|  |  |  |
| --- | --- | --- |
| Missionaries and Cannibals | | |
|  | DFS | BFS |
| Path to the goal | M on left:3  C on left:3  M on right:0  C on right:0  boat is on the left.  M on left:2  C on left:2  M on right:1  C on right:1  boat is on the right.  M on left:3  C on left:2  M on right:0  C on right:1  boat is on the left.  M on left:0  C on left:2  M on right:3  C on right:1  boat is on the right.  M on left:2  C on left:2  M on right:1  C on right:1  boat is on the left.  M on left:1  C on left:1  M on right:2  C on right:2  boat is on the right.  M on left:3  C on left:1  M on right:0  C on right:2  boat is on the left.  M on left:0  C on left:1  M on right:3  C on right:2  boat is on the right.  M on left:1  C on left:1  M on right:2  C on right:2  boat is on the left.  M on left:0  C on left:0  M on right:3  C on right:3  boat is on the right. | M on left:3  C on left:3  M on right:0  C on right:0  boat is on the left.  M on left:2  C on left:2  M on right:1  C on right:1  boat is on the right.  M on left:3  C on left:2  M on right:0  C on right:1  boat is on the left.  M on left:1  C on left:1  M on right:2  C on right:2  boat is on the right.  M on left:2  C on left:2  M on right:1  C on right:1  boat is on the left.  M on left:0  C on left:1  M on right:3  C on right:2  boat is on the right.  M on left:1  C on left:1  M on right:2  C on right:2  boat is on the left.  M on left:0  C on left:0  M on right:3  C on right:3  boat is on the right. |
| Path length | 9 | 7 |
| No. of expanded | 10 | 10 |

|  |  |  |
| --- | --- | --- |
| Farmer, Fox, Chicken, and Grain | | |
|  | DFS | BFS |
| Path to the goal | The farmer is on the left  The fox is on the left  The chicken is on the left  The grain is on the left  The boat is on the left.  The farmer is on the right  The fox is on the left  The chicken is on the right  The grain is on the left  The boat is on the right.  The farmer is on the left  The fox is on the left  The chicken is on the right  The grain is on the left  The boat is on the left.  The farmer is on the right  The fox is on the right  The chicken is on the right  The grain is on the left  The boat is on the right.  The farmer is on the left  The fox is on the right  The chicken is on the left  The grain is on the left  The boat is on the left.  The farmer is on the right  The fox is on the right  The chicken is on the left  The grain is on the right  The boat is on the right.  The farmer is on the left  The fox is on the right  The chicken is on the left  The grain is on the right  The boat is on the left.  The farmer is on the right  The fox is on the right  The chicken is on the right  The grain is on the right  The boat is on the right. | The farmer is on the left  The fox is on the left  The chicken is on the left  The grain is on the left  The boat is on the left.  The farmer is on the right  The fox is on the left  The chicken is on the right  The grain is on the left  The boat is on the right.  The farmer is on the left  The fox is on the left  The chicken is on the right  The grain is on the left  The boat is on the left.  The farmer is on the right  The fox is on the left  The chicken is on the right  The grain is on the right  The boat is on the right.  The farmer is on the left  The fox is on the left  The chicken is on the left  The grain is on the right  The boat is on the left.  The farmer is on the right  The fox is on the right  The chicken is on the left  The grain is on the right  The boat is on the right.  The farmer is on the left  The fox is on the right  The chicken is on the left  The grain is on the right  The boat is on the left.  The farmer is on the right  The fox is on the right  The chicken is on the right  The grain is on the right  The boat is on the right. |
| Path length | 7 | 7 |
| No. of expanded | 8 | 10 |

|  |  |  |
| --- | --- | --- |
| 4-Disk Towers of Hanoi | | |
|  | DFS | BFS |
| Path to the goal | [[4, 3, 2, 1] ,[] ,[]]  [[4, 3, 2] ,[1] ,[]]  [[4, 3] ,[1] ,[2]]  [[4, 3, 1] ,[] ,[2]]  [[4, 3] ,[] ,[2, 1]]  [[4] ,[3] ,[2, 1]]  [[4, 1] ,[3] ,[2]]  [[4] ,[3, 1] ,[2]]  [[4, 2] ,[3, 1] ,[]]  [[4, 2, 1] ,[3] ,[]]  [[4, 2] ,[3] ,[1]]  [[4] ,[3, 2] ,[1]]  [[4, 1] ,[3, 2] ,[]]  [[4] ,[3, 2, 1] ,[]]  [[] ,[3, 2, 1] ,[4]]  [[1] ,[3, 2] ,[4]]  [[] ,[3, 2] ,[4, 1]]  [[2] ,[3] ,[4, 1]]  [[2, 1] ,[3] ,[4]]  [[2] ,[3, 1] ,[4]]  [[] ,[3, 1] ,[4, 2]]  [[1] ,[3] ,[4, 2]]  [[] ,[3] ,[4, 2, 1]]  [[3] ,[] ,[4, 2, 1]]  [[3, 1] ,[] ,[4, 2]]  [[3] ,[1] ,[4, 2]]  [[3, 2] ,[1] ,[4]]  [[3, 2, 1] ,[] ,[4]]  [[3, 2] ,[] ,[4, 1]]  [[3] ,[2] ,[4, 1]]  [[3, 1] ,[2] ,[4]]  [[3] ,[2, 1] ,[4]]  [[] ,[2, 1] ,[4, 3]]  [[1] ,[2] ,[4, 3]]  [[] ,[2] ,[4, 3, 1]]  [[2] ,[] ,[4, 3, 1]]  [[2, 1] ,[] ,[4, 3]]  [[2] ,[1] ,[4, 3]]  [[] ,[1] ,[4, 3, 2]]  [[1] ,[] ,[4, 3, 2]]  [[] ,[] ,[4, 3, 2, 1]] | [[4, 3, 2, 1] ,[] ,[]]  [[4, 3, 2] ,[1] ,[]]  [[4, 3] ,[1] ,[2]]  [[4, 3, 1] ,[] ,[2]]  [[4, 3] ,[] ,[2, 1]]  [[4] ,[3] ,[2, 1]]  [[4, 1] ,[3] ,[2]]  [[4, 1] ,[3, 2] ,[]]  [[4] ,[3, 2, 1] ,[]]  [[] ,[3, 2, 1] ,[4]]  [[1] ,[3, 2] ,[4]]  [[] ,[3, 2] ,[4, 1]]  [[2] ,[3] ,[4, 1]]  [[2, 1] ,[3] ,[4]]  [[2, 1] ,[] ,[4, 3]]  [[2] ,[1] ,[4, 3]]  [[] ,[1] ,[4, 3, 2]]  [[1] ,[] ,[4, 3, 2]]  [[] ,[] ,[4, 3, 2, 1]] |
| Path length | 40 | 18 |
| No. of expanded | 40 | 63 |