3: Subject should not be empty
Tc 4: If mail is sent after 5:00 PM, then mail should be stored in outbox
Tc 5:
…

Q2:

Sol:
a)

BVA=4n + 1 = 13

Robust BVA = 6n +1 = 19

Worst case BVA= 5^n +1 = 126

Robust Worst case BVA= 7^n = 343

- n = number of inputs
- Here n is 3 (conditions)

b)

Robust BVA
https://t4tutorials.com/what-is-robust-case-testing-software-testing/#google_vignette

BVA
https://t4tutorials.com/what-is-simple-boundary-value-testing-software-testing/

	X (working hours)	Y (experience)	Z (age)
Min-	08:45	9	24
Min	09:00	10	25
Min +	09:15	11	26

Nominal	09:30	15	37
Max-	09:45	19	49
Max	10:00	20	50
Max +	10:15	21	51

Test case	X (working hours)	Y (experience)	Z (age)	Expected output
1	09:30	15	24	Not promoted
2	09:30	15	25	Promoted
3	09:30	15	26	Promoted
4	09:30	15	37	Promoted
5	09:30	15	49	Promoted
6	09:30	15	50	Promoted
7	09:30	15	51	Not promoted
8	09:30	9	37	Not promoted
9	09:30	10	37	Promoted
10	09:30	11	37	Promoted
11	09:30	19	37	Promoted
12	09:30	20	37	Promoted
13	09:30	21	37	Not promoted
14	08:45	15	37	Not promoted
15	09:00	15	37	Promoted
16	09:15	15	37	Promoted
17	09:45	15	37	Promoted
18	10:00	15	37	Promoted
19	10:15	15	37	Not promoted

Based on below diagram we have to write test case, for eg:

1. Minimum
2. Just above the minimum
3. A nominal value
4. Just below the maximum
5. Maximum
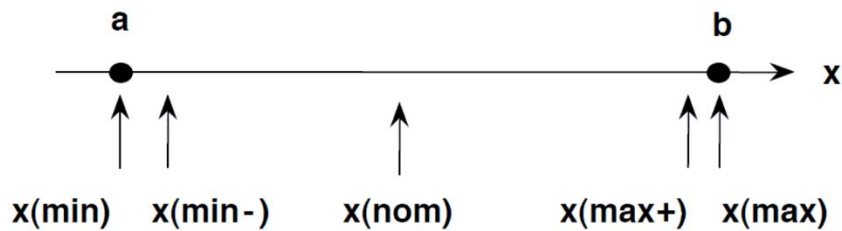
Q3.

An electric geyser is to be installed with two-way switches (S1 and S2). Switch S1 is to be installed on ground floor of the house, while switch S2 is to be installed on the first floor of the house. The geyser will be ON only if both the switches S1 and S2 are in ON position or both are in OFF position. The geyser will be OFF for all other positions of S1 and S2.   [3+2+2 = 7 Marks]

a)Identify the conditions and actions for the given case. Also, derive the decision table for the problem.

b) Design the test cases with values of inputs and outputs.

c) Draw the cause-effect graph for the same.

Sol:

C1 : s1
C2 : S2

A1 : Geyser is ON
A2 : Geyser is OFF

Conditions	Rule1	Rule2	Rule3	Rule4
C1	T	T	F	F
C2	T	F	T	F
Actions				

A1	T			T
A2		F	F	

2^n – n is rules
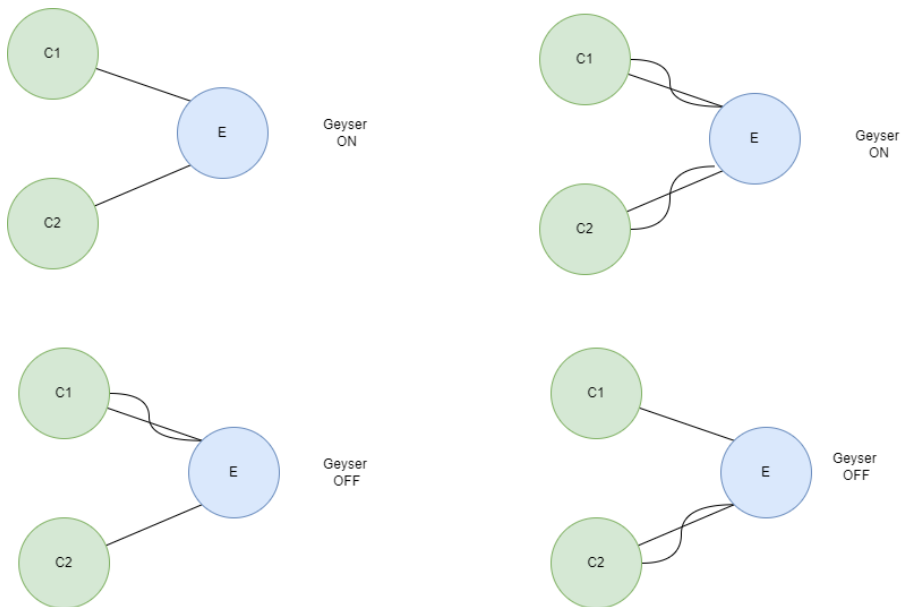2^2(conditions) = 2*2= 4 (Rules)

B)

TC 1: S1 – on and S2 – off, then Geyser is OFF
TC 2: S1 – off and S2 – on, then Geyser is OFF
Tc 3: S1 – on and S2 – on, then Geyser is ON
Tc 4: S1 – off and S2 – off, then Geyser is ON

C)

Q4.

Function Point estimation is a technique used in the early stages of the project to determine the size of the project based on software requirements. The calculation of size is based on functions supported by the software and the data files used by the software. Data files are of 2 types: Internal Logical Files (ILF) and External Interface Files (EIF). Complexity of files is determined based on 2 characteristics of the file namely - Data Element Types (DET) and Record Element Types (RET), based on the matrix given below: [2+2+3 = 7 Marks]

ILF/EIF	1-19 DETs	20-50 DETs	51+ DETs
1 RET	Low	Low	Average
2- 5 RETs	Low	Average	High
6+ RET	Average	High	High

Software is designed to automate the process of calculating the complexity of the ILF based on the number of DETs and RETs.

a) Derive the valid and invalid sub-domains for the input variables. Justify any specific choice you make for the sub-domains.
b) Calculate the number of test cases for Strong Robust Equivalence Class testing. State clearly the sub-domains chosen.
c) Write down all the test cases for Strong Robust Equivalence Class testing.

Sol:

a.) Valid subdomains :

Sl.no	Input paramters	Valid subdomains	Invalid Subdomains
1	RET	1=RET	RET<1
		2<=RET<=5	1<RET<2
		6<=RET	5<RET<6
2	DET	1<=DET<=19	DET<1
		20<=DET<=50	19<DET<20
		51<=DET	50<DET<51

b.) Number of test cases for Strong robust :
24 (why 27)
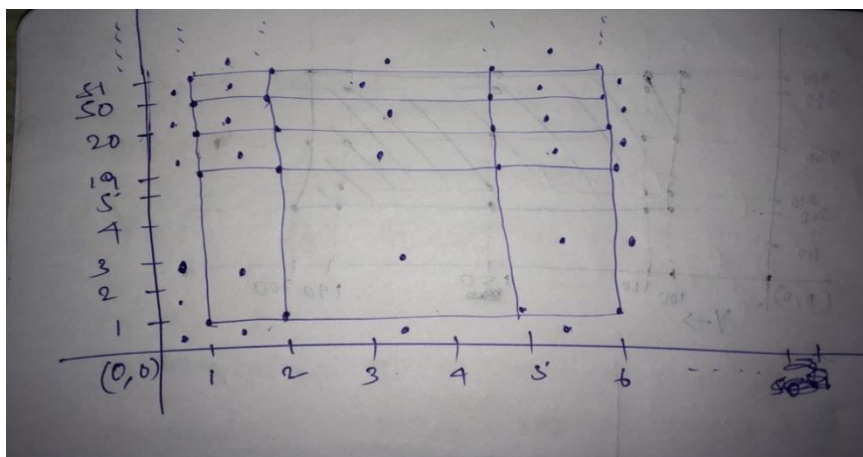
Q5.

Suppose a user can operate a typical washing machine motor in three different modes namely: Soft, Normal and Strong. Before starting the motor in any mode, the values of two parameters namely 'A' and 'B' are to be set. The range (maximum and minimum) of values that parameter 'A' and 'B' can take in various modes is shown in the following table: [2+3+2 = 7 marks]

Mode	Possible ranges of A	Possible ranges of B
Soft	$40 <= A <= 70$	$10 <= B <= 15$
Normal	$70 < A <= 80$	$15 < B <= 25$
Strong	$80 < A <= 90$	$25 < B <= 35$

(a) Derive the valid and invalid sub-domains for the input variables. Justify any specific choice you make for the sub-domains.

(b) Calculate the number of test cases for Strong Robust Equivalence Class testing. State clearly the sub-domains chosen.

(c) Write down all the test cases for Strong Robust Equivalence Class testing.

Sol: