

DSTL LAB ASSIGNMENT 3

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Section: 3-B

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1. Write a program in C to perform the Power Set operation on a set.

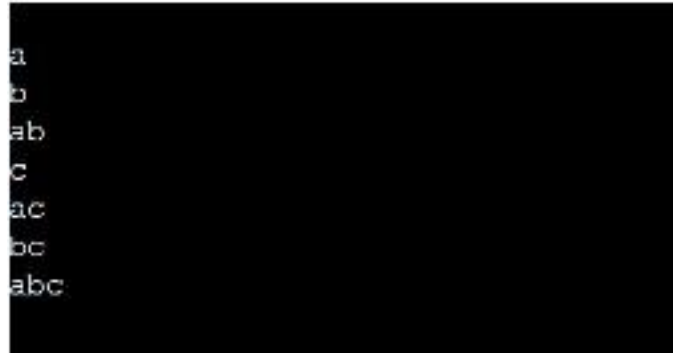
```
#include <stdio.h>
#include <math.h>

void printPowerSet(char *set, int set_size)
{
    /*set_size of power set of a set with set_size
    n is (2**n -1)*/
    unsigned int pow_set_size = pow(2, set_size);
    int counter, j;

    /*Run from counter 000..0 to 111..1*/
    for(counter = 0; counter < pow_set_size; counter++)
    {
        for(j = 0; j < set_size; j++)
        {
            /* Check if jth bit in the counter is set
            If set then print jth element from set */
            if(counter & (1<<j))
                printf("%c", set[j]);
        }
        printf("\n");
    }
}

int main()
{
    char set[] = {'a','b','c'};
    printPowerSet(set, 3);
    return 0;
}
```

OUTPUT:



```
a
b
ab
c
ac
bc
abc
```

2. Write a program in C to display the Boolean Truth table for AND, OR and NOT.

```
#include<stdio.h> void
main()
{ int
a[2][2],b[2][2],c[2];
int i,j;
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
a[i][j]=(i&& j);
b[i][j]=(i||j);
} }
for(i=0;i<=1;i++)
{ c[i]=(!i);
}
printf("\nThe Truth Table for AND Gate( && ) is..\n");
printf(" A  B   :  C=A&&B\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
printf("  %d  %d   :  %d\n",i,j,a[i][j]);
} } printf("\nThe Truth Table for OR Gate( || )
is..\n"); printf(" A  B   :  C=A||B\n");
for(i=0;i<=1;i++) {
for(j=0;j<=1;j++)
{
```

```

        printf(" %d %d : %d\n",i,j,b[i][j]);
    } } printf("\nThe Truth Table for NOT Gate (!)
is..\n");
printf(" A : B = !A\n");
for(i=0;i<=1;i++)
{
    printf(" %d : %d\n",i,c[i]);
}
}

```

OUTPUT:

The Truth Table for AND Gate(&&) is..

A	B	:	C=A&B
0	0	:	0
0	1	:	0
1	0	:	0
1	1	:	1

The Truth Table for OR Gate(||) is..

A	B	:	C=A B
0	0	:	0
0	1	:	1
1	0	:	1
1	1	:	1

The Truth Table for NOT Gate (!) is..

A	:	B = !A
0	:	1
1	:	0