Assignment 3 - Tower of Hanoi

Darshan Udikeri

TE-09 ¶

33120

K-9

```
In [1]:
```

```
def Hanoi(n, A, B, C):
    count = 1
    if n==1:
        print("Move disk ", n, " from " , A, " to ", C)
        return count
    else :
        count += Hanoi(n-1, A, C, B)
        print("Move disk ", n, " from " , A, " to ", C)
        count += Hanoi(n-1, B, A, C)
        return count
```

In [2]:

```
Hanoi(3,'A','B','C')
```

```
Move disk 1 from A to C
Move disk 2 from A to B
Move disk 1 from C to B
Move disk 3 from A to C
Move disk 1 from B to A
Move disk 2 from B to C
Move disk 1 from A to C

Out[2]:
```

7

In [3]:

```
Hanoi(4, "Tower 1", "Tower 2", "Tower 3")
Move disk 1 from Tower 1 to Tower 2
Move disk 2 from Tower 1 to Tower 3
Move disk 1 from Tower 2 to Tower 3
Move disk 3 from Tower 1 to Tower 2
Move disk 1 from Tower 3 to Tower 1
Move disk 2 from Tower 3 to Tower 2
Move disk 1 from Tower 1 to Tower 2
Move disk 4 from Tower 1 to Tower 3
Move disk 1 from Tower 2 to Tower 3
Move disk 2 from Tower 2 to Tower 1
Move disk 1 from Tower 3 to Tower 1
Move disk 3 from Tower 2 to Tower 3
Move disk 1 from Tower 1 to Tower 2
Move disk 2 from Tower 1 to Tower 3
Move disk 1 from Tower 2 to Tower 3
Out[3]:
```

15

In [4]:

```
n = int(input("Enter number of rings : "))
Hanoi(n,'A','B','C')
```

```
Enter number of rings : 5
Move disk 1 from A
                    to
                        C
Move disk 2 from
                 Α
                    to
                         В
Move disk 1 from
                 C
                     to
                        В
         3
Move disk
            from
                  Α
                     to
                        C
Move disk
         1 from
                  В
                     to
                        Α
Move disk 2 from
                 B to
                        C
Move disk 1 from
                 A to
                        C
Move disk 4 from
                        В
                 Α
                     to
Move disk 1 from
                 C
                        В
                     to
Move disk 2 from
                 C
                     to
                        Α
Move disk 1 from
                 В
                        Α
                     to
Move disk 3
            from
                  C
                     to
                        В
Move disk 1 from
                        C
                 A to
Move disk 2 from
                 A to
                        В
Move disk
         1
            from
                  C
                     to
                        В
Move disk 5 from
                 Α
                        C
                    to
Move disk 1 from
                  В
                    to
                        Α
Move disk 2 from
                        C
                  В
                     to
         1 from
Move disk
                        C
                  Α
                     to
Move disk 3 from
                  В
                     to
                        Α
                 C
Move disk 1 from
                     to
                        В
Move disk 2
            from
                 C
                     to
                        Α
Move disk
         1
            from
                  В
                     to
                        Α
Move disk 4 from
                        C
                 В
                     to
Move disk 1 from
                 A to
                        C
Move disk
            from
         2
                  Α
                     to
                        В
         1
Move disk
            from
                  C
                     to
                        В
                        C
Move disk 3 from
                 Α
                    to
Move disk 1 from B
                    to
                        Α
Move disk
         2
            from B
                        C
                     to
Move disk
         1 from A
                        C
                     to
```

Out[4]:

31

```
In [5]:
```

```
n = int(input("Enter number of rings : "))
Hanoi(n,'A','B','C')
```

```
Enter number of rings: 6
Move disk
            1
               from
                      Α
                         to
                              В
Move disk
            2
               from
                              C
                      Α
                         to
Move disk
            1
               from
                      В
                         to
                              C
Move disk
           3
                      Α
                         to
                              В
               from
                      C
Move disk
           1
               from
                         to
                              Α
            2
                      C
Move disk
               from
                         to
                              В
Move disk
            1
               from
                      Α
                              В
                         to
                              C
Move disk
            4
               from
                      Α
                         to
Move disk
               from
                      В
                              C
            1
                         to
Move disk
            2
               from
                      В
                         to
                              Α
                      C
Move disk
           1
               from
                              Α
                         to
Move disk
           3
               from
                      В
                              C
                         to
Move disk
            1
               from
                      Α
                         to
                              В
Move disk
            2
                      Α
                              C
               from
                         to
Move disk
                              C
            1
               from
                      В
                         to
Move disk
            5
               from
                      Α
                         to
                              В
Move disk
                      C
            1
               from
                         to
                              Α
Move disk
           2
               from
                      C
                              В
                         to
Move disk
           1
               from
                      Α
                         to
                              В
Move disk
            3
               from
                      C
                              Α
                         to
Move disk
            1
               from
                      В
                         to
                              C
Move disk
            2
               from
                      В
                              Α
                         to
Move disk
            1
               from
                      C
                         to
                              Α
Move disk
               from
                      C
           4
                              В
                         to
Move disk
            1
               from
                      Α
                         to
                              В
                              C
Move disk
            2
               from
                      Α
                         to
Move disk
            1
               from
                      В
                         to
                              C
Move disk
            3
               from
                      Α
                         to
                              В
Move disk
            1
               from
                      C
                         to
                              Α
Move disk
            2
               from
                      C
                         to
                              В
Move disk
               from
                      Α
                              В
            1
                         to
Move disk
            6
               from
                      Α
                         to
                              C
                      В
                              C
Move disk
           1
               from
                         to
Move disk
           2
               from
                      В
                         to
                              Α
                      C
Move disk
            1
               from
                         to
                              Α
Move disk
            3
               from
                      В
                              C
                         to
Move disk
            1
               from
                      Α
                         to
                              В
Move disk
            2
               from
                      Α
                              C
                         to
Move disk
            1
               from
                      В
                         to
                              C
Move disk
           4
               from
                      В
                         to
                              Α
                      C
Move disk
               from
                         to
                              Α
Move disk
                      C
            2
               from
                         to
                              В
Move disk
            1
               from
                      Α
                              В
                         to
Move disk
                      C
                              Α
            3
               from
                         to
Move disk
               from
                              C
            1
                      В
                         to
Move disk
            2
               from
                      В
                         to
                              Α
Move disk
                      C
            1
               from
                         to
                              Α
            5
Move disk
                      В
                              C
               from
                         to
Move disk
            1
               from
                      Α
                         to
                              В
            2
                              C
Move disk
               from
                      Α
                         to
Move disk
            1
               from
                      В
                              C
                         to
Move disk
            3
               from
                      Α
                         to
                              В
Move disk
                      C
               from
                              Α
            1
                         to
Move disk
            2
               from
                      C
                         to
                              В
Move disk
               from
                      Α
                              В
            1
                         to
Move disk
               from
                      Α
                              C
                         to
Move disk
            1
               from
                      В
                         to
                              C
Move disk
            2
               from
                      В
                         to
                              Α
Move disk
               from
                      C
                              Α
            1
                         to
Move disk
           3
               from
                      В
                         to
                              C
```

```
Move disk 1 from A to B
Move disk 2 from A to C
Move disk 1 from B to C

Out[5]:

In []:
```