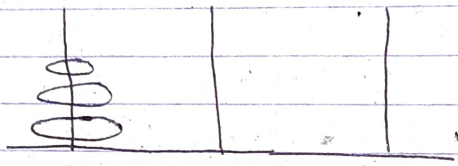
Date: / /
Page:

Day - 93

Recursion - 14

* Tower of Hanoi:



Source helper destination

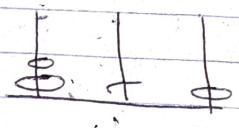
⇒ We have given n disk & we have to shift all the disk to destination.

⇒ But the conditions are :—

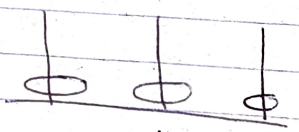
(i). Only one disk can move at a time and only the top disk.

(ii). we can't put bigger disk on smaller disk.

Steps

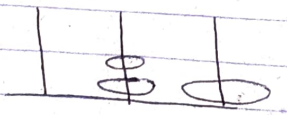


(i).



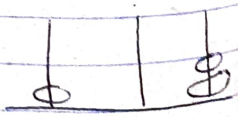
(ii)

(iii)

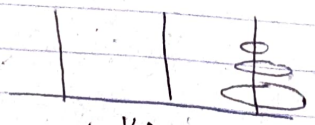


(iv)

(v)

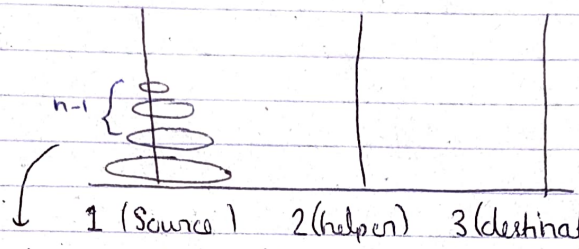


(vi)



(vii).

Date : / /
Page:



⇒ To solve n disk, first, we solve it for n-1 disk.
⇒ After that we move n^{th} disk to destination.

Code

```
void TOH(int n, int sour, int help, int des){
    if(n==1){
        cout << "Move disk" << n << "from" << sour
        << "to" << dest; return; }
    TOH(n-1, sour, dest, help);
    cout << "Move disk" << n << "from" << sour
    << "to" << dest;
    TOH(n-1, help, sour, dest);
}
```

⇒ T.C. → $O(2^n - 1) = O(2^n)$
⇒ S.C. → $O(n)$