INDIAN INSTITUTE OF INFORMATION TECHNOLOGY VADODARA

GOVERNMENT ENGINEERING COLLEGE, SECTOR-28, GANDHINAGAR

GUJARAT - 382028

Artificial Intelligence
Lab Assignment 4

Markov Decision Process and Dynamic Programming

Submitted by:
Group 4
Sandhya Yadav (201652023)
Payal Mahisaniya (201652015)
Pooja Gurjar (201652016)

1 Problem Statement

Three jealous husbands and their wives need to cross a river using a single boat. At no time should any of the women be left in company with any of the men, unless her husband is present. The boat can carry up to two passengers and can not move by itself.

```
Success is:  [1, 1, 1, 1, 1, 1]  reached
Depth is :   11
path is
[0, 0, 0, 0, 0, 0]
[1, 1, 0, 0, 0, 0]
[0, 1, 0, 0, 0, 0]
[1, 1, 1, 0, 0, 0]
[0, 1, 1, 0, 0, 0]
[0, 1, 1, 0, 1, 1]
[0, 0, 1, 0, 0, 1]
[0, 0, 1, 1, 1, 1]
[0, 0, 0, 1, 1, 1]
[1, 1, 0, 1, 1, 1]
[0, 1, 0, 1, 1, 1]
elapsed time: 282.40s
```

```
Success is:  [1, 1, 1, 1, 1, 1]  reached
Depth is :   13
path is
[0, 0, 0, 0, 0, 0]
[0, 0, 1, 0, 0, 1]
[0, 0, 1, 0, 0, 0]
[0, 1, 1, 0, 0, 0]
[0, 1, 0, 0, 0, 0]
[1, 1, 1, 0, 0, 0]
[1, 1, 0, 0, 0, 0]
[1, 1, 0, 1, 1, 0]
[1, 0, 0, 1, 0, 0]
[1, 0, 0, 1, 1, 1]
[0, 0, 0, 1, 1, 1]
[0, 1, 1, 1, 1, 1]
[0, 1, 1, 0, 1, 1]
elapsed time: 123.77s
```

Conclusion -
In the BFS total path is 11 and elapsed time is 282.40 s. In the DFS tatal path is 13 and elapsed time is 123.77 s. In the BFS, step is less than DFS But in the BFS search path is greator than DFS so BFS take more time than DFS.