ARTIFICIAL INTELLIGENCE

MINI PROJECT

TOWER OF HANOI

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GROUP MEMBER

SYED DANISH ALI
[2K18CSUN01043]

## AMANPREET SINGH
[2K18CSUN01008]

PROJECT DESCRIPTION : -

Tower of Hanoi is a mathematical puzzle or a game where we have three rods and n disks. The objective of the puzzle is to move the entire stack to from initial state to final state.

BY 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.
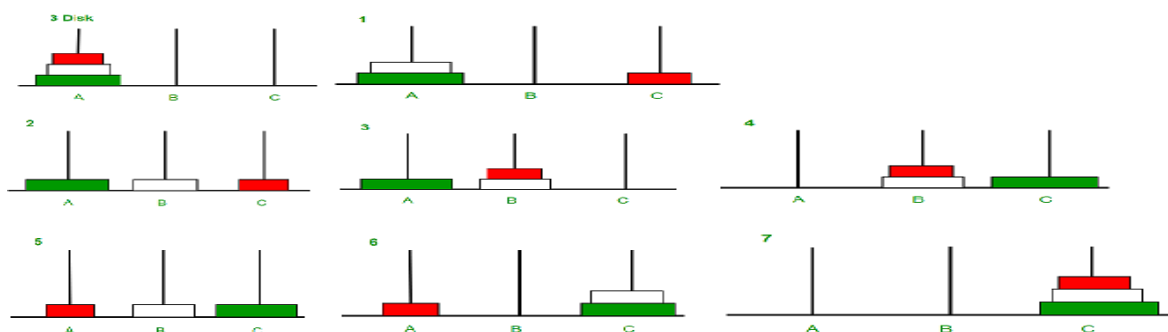
C O D E

PROLOG CODE-

....

DOMAINS

   loc =right;middle;left

PREDICATES

   hanoi(integer)

   move(integer,loc,loc,loc)

   inform(loc,loc)

CLAUSES

```prolog
hanoi(N):-

    move(N,left,middle,right).


move(1,A,_,C):-

    inform(A,C),!.


move(N,A,B,C):-

    N1=N-1, move(N1,A,C,B),

    inform(A,C),move(N1,B,A,C).


inform(Loc1, Loc2):-nl,

    write("Move a disk from ", Loc1, " to ", Loc2).
```
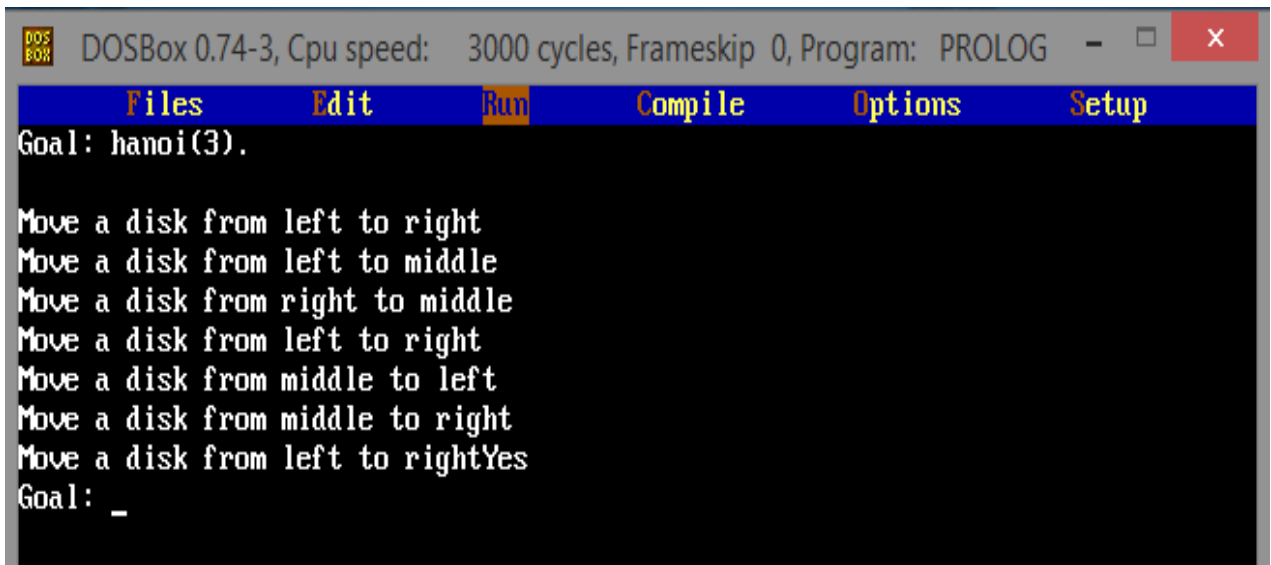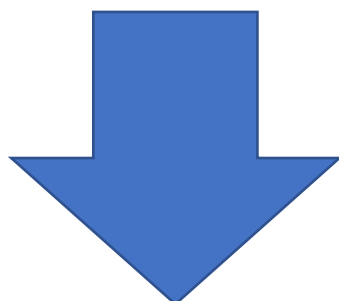
....

OUT PUT

1.when i entered **3** in **hanoi().** the output is :-

```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip 0, Program: PROLOG    -  □  ×

     Files        Edit        Run        Compile        Options        Setup
Goal: hanoi(3).

Move a disk from left to right
Move a disk from left to middle
Move a disk from right to middle
Move a disk from left to right
Move a disk from middle to left
Move a disk from middle to right
Move a disk from left to rightYes
Goal: _
```

2. when I entered **4** in **hanoi().**the output is :-

```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip 0, Program:  PROLOG   –  □  ×
    Files          Edit          Run         Compile       Options        Setup
Goal: hanoi(4).

Move a disk from left to middle
Move a disk from left to right
Move a disk from middle to right
Move a disk from left to middle
Move a disk from right to left
Move a disk from right to middle
Move a disk from left to middle
Move a disk from left to right
Move a disk from middle to right
Move a disk from middle to left
Move a disk from right to left
Move a disk from middle to right
Move a disk from left to middle
Move a disk from left to right
Move a disk from middle to rightYes
Goal: _




F2-Save   F3-Load   F5-Zoom   F6-Next   F8-Previous goal   Shift-F10-Resize   F10-End
```

3. when I entered 2 in hanoi().the output is :-

```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip 0, Program:  PROLOG    —  □   ×

      Files          Edit        Run        Compile        Options        Setup
Goal: hanoi(2).

Move a disk from left to middle
Move a disk from left to right
Move a disk from middle to rightYes
Goal:
```
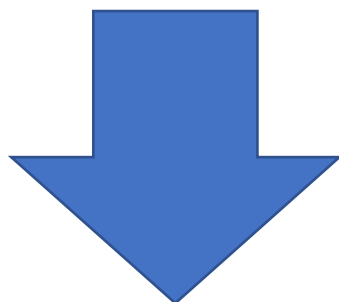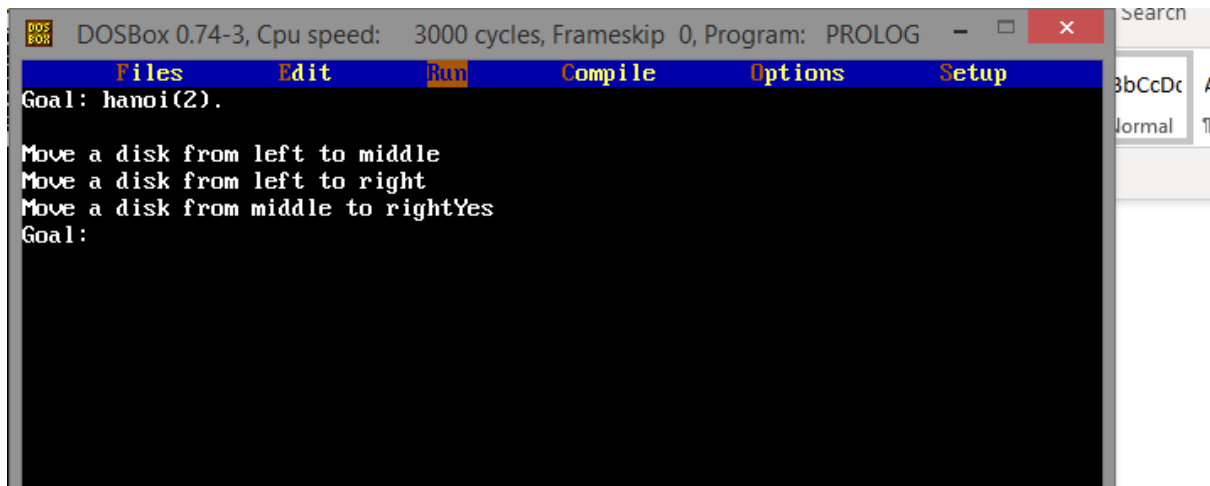
Note:-

I PASS 3 , 2 , 4 IN hanoi(). Because their execution is small so IT IS EASY TO me take complete screenshot of OUTPUT (STEP BY STEP) IN ONE FRAME .

ALTHOUGH YOU can PASS n th no of terms.it will execute it perfectly.

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THANKS

SUBMITTED BY:- SYED DANISH ALI ; AMANPREET SINGH

CSE 4C   2K18CSUN01043 ; 2K18CSUN01008