

DSTL LAB-2

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E-316

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

ANS.

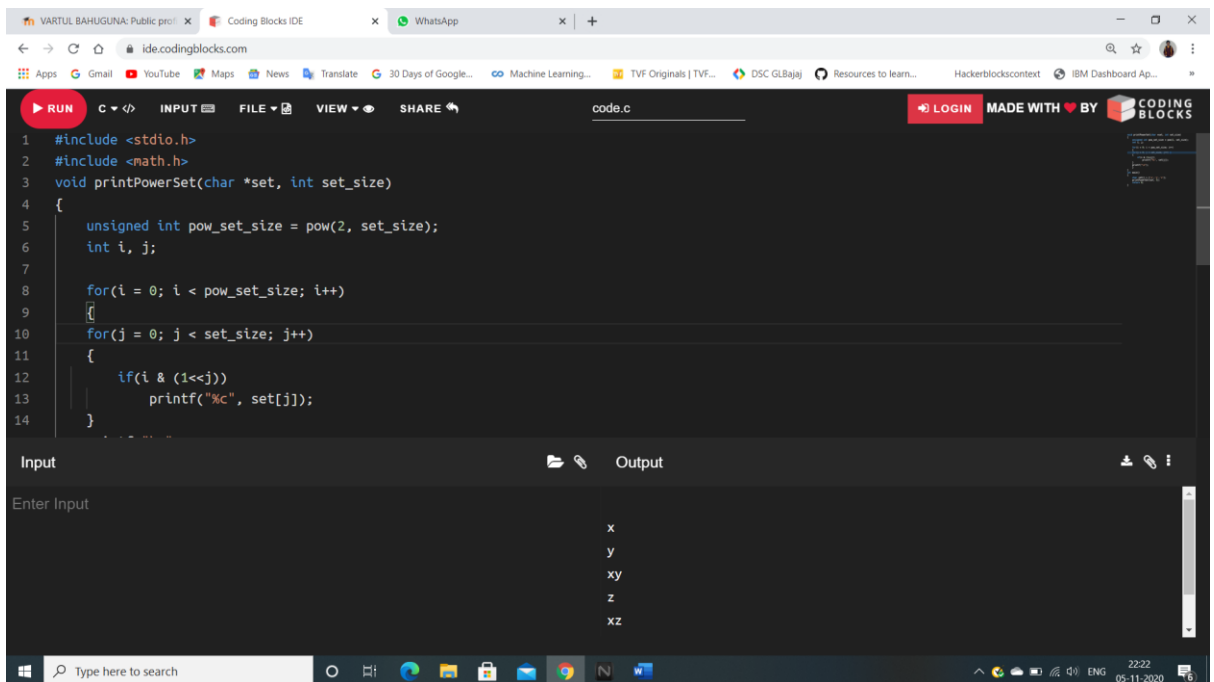
INPUT:-

```
#include <stdio.h>
#include <math.h>
void printPowerSet(char *set, int set_size)
{
    unsigned int pow_set_size = pow(2, set_size);
    int i, j;

    for(i = 0; i < pow_set_size; i++)
    {
        for(j = 0; j < set_size; j++)
        {
            if(i & (1<<j))
                printf("%c", set[j]);
        }
        printf("\n");
    }
}
```

```
int main()
{
    char set[] = {'x','y','z'};
    printPowerSet(set, 3);
    return 0;
}
```

OUTPUT:-



The screenshot displays the Coding Blocks IDE interface. The top browser bar shows the URL 'ide.codingblocks.com'. The code editor contains the following C code:

```
1 #include <stdio.h>
2 #include <math.h>
3 void printPowerSet(char *set, int set_size)
4 {
5     unsigned int pow_set_size = pow(2, set_size);
6     int i, j;
7
8     for(i = 0; i < pow_set_size; i++)
9     {
10        for(j = 0; j < set_size; j++)
11        {
12            if(i & (1<<j))
13                printf("%c", set[j]);
14        }
15    }
```

Below the code editor, the 'Input' field is labeled 'Enter Input'. The 'Output' pane shows the results of the program execution:

```
x
y
xy
z
xz
```

The Windows taskbar at the bottom indicates the date and time as 05-11-2020, 22:22.

2. Write a program in C to Display the Boolean Truth Table for AND, OR, NOT

ANS.

INPUT:-

```
#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 screenshot shows the Coding Blocks IDE interface. The code editor displays a C program that calculates truth tables for AND and NOT gates. The code includes headers, defines a main function, and uses nested loops to calculate the results for all combinations of inputs A and B (0 and 1). The output window shows the results of the program execution.

Code:

```

1 #include<stdio.h>
2
3
4 void main()
5 {
6     int a[2][2],b[2][2],c[2];
7     int i,j;
8     for(i=0;i<=1;i++)
9     {
10        for(j=0;j<=1;j++)
11        {
12            a[i][j]=(i&&j);
13            b[i][j]=(i||j);
14        }
15    }
16 }

```

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

```