Practical No. 26: Practical based on Tower of Hanoi.

Subject Teacher
Santosh Dhamone

Assistant Professor in Mathematics
Art's Commerce and Science College,Onde
Tal:- Vikramgad, Dist:- Palghar

ssdhamone@acscollegeonde.ac.in
www.santoshdhamone.com

5^{th} October 2024

SANTOSH S DHAMONE
Mathematics Professor
www.santoshdhamone.com
Learn mathematics free with us

Practical based on Tower of Hanoi:

My Inspiration
Late. Shivlal Dhamone

Subject Teacher
Santosh Dhamone

What are the rules of the Tower of Hanoi::

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.
   Note Transferring the top n-1 disks from the source rod to the Auxiliary rod can again be thought of as a fresh problem and can be solved in the same

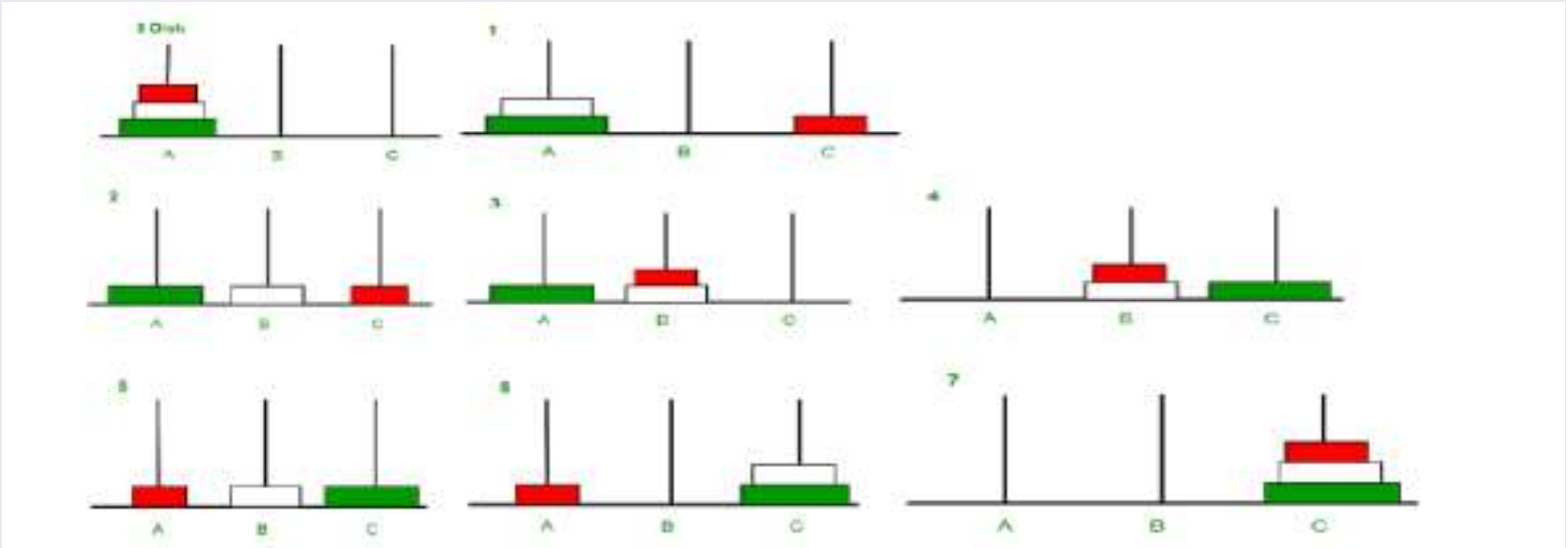
SANTOSH S DHAMONE
Mathematics Professor
www.santoshdhamone.com
Learn mathematics free with us

Practical based on Tower of Hanoi:

My Inspiration
Late. Shivlal Dhamone

Subject Teacher
Santosh Dhamone

Tower of Hanoi::



Practical based on Tower of Hanoi:

Tower of Hanoi Using Recursion :

The function recursively breaks down the problem of moving n disks into smaller problems of moving n-1 disks. It alternates the roles of the rods (source, destination, auxiliary) in each recursive call to facilitate the step-by-step transfer of disks according to the rules of the Tower of Hanoi puzzle. The rules are that you can only move one disk at a time and a larger disk may not be placed on top of a smaller disk.

Practical based on Tower of Hanoi:

Tower of Hanoi::

```
# Recursive Python function to solve the tower of hanoi

def TowerOfHanoi(n , source, destination, auxiliary):
    if n==1:
        print ("Move disk 1 from source",source,"to destination", destination)
        return
    TowerOfHanoi(n-1, source, auxiliary, destination)
    print ("Move disk",n,"from source",source,"to destination",destination)
    TowerOfHanoi(n-1, auxiliary, destination, source)

# Driver code
n = 4
TowerOfHanoi(n,'A','B','C')
# A, C, B are the name of rods
```

Practical based on Tower of Hanoi:

My Inspiration
Late. Shivlal Dhamone

Subject Teacher
Santosh Dhamone

Tower of Hanoi::

```
Move disk 1 from source A to destination C
Move disk 2 from source A to destination B
Move disk 1 from source C to destination B
Move disk 3 from source A to destination C
Move disk 1 from source B to destination A
Move disk 2 from source B to destination C
Move disk 1 from source A to destination C
Move disk 4 from source A to destination B
Move disk 1 from source C to destination B
Move disk 2 from source C to destination A
Move disk 1 from source B to destination A
Move disk 3 from source C to destination B
Move disk 1 from source A to destination C
Move disk 2 from source A to destination B
Move disk 1 from source C to destination B
```