Department of Computer Science UET Lahore, New Campus			Name: M. Samiullah Registration No: 2020-SE-25
EXAM: MID-TERM Semester: FALL 2020	SE-331: Software Quality Engineering	Time Limit: 90 minutes	Total Marks: 50 Marks Obtained:

Q. No.	Solve the following questions and write the answers on answer sheet.	MARKS

1
[CLO1]
	Calculate Cyclomatic Complexity for the given code. Also draw the control flow graph and find all independent paths for white box testing.
	
	`{ int i, j, k;`
	`  for (i=0; i<=N ; i++)`
	`p[i]= 1;`
	`  for (i=2; i<=N ; i++)`
	`  {`
	`  k = p[i]; j=1;`
	`  while (a[p[j-1]] > a[k] {`
	`  p[j] = p[j-1];`
	`  j--; }`
	`  }`
	`  p[j]=k;`
	`}`
		10 points

2
[CLO2]
	Design equivalence classes for a UET admission eligibility function and write all weak robust equivalence class test cases. Consider a function that receive two parameters, matric percentage marks and fsc percentage marks. If conditions value are in valid range then eligible otherwise not eligible. (Hint: If you want full marks draw dot diagram and all test cases in table)
	
	`public bool Admission_Eligibility (float Matric, float FSC)`
	`{`
	`  If (Matric > = 30% && Matric < = 60% && FSC > = 70% && FSC< = 90%)`
	`  {`
	`  Return true;`
	`  }`
	`  Else`
	`  {`
	`  Return false;`
	`  }`
	`}`
		10 points

3 [CLO1]	Apply worst-case boundary value testing technique on the given function bool Admission_Eligibility (float Matric, float FSC) in question 2 and write all test cases in a table with proper expected values. Also draw dot diagram to show from where you have selected test values.	**10 points**

4 [CLO4]	Identify all the test cases for triangle problem using decision table technique. c1. $1 \leq a \leq 200$ c4. $a < b + c$ c2. $1 \leq b \leq 200$ c5. $b < a + c$ c3. $1 \leq c \leq 200$ c6. $c < a + b$ 1. If all three sides are equal, the program output is Equilateral. 2. If exactly one pair of sides is equal, the program output is Isosceles. 3. If no pair of sides is equal, the program output is Scalene. 4. If any of conditions c4, c5, and c6 is not met, the program output is NotATriangle.	**10 points**

5 [CLO2]	Consider the login page test case word template and rewrite the missing heading names, where question marks are seen.	**10 points**

? Test ID | BU_001 | Test Case Description | Test the Login Functionality in Banking

Created By | Mark | Reviewed By | Bill | Version | 2.1

QA Tester's Log | Review comments from Bill incorporate in version 2.1

? Tester | Mark | Date Tested | 1-Jan-2017 | ? Status | Pass

S #	
1	Access to Chrome Browser
2	
3	
4	

S #	? Inputs/Credentials
1	Userid = mg12345
2	Pass = df12@434c
3	
4	

Environment | Mac os, chorme 1.5

Step #	Steps' description	Expected output	Actual output	Pass / Fail / Not executed / Suspended
1	Navigate to http://demo.guru99.com	Site should open	As Expected	Pass
2	Enter Userid & Password	Credential can be entered	As Expected	Pass
3	Click Submit	Customer is logged in	As Expected	Pass
4				

BEST OF LUCK ☺

Sr. No. 2022-2023 301066

UNIVERSITY OF ENGINEERING AND TECHNOLOGY, LAHORE

Reg. No. 2020-SE-25

Supdt. Signature

Session: 2020

Date: 13/03/2023

1. Semester: 6th
2. Degree Program Software Engineering (SE)
3. Subject Software Quality Engineering (SQE)

CANDIDATE MUST READ THE FOLLOWING INSTRUCTIONS:

1. The Answer Book contains 16 pages and no leaf is to be torn out.
2. No Extra Sheet will be provided.
3. Candidate must write his/her Reg. No. in the specified Box.
4. Candidate found guilty of using UNFAIR MEANS shall be liable to disciplinary action.
5. Candidate creating disturbance in or around the Examination Hall during the examination shall be liable to disciplinary action.
6. Candidate should answer only as many questions as are required to be answered. If the answers are more than the specific number, he/she runs the risk of losing credit for his/her best answers, as the examiner may see only those answers which have been first answered according to the specific numbers.
7. Candidate is not permitted to leave the Examination Hall/Room until the expiry of one hour after the distribution of the question paper.
8. The answer Book must be returned to the Superintendent before leaving the Examination Hall.
9. Mobiles and other helping material are strictly prohibited in the examination Center.

Q. No	Maximum Marks	Obtained Marks
1.		10
2.		8
3.		10
4.		10
5.		10
6.		
7.		
8.		
9.		
10.		
Total		48+1 (49)

Examiner's Full Signature _____

Total Marks Obtained in Words _____

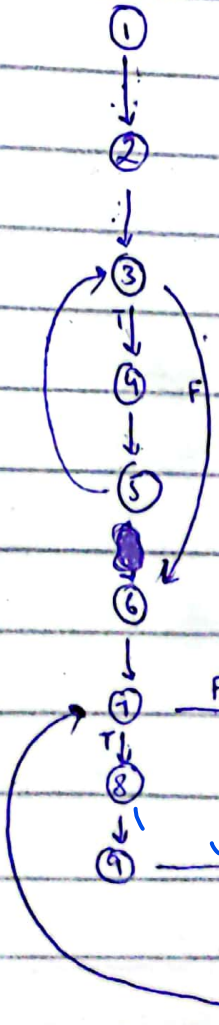
Q#4

Condition stub	Condition entries										
a < b+c ?	F	T	T	T	T	T	T	T	T	T	T
b < a+c ?	-	F	T	T	T	T	T	T	T	T	T
c < a+b ?	-	-	F	T	T	T	T	T	T	T	T
a = b ?	-	-	-	T	T	T	T	F	F	F	F
a = c ?	-	-	-	T	T	F	F	T	T	F	F
b = c ?	-	-	-	T	F	T	F	T	F	T	F
Action stub	**Action entries**										
Not a triangle	X	X	X								
Equilateral				X							
Scalene											X
Isoceles							X		X	X	
Impossible					X	X		X			

Test ID	a	b	c	Expected Output
1	10	5	5	Not a triangle
2	5	10	5	Not a triangle
3	5	5	10	Not a triangle
4	100	100	100	Equilateral
5	5	10	10	Isoceles

6	10	10	5	Isoceles
7	10	5	10	Isoceles
8	2	3	4	scalene
9	-1	5	10	Not a triangle / Invalid
10	10	-1	2	Not a Triangle / Invalid
11	2	100	-1	Invalid / ✗
12	20	20	20	Equilateral
13	7	8	9	scalene

Q#1



$V(G) = E - N + 2P$

$\because N = 14, \quad E = 15$

$\therefore V(G) = 15 - 14 + 2(1)$

$\boxed{V(G) = 3}$

Independant paths:

1 → 2 → 3 → 4 → 5 → 3 → 6 → 7 → 14

1 → 2 → 3 → 4 → 5 → 3 → 6 → 7 → 8 → 9 → 10 → 13 → 7 → 14

1 → 2 → 3 → 4 → 5 → 3 → 6 → 7 → 8 → 9 → 10 → 11 → 12 → 10 → 13 → 7 → 14

8 ≠ 1

Q#3

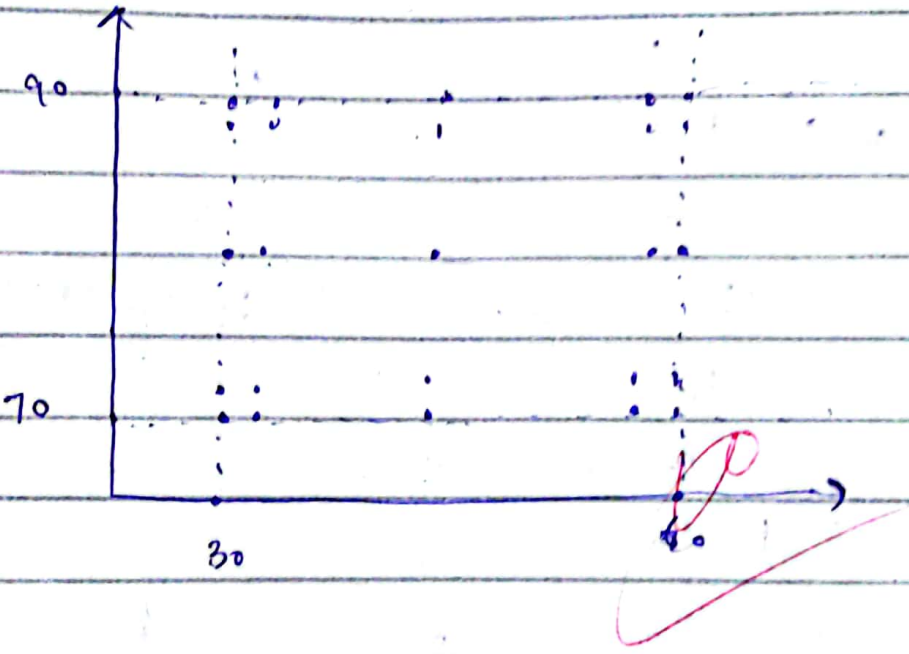
$30 \leq Matric \leq 60$ multi-fault assumption

$70 \leq FSC \leq 90$ multi-fault assumption

Worst case: only valid values + ~~SIZE~~

Test ID	Matric	FSC	Expected output
1	30	70	Eligible
2	30	71	Eligible
3	30	80	Eligible
4	30	89	Eligible
5	30	90	Eligible
6	31	70	Eligible
7	31	71	Eligible
8	31	80	Elig
9	31	89	Elig
10	31	90	Eligible
11	45	70	Eligible
12	45	71	Eligible
13	45	80	Elisi
14	45	89	Eligible
15	45	90	Eligible
16	59	70	Eligible

17	59	71	Eligible
18	59	80	Eligible
19	59	89	Eligible
20	59	90	Eligible
21	60	70	Eligible
22	60	71	Eligible
23	60	80	Eligible
24	60	89	Eligible
25	60	90	Eligible



Q#2

Worst robustness = Single fault assumption + Valid + Invalid values

$30 \leq matric \leq 60$

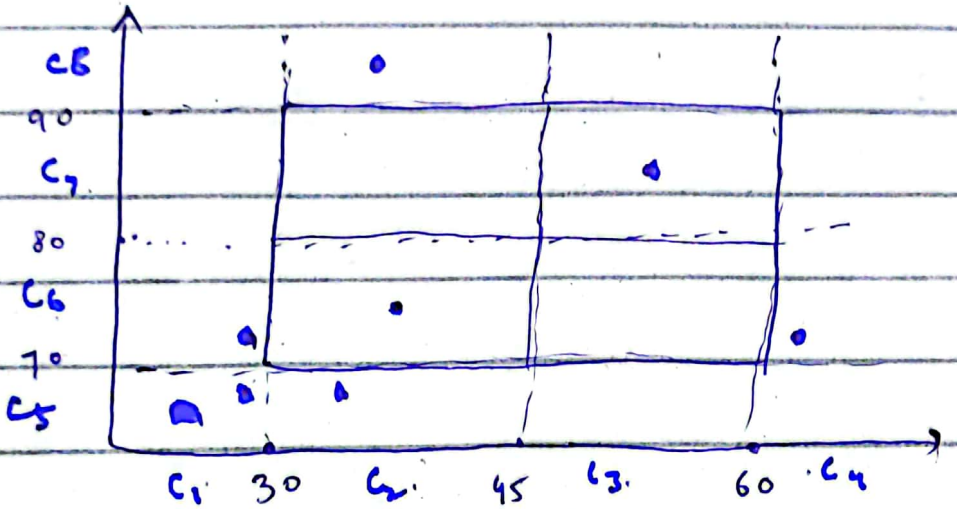
$70 \leq FSC \leq 90$

$C_1: m < 30$ $C_5: FSC < 70$

$C_2: 30 \leq m \leq 45$ $C_6: 70 \leq FSC \leq 80$ $C_7: 70 \leq FSC \leq 90$

$C_3: 45 \leq m \leq 60$

$C_4: m > 60$ $C_8: FSC > 90$



Test ID	matric	fsc	Expected output
1	29 C_1	71 C_6	Not eligible
2	33 C_2	69 C_5	Not eligible
3	61 C_4	71 C_6	Not eligible
4	33 C_2	91 C_8	Not eligible
5	29 C_1	69 C_5	Not eligible
6	37 C_2	75 C_6	Eligible
7	52 C_3	85 C_7	Eligible
8	65 C_4	25 C_5	Not eligible

Remaining Q# 4

Test ID	a	b	c	Expected output
14	200	200	200	Equilateral
15	100	101	102	Scalene
16	100	102	102	Isosceles
17	9	10	11	Scalene
18	-3	2	-5	Invalid
19	6	6	12	Not a Δ
20	15	7	8	Not a Δ
21	7	8	15	Not a Δ
22	101	101	101	Equilateral
23	12	13	14	Scalene
24	10	5	10	Isosceles
25	7	3	10	Not a Δ