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Course

Software Quality Eng

Submitted To

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3

Table of Contents

Summary of changes

Number	Changes
1	Table of content
2	Word Document
3	Daily work
4	Neatness

Brick kiln Management

- Case Study

Brick kiln Plus is the Brick kiln Management Software that can manages all kind of brick kiln works. Through this software you can manages your stock, pakka, kaccha, raw material, and salary of the employees and finished product. Days are gone when brick kiln owners used to examine the books written by accountants to get the thorough detail of raw and finished bricks and tiles. This software helps you in maintaining the brick kiln work easily and accurately. After development of this software there is no need to examine the books or written the books to maintain the data or to keep the record of kaccha, pakka, raw material, finished product, waste material, salary of the employees and so on. The Brick kiln management system has following functionality Stock Management, Order Booking, Account Management, Attendance & Salary Management, Agent Management, Vehicle Management, Sale/Purchase Management, Rapid and Powerful Searches

Stock Management:

It keeps record of Kacha and Pakka stock using stock management. Also keeps complete inventory of material such as Kahi, Balcha etc. which we issue to labor. Track consumption of stock like diesel, sand etc. by auto consumption or manually. See various number of reports related to stock like stock ledger, stock summary, location wise stock reports and many more important reports.

Order Booking:

Pre booking of order can be maintained and various information of order can be saved for example: quantity, type of brick, committed rate and amount. At the time of sale software automatically deducts delivered items from the order and keep record of all the transactions done under that order.

Account Management:

In account management you can manage everything that is needed in accounts like incomes, expenses etc. It has a strong management of account and also have multiple number of reports related to accounts like trial balance, balance sheet, and profit loss statement etc.

Attendance and Salary Management:

With software you can mark attendance of employees and can make salary for them. Salary will be automatically calculated as per attendance.

Vehicle Management:

It keeps track of sale done through vehicle, expenses done on vehicles and also gives report of profit/loss vehicle wise. All vehicle information can be added like insurance number, manufacturer etc.

Q2. Identify the functions (at least 3) from the case study and there must me at least one function that takes 3 parameters.

- **Stock_Management(**kacha_Stock, Pakka_stock, Diesel **)**
- **Order_Booking(**quantity, committed_rate**)**
- **Account_Management(**incomes, expenses **)**

Q3. Black box Testing

a) Using worst case BVA, identify test cases of each function and list down all test cases.

- **Test case of Stock_Management**

Ans: No of test cases are $5^n = 5^3 = 125$
10000<=kacha_stock<=100000
20000<=Paka_stock<=200000
500L<=Diesel<=1500L

Test cases:

Case	a	b	c
1	10000	20000	500L
2	10000	20000	501L
3	10000	20000	1000L
4	10000	20000	1499L
5	10000	20000	1500L
6	10000	20001	500L
7	10000	20001	501L
8	10000	20001	1000L
9	10000	20001	1499L
10	10000	20001	1500L
11	10000	100000	500L
12	10000	100000	501L

13	10000	100000	1000L
14	10000	100000	1499L
15	10000	100000	1500L
16	10000	199999	500L
17	10000	199999	501L
18	10000	199999	1000L
19	10000	199999	1499L
20	10000	199999	1500L
21	10000	200000	500L
22	10000	200000	501L
23	10000	200000	1000L
24	10000	200000	1499L
25	10000	200000	1500L
26	10001	20000	500L
27	10001	20000	501L
28	10001	20000	1000L
29	10001	20000	1499L
30	10001	20000	1500L
31	10001	20001	500L
32	10001	20001	501L
33	10001	20001	1000L
34	10001	20001	1499L
35	10001	20001	1500L
36	10001	100000	500L
37	10001	100000	501L
38	10001	100000	1000L
39	10001	100000	1499L
40	10001	100000	1500L
41	10001	199999	500L
42	10001	199999	501L
43	10001	199999	1000L
44	10001	199999	1499L
45	10001	199999	1500L
46	10001	200000	500L
47	10001	200000	501L
48	10001	200000	1000L
49	10001	200000	1499L
50	10001	200000	1500L

- **Number of Test case of Order_Booking**

Ans: No of test cases are $5^n = 5^2 = 25$
2000<=Quantity<= 900000
4500<=commited_rate<=6500

Test cases:
{<2000,4500>,<2000,4501>,<2000,5500>,<2000,6499>,<2000,6500>,<2001,4500>,<2001,4501>,<2001,5500>,<2001,6499>,<2001,6500>,<45000,4500>,<45000,4501>,<45000,5500>,<45000,6499>,<45000,6500>,<89999,4500>,<89999,4501>,<89999,5500>,<89999,6499>,<89999,6500>,<90000,4500>,<90000,4501>,<90000,5500>,<90000,6499>,<90000,6500>}

- **Number of Test case of Account_Managment**

Ans: No of test cases are $5^n = 5^2 = 25$
0<= incomes <=1000000
50000<=expenses<=500000 minimum expenses needed to start work is 50000 because when labor of kiln start making bricks they need sand which kiln owner bought from some were and tools that's why when kiln making process start kiln owner will full fill these things which almost cost 50000 minimum.

Test cases:
{<0,50000>,<0,50001>,<0,250000>,<0,499999>,<0,500000>,<1,50000>,<1,50001>,<1,250000>,<1,499999>,<1,500000>,<500000,50000>,<500000,50001>,<500000,250000>,<500000,499999>,<500000,500000>,<999999,50000>,<999999,50001>,<999999,250000>,<999999,499999>,<999999,500000>,<1000000,50000>,<1000000,50001>,<1000000,250000>,<1000000,499999>,<1000000,500000>}

Q4. Write down test cases using strong robust equivalence class partitioning.

- **Test case of Stock_Management**

Ans:
10000<=kacha_stock<=100000
20000<=Paka_stock<=200000
500L<=Diesel<=1500L

Test cases:

Case	a	b	c
1	10000	20000	500L
2	10000	20000	501L
3	10000	20000	1000L
4	10000	20000	1499L
5	10000	20000	1500L
6	10000	20001	500L
7	10000	20001	501L
8	10000	20001	1000L
9	10000	20001	1499L
10	10000	20001	1500L
11	10000	100000	500L
12	10000	100000	501L
13	10000	100000	1000L
14	10000	100000	1499L
15	10000	100000	1500L
16	10000	199999	500L
17	10000	199999	501L
18	10000	199999	1000L
19	10000	199999	1499L
20	10000	199999	1500L
21	10000	200000	500L
22	10000	200000	501L
23	10000	200000	1000L
24	10000	200000	1499L
25	10000	200000	1500L
26	10001	20000	500L
27	10001	20000	501L
28	10001	20000	1000L
29	10001	20000	1499L
30	10001	20000	1500L
31	10001	20001	500L
32	10001	20001	501L
33	10001	20001	1000L
34	10001	20001	1499L
35	10001	20001	1500L
36	10001	100000	500L
37	10001	100000	501L
38	10001	100000	1000L

39	10001	100000	1499L
40	10001	100000	1500L
41	10001	199999	500L
42	10001	199999	501L
43	10001	199999	1000L
44	10001	199999	1499L
45	10001	199999	1500L
46	10001	200000	500L
47	10001	200000	501L
48	10001	200000	1000L
49	10001	200000	1499L
50	10001	200000	1500L

Invalid Cases:

Case	a	b	c
61	100001 /1lac and one	200001 /2lacand 1	1501L
62	100001	200001	1400L
63	100001	150000	1501L
64	100001	150000	1400L
65	50000	200001	1400L
66	50000	200001	1501L
67	50000	150000	1501L
68	9999	19999	499L
69	9999	19999	510L
70	9999	21000	499L
71	9999	21000	510L
72	11000	19999	510L
73	11000	19999	499L
74	11000	21000	499L

- **Number of Test case of Order_Booking**

Ans:
2000<=Quantity<= 900000
4500<=commited_rate<=6500

Test cases:

{<2000,4500>,<2000,4501>,<2000,5500>,<2000,6499>,<2000,6500>,<2001,4500>,<2001,4501>,<2001,5500>,<2001,6499>,<2001,6500>,<45000,4500>,<45000,4501>,<45000,5500>,<45000,6499>,<45000,6500>,<89999,4500>,<89999,4501>,<89999,5500>,<89999,6499>,<89999,6500>,<90000,4500>,<90000,4501>,<90000,5500>,<90000,6499>,<90000,6500>}

Invalid Test cases:
{
<900001,6501>,<900001,6000>,<500000,6501>,<1999,4000>,<1999,5000>,<2500,4000>}

- **Number of Test case of Account_Managment**

Ans:
0<= incomes <=1000000
50000<=expenses<=500000

Test cases:
{<0,50000>,<0,50001>,<0,250000>,<0,499999>,<0,500000>,<1,50000>,<1,50001>,<1,250000>,<1,499999>,<1,500000>,<500000,50000>,<500000,50001>,<500000,250000>,<500000,499999>,<500000,500000>,<999999,50000>,<999999,50001>,<999999,250000>,<999999,499999>,<999999,500000>,<1000000,50000>,<1000000,50001>,<1000000,250000>,<1000000,499999>,<1000000,500000>}

Invalid Test Cases:

{<1500000,800000>,<700000,800000>,<1500000,400000>, < -1,45000>,<2000,45000>,<500,55000>}

- List down requirements in form of causes and effects
  a. Cause Effect of Stock Management.

	Cause		Effect
C1	Kacha Stock <=70000	E1	Work Start on Making Bricks
C2	Paka Stock <=1 lac	E2	Work Stop
C3	Kacha Stock>=10 lac		
C4	PakaStock >=20 lac		

b. Cause Effect of Salary Management.

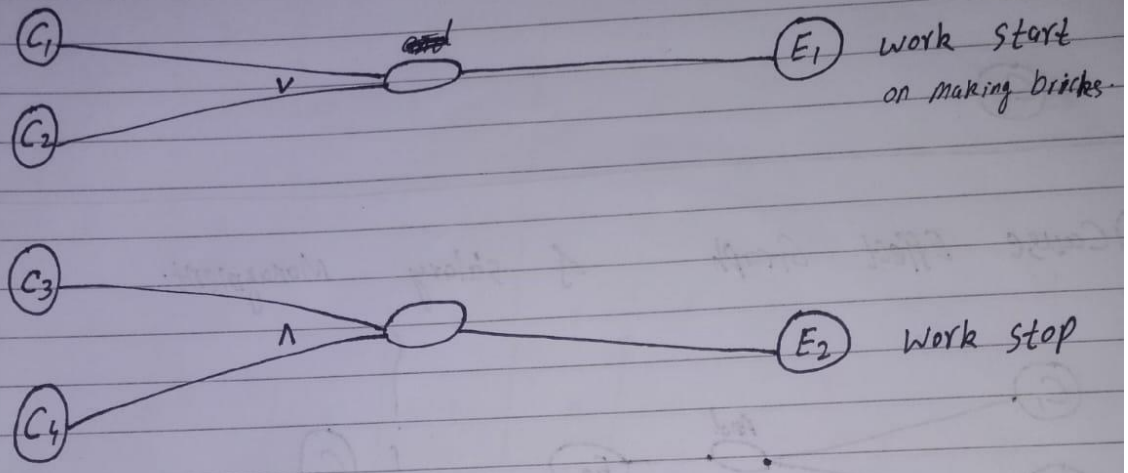
	Cause		Effect
C1	Salary of Week<=15000	E1	No Bonus
C2	Salary of Week>15000	E2	2% Bonus
C3	Expenses in Week of Kiln<=2 lac	E3	1% Extra Bonus
C4	Expenses in Week of Kiln>2 lac	E4	2% Bonus + 1% Extra

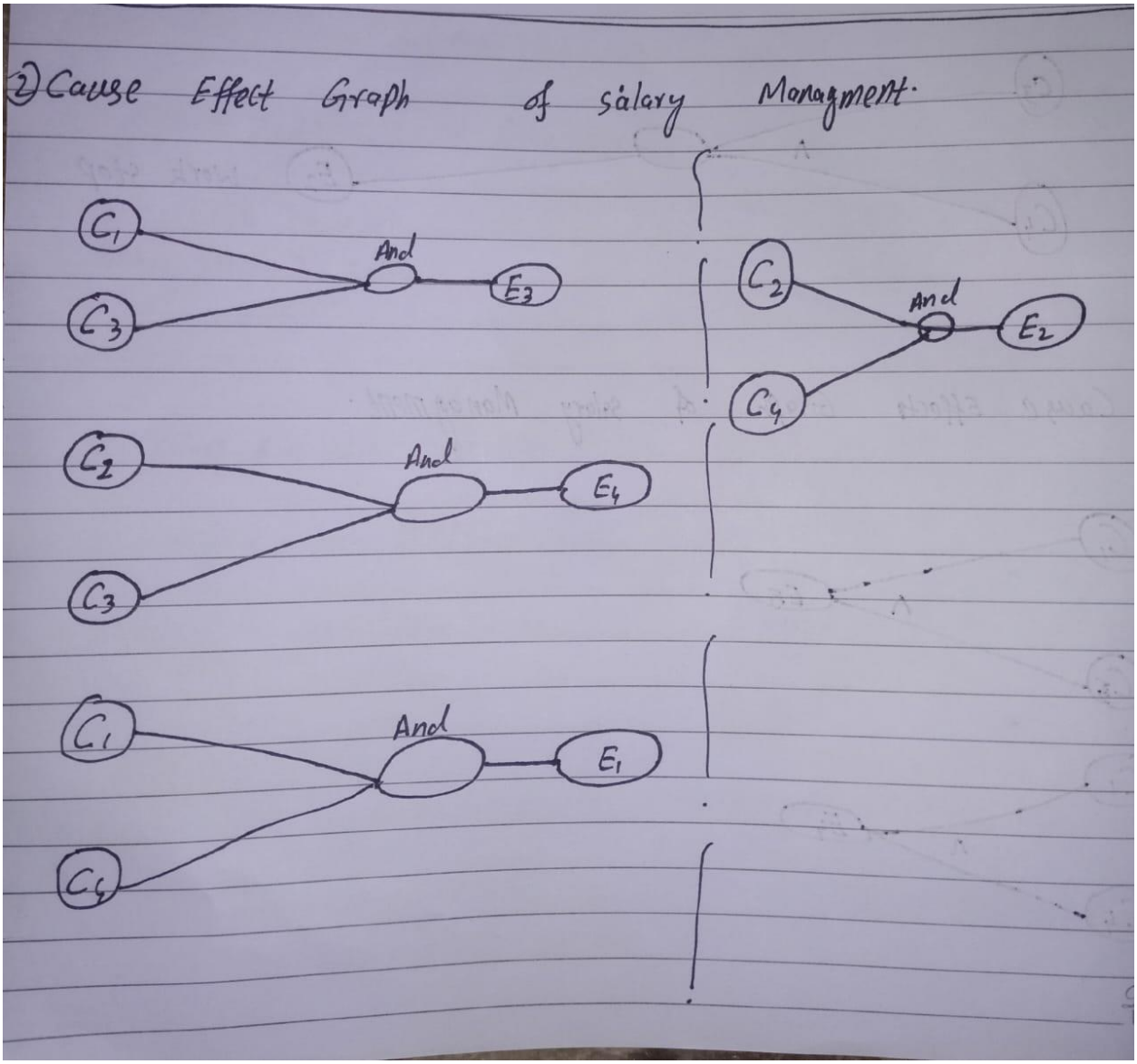
- Draw app possible cause effect graphs (can be more than 1 cause-effect graphs)

Date:...../...../20.....

M□T□W□T□F□S

(21) Cause Effect Graph of Stock Managment.





- Draw decision table (Tables)

1 Decision Table for Stock Management.

Action	T1	T2	T3	T4	T5	T6
C1	1	0	1	0	0	0
C2	1	0	0	1	0	0
C3	0	1	0	0	1	0
C4	0	1	0	0	0	1

E1	1	0	1	1	0	0
E2	0	1	0	0	1	1

2 Decision Table for Salary Management.

Action	T1	T2	T3	T4	T5	T6	T7	T8
C1	1	0	1	0	1	0	0	0
C2	0	1	0	1	0	1	0	0
C3	1	1	0	0	0	0	1	0
C4	0	0	1	1	0	0	0	1
E1	0	0	1	0	1	0	0	0
E2	0	0	0	1	0	1	0	0
E3	1	0	0	0	0	0	1	0
E4	0	1	0	0	0	0	0	1

- Identify test cases by using BVA

Test Case of Stock

Test Case No.	Cause(Input)		Effect(Output)
	Kacha Stock	Paka Stock	
1	<=70000	<=10 lac	Work Start no making Bricks
2	>= 10 lac	>=20 lac	Work Stop

Test Case of Salary management

Test Case	Input (Cause)		Output(Effect)
	Salary	Expenses	
1	<=15000	<=2 lac	1% Extra bonus
2	<=15000	>2lac	No Bonus
3	>15000	<=2lac	2% Bonus + 1% extra
4	>15000	>2lac	2% Bonus