



國立清華大學

NATIONAL TSING HUA UNIVERSITY

EE 6250 VLSI Testing
Homework#1

資工系碩士班一年級

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Answer

(a)

x1	x2	x3	z
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

(b)

Fault	a-sa-0	a-sa-1	b-sa-0	b-sa-1	z-sa-0	z-sa-1
# Test Pattern	0	2	4	2	2	6

(c)

Fault	y1	y2	a	b	z
Fault List	{x2/0,y1/0}	{x2/0,y2/0}	{x2/0,y1/0,a/1}	{x2/0,x3/0,y2/0,b/1}	{x2/0,x3/0,y1/0,y2/0,a/1,b/1,z/0}

Source Code (Enviroment:Visual Studio 2015)

```
#include<stdio.h>
#include<stdlib.h>

int main()
{
    printf("┌───┬───┬───┬───┐ \n");
    printf("│ x1 │ x2 │ x3 │ z │ \n");
    printf("└───┴───┴───┴───┘ \n");
    int x1, x2, x3, a, b, z;
    int as0 = 0, as1 = 0, bs0 = 0, bs1 = 0, zs0 = 0, zs1=0;
    for (x1 = 0; x1 < 2; x1++)
        for (x2 = 0; x2 < 2; x2++)
            for (x3 = 0; x3 < 2; x3++) {
                a = !(x1 || x2);
                b = !(x2 && x3);
                z = !(a || b);
                if (z != (!(0 || b))) as0++;
                if (z != (!(1 || b))) as1++;
                if (z != (!(a || 0))) bs0++;
                if (z != (!(a || 1))) bs1++;
                if (z != 0) zs0++;
                if (z != 1) zs1++;
                printf("│ %d │ %d │ %d │ %d │ \n", x1, x2, x3, z);
                if(x1==1&&x2==1&&x3==1) printf("┌───┬───┬───┬───┐ \n");
                else printf("└───┴───┴───┴───┘ \n");
            }
    printf("┌───┬───┬───┬───┬───┬───┬───┬───┐ \n");
    printf("│      Fault      │ a-sa-0 │ a-sa-1 │ b-sa-0 │ b-sa-1 │ z-sa-0 │ z-sa-1 │ \n");
    printf("└───┴───┴───┴───┴───┴───┴───┴───┘ \n");
    printf("│ #Test Pattern │      %d │      %d │      %d │      %d │      %d │      %d │ \n", as0, as1, bs0, bs1, zs0, zs1);
    printf("└───┴───┴───┴───┴───┴───┴───┴───┘ \n");
    system("PAUSE");
    return 0;
}
```

Execution Result

x1	x2	x3	z
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Fault	a-sa-0	a-sa-1	b-sa-0	b-sa-1	z-sa-0	z-sa-1
#Test Pattern	0	2	4	2	2	6

請按任意鍵繼續 . . .