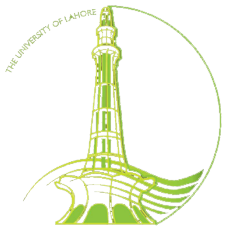

THE UNIVERSITY OF LAHORE
ISLAMABAD CAMPUS

Artificial Intelligence
(CS13217)

Lab Report

Name:	Iqra Arshad
Registration #:	CSU-S15-120
Lab Report #:	02
Dated:	16-04-2018
Submitted To:	Mr. Usman Ahmed

The University of Lahore, Islamabad Campus
Department of Computer Science & Information Technology

Experiment # 2
Implementing Tower of Hanoi Problem

Objective
To understand and implement the Tower of Hanoi Problem.

Software Tool
1. Operating System, Window 10
2. Sublime text, Version 3.0
3. Python

1 Theory

The Tower of Hanoi is a mathematical game or puzzle. It consists of three rods, and a number of disks of different sizes which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, the smallest at the top, thus making a conical shape.
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.

With three disks, the puzzle can be solved in seven moves. The minimum number of moves required to solve a Tower of Hanoi puzzle is 2n - 1, where n is the number of disks.

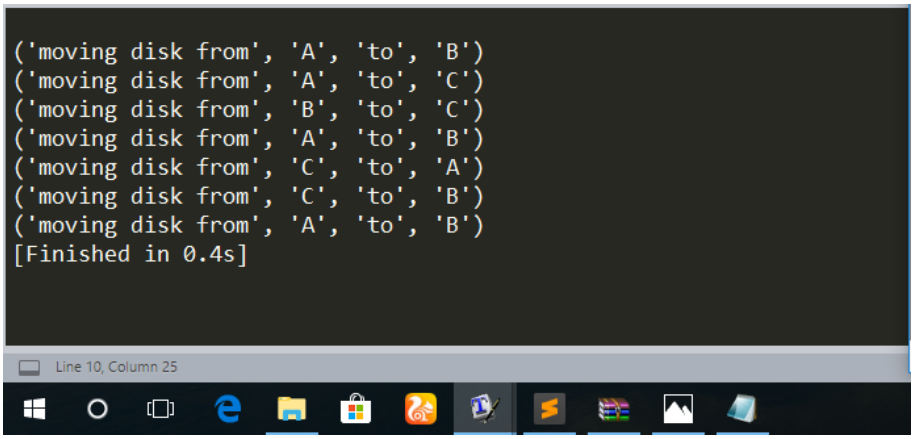

Figure 1: Time Independent Feature Set

2 Task

2.1 Procedure: Task 1

The minimum number of moves required to solve a Tower of Hanoi puzzle is 2n - 1, where n is the number of disks.

```
def moveTower(height,fromPole, toPole, withPole):
    if height >= 1:
        moveTower(height-1,fromPole,withPole,toPole)
        moveDisk(fromPole,toPole)
        moveTower(height-1,withPole,toPole,fromPole)

def moveDisk(fp,tp):
    print("moving disk from",fp,"to",tp)

moveTower(3,"A","B","C")
```

3 Conclusion

Thus we have successfully implemented a program to solve the Tower of Hanoi puzzle is 2n-1, where n is the number of disks.