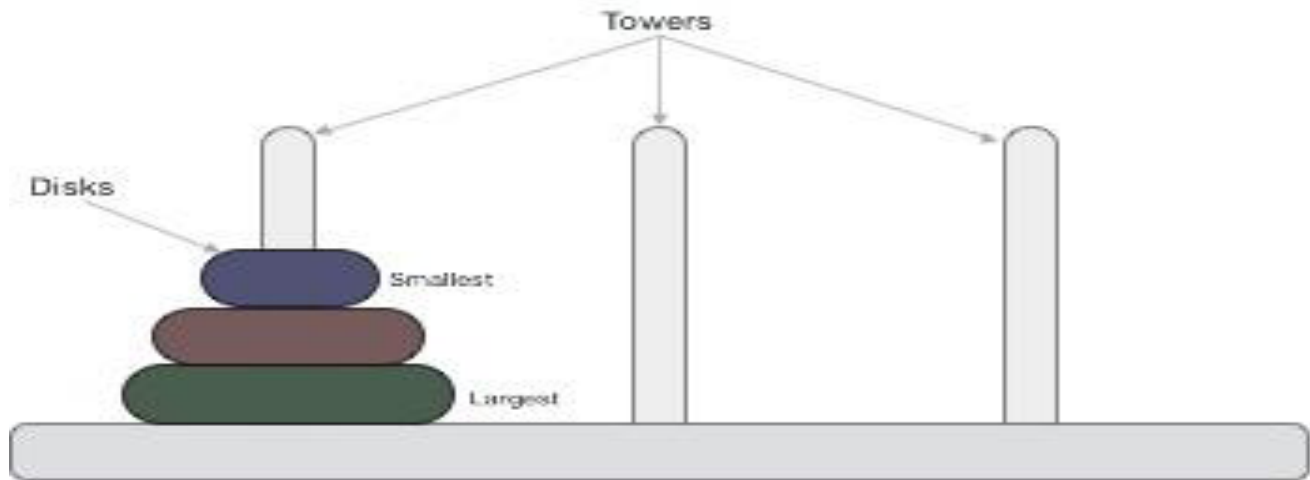


TOWER OF HANOI

Tower of Hanoi, is a mathematical puzzle which consists of three towers (pegs) and more than one rings is as depicted –



These rings are of different sizes and stacked upon in an ascending order, i.e. the smaller one sits over the larger one. There are other variations of the puzzle where the number of disks increase, but the tower count remains the same.

Rules

The mission is to move all the disks to some another tower without violating the sequence of arrangement. A few rules to be followed for Tower of Hanoi are –

- Only one disk can be moved among the towers at any given time.
- Only the "top" disk can be removed.
- No large disk can sit over a small disk.

ALGORITHM

START

Procedure Hanoi(disk, source, dest, aux)

IF disk == 1, THEN

 move disk from source to dest

ELSE

 Hanoi(disk - 1, source, aux, dest) // Step 1

 move disk from source to dest // Step 2

 Hanoi(disk - 1, aux, dest, source) // Step 3

END IF

END Procedure

STOP

CODE:

```
#include <stdio.h>

#include <stdlib.h>

void transfer(int n, char from, char to, char temp){

    if(n==0){

        return;

    }else {

        transfer(n-1, from, temp, to);

        printf("\nMove disk %d from %c to %c via %c",n,from,to,temp);

        transfer(n-1,temp,to,from);

    }

}

int main(){

    int n;

    system("clear");

    printf("\nEnter No. of discs \n");

    scanf("%d",&n);

    transfer(n,'S','D', 'A');

    return 0;

}
```

OUTPU:

```
Enter No. of discs
4

Move disk 1 from S to A via D
Move disk 2 from S to D via A
Move disk 1 from A to D via S
Move disk 3 from S to A via D
Move disk 1 from D to S via A
Move disk 2 from D to A via S
Move disk 1 from S to A via D
Move disk 4 from S to D via A
Move disk 1 from A to D via S
Move disk 2 from A to S via D
Move disk 1 from D to S via A
Move disk 3 from A to D via S
Move disk 1 from S to A via D
Move disk 2 from S to D via A
Move disk 1 from A to D via S
(base) subash@archlinux > /run/media/subash/New Volume/DSA/recursion > main ±
```