

```

#include<iostream>
using namespace std;
void TOH(int n,int A,int B,int C){
    if (n>0)
    {
        TOH(n-1,A,C,B);
        cout<<"From "<<A<<" to "<<C<<endl;
        TOH(n-1,B,A,C);
    }
}

int main(){
    TOH(16,1,2,3);

    return 0;
}

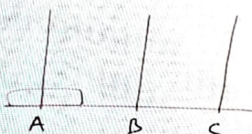
```

### Tower of Hanoi

TOH(1,A,B,C)

Move Disk from A to C using B

1 Disk



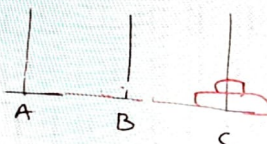
TOH(2,A,B,C)

1. TOH(1,A,C,B)

2. Move Disk from A to C using B

3. TOH(1,B,A,C)

2 Disk



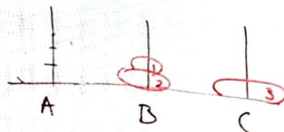
TOH(3,A,B,C)

1. TOH(2,A,C,B)

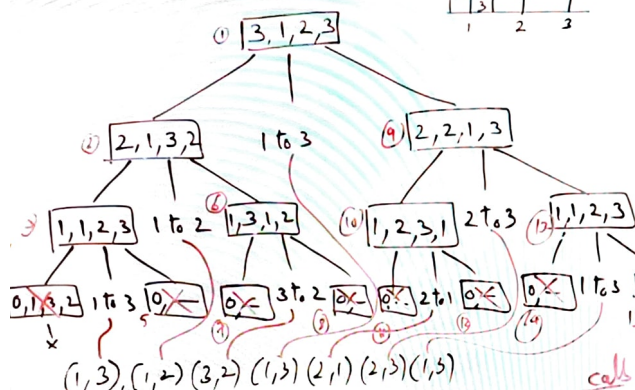
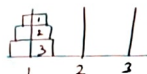
2. Move Disk from A to C using B

3. TOH(2,B,A,C):

3 Disk



### Tower of Hanoi



(1,3), (1,2), (3,2), (1,3), (2,1), (2,3), (1,3)

$$n=3 \quad 15 \quad 1+2+3=2^3-1$$

$$n=2 \quad 7$$

$$=O(2^n)$$

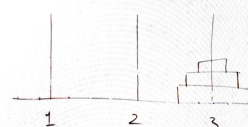
```

void TOH(int n,int A,int B,int C)
{
    if(n>0)
    {
        TOH(n-1,A,C,B);
        printf("from %d to %d",A,C);
        TOH(n-1,B,A,C);
    }
}

```

TOH(3,1,2,3);

### Tower of Hanoi



Moves

- ✓ (1,3)
- ✓ (1,2)
- ✓ (3,2)
- ✓ (1,3)
- ✓ (2,1)
- ✓ (2,3)
- ✓ (1,3)