**DAA ASSIGNMENT-1**

**PROBLEM-02**

TEAM DETAILS:

* Sri Chandana P – 1KS18CS098
* R.Soumya – 1KS18CS125
* Rekha NC – 1KS18CS082

CONTRIBUTION:

* Sri Chandana P – Coding for 4 towers, n discs and submission.
* R.Soumya – Coding for four tower using stacks and testing.
* Rekha NC – Coding for three tower using stacks and report making.

INSTRUCTION TO RUN THE PROGRAM:

**\*** Input the number of discs you want.

\* Run the program.

DETAILS ON EXAMPLE INVOCATION AND OUTPUT:

\*Enter the number of discs as required for example, lets enter 3.

\*Run the program.

\*Then the output would be as,

Let sample inputs be 3

initially

1

2

3

aux:

destination:

temp:

Move 1

Source:2 3

Aux:

Destination:1

Temp:

Move 2

Source:3

Aux:2

Destination:1

Temp:

Move 3

Source:3

Aux:1 2

Destination:

Temp:

Move 4

Source:

Aux:1 2

Destination:3

Temp:

Move 5

Source:

Aux:2

Destination:3

Temp:1

Move 6

Source:

Aux:

Destination: 2 3

Temp:1

Move 7

Source:

Aux:

Destination:1 2 3

Temp:

TIME COMPLEXITY:

\*When you have 4 pegs,time complexity to move 1 peg will require 1 comparision.Time complexity to move 2 peg will require 3 comparisons.Time complexity=2\*T(n-2)+3,n>=3

\*While solving it through substitution method.T(n)=2\*T(n-2)+3,n>=3

=2^2T(n-4)+2\*3+3=2^3T(n-6)+2^2\*3+2\*3+3 and so on.

\*For kth substitution,

=2^(k/2)\*T(n-k)+2^(k/2-1)\*3+………+2^2\*3+2\*3+3----------(1)

take n-k=2=>k=n-2 so eqn------(1) becomes

=2^(n/2-1)\*3+2^(n/2-2).3+………+2^2\*3+2\*3+3

=3{1.(2^(n/2)-1)}

=Ɵ(2^(n/2))

CHALLENGES FACED:

\*Challenging was debugging.

\*Implementing code for n discs.

\*Using GitHub was also new to us.

HOW WE FACE THE CHALLENGES:

\*First we tried to solve 3 discs by 3 towers and tried to get the output required.

\*Then we implemented that to 4 towers

\*We than worked for n discs.

\*We brought ideas of individual team members and worked on problem.

\*Reffered to some videos for better understanding of recursive function.

\*And also took help from seniors for getting the command lines and also dynamics inputs.

WHAT WE LEARNT FROM THIS ASSIGNMENT:

\*Mainly we learnt how to use GitHub.

\*We learnt the importance of co-ordination while we are working together for a project or to an assignment.

\*We learnt how to clear errors during the execution of the program and also we learnt how to trace the program.

\*About dynamic memory allocation for inputs.