Institute of Computer Technology
B. Tech. Computer Science and Engineering
Sub: DS Branch: BDA Class: A

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Class: A
Subject: DS
Practical: 07
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TOH

Tower of Hanoi is a mathematical puzzle where we have three rods and n disks. The objective of the puzzle is to move the entire stack to another rod, obeying the following simple rules:

1. Only one disk can be moved at a time.
2. Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack i.e. a disk can only be moved if it is the uppermost disk on a stack.
3. No disk may be placed on top of a smaller disk. Design a program for Tower of Hanoi using recursion.

No of Disk =3 and no. of rod = 3

Take an example for 2 disks:

Let rod 1 = 'A&#39, rod 2 = 'B&#39, rod 3 = 'C&#39.

Step 1 : Shift first disk from 'A' to 'C&#39.

Step 2 : Shift second disk from 'A' to 'B&#39.

Step 3 : Shift first disk from 'C' to 'B&#39.

The pattern here is :

Top Disk moved from A to C

Top Disk moved from A to B

Top Disk moved from C to B

Input Format:

3

Output Format:

Top Disk moved from A to B

Top Disk moved from A to C

Top Disk moved from B to C

Top Disk moved from A to B

Top Disk moved from C to A

Top Disk moved from C to B

Top Disk moved from A to B

Input Code:

Prac-7DS.cpp > ...

```c
#include <stdio.h>

void towerOfHanoi(int n, char from_rod, char to_rod, char aux_rod) {
    if (n == 1) {
        printf("Top Disk moved from %c to %c\n", from_rod, to_rod);
        return;
    }

    towerOfHanoi(n - 1, from_rod, aux_rod, to_rod);
    printf("Top Disk moved from %c to %c\n", from_rod, to_rod);
    towerOfHanoi(n - 1, aux_rod, to_rod, from_rod);
}

int main() {
    int n = 3;
    towerOfHanoi(n, 'A', 'B', 'C');
    return 0;
}

```

Output:

Here I entered 5 on the place of the numbers of disks and got this output that is shown in image.


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
[Running] cd "c:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-7\
"c:\Users\jatin\OneDrive\Desktop\Academics\SEM - 3\Practicals\DS\Practical-7\"Prac-7DS
Top Disk moved from A to B
Top Disk moved from A to C
Top Disk moved from B to C
Top Disk moved from A to B
Top Disk moved from C to A
Top Disk moved from C to B
Top Disk moved from A to B
[Done] exited with code=0 in 0.459 seconds