Farmer, Fox, Chicken, and Grain		Missionaries and Cannibals		4-Disk Towers of Hanoi	
BFS	DFS	BFS	DFS	BFS	DFS
			len(OPEN)=1;		
len(OPEN)=3;	len(OPEN)=3;	len(OPEN)=3;	len(CLOSED)=	len(OPEN)=14;	len(OPEN)=5;
len(CLOSED)=	len(CLOSED)=	len(CLOSED)=	10; COUNT =	len(CLOSED)=67;	len(CLOSED)=40;
8; COUNT = 8	8; COUNT = 8	8; COUNT = 8	10	COUNT = 67	COUNT = 40
		Congratulatio	Congratulatio		
Congratulation	Congratulatio	ns on	ns on		
ns on	ns on	successfully	successfully		
successfully	successfully	guiding the	guiding the		
transfer all	transfer all	missionaries	missionaries		
passengers	passengers		and cannibals		
from LEFT to		across the	across the	•	The Tower Transport
right!	right!	river!	river!	is Triumphant!	is Triumphant!
Solution	Solution	Solution	Solution		
path:	path:	path:	path:	Solution path:	Solution path:
F	F			[[4, 3, 2, 1],[],	[[4, 3, 2, 1],[],[]]
Farmer on	Farmer on	NA on loft. 2	NA on loft.2	[[4 2 2] [4] []]	[[4 2 2] [4] []]
LEFT:1 Fox on	LEFT:1 Fox on	M on left:3	M on left:3	[[4, 3, 2],[1],[]]	[[4, 3, 2],[1]]
LEFT:1	LEFT:1	C on left:3	C on left:3	[[4, 3] ,[1] ,[2]]	[[4, 3] ,[1] ,[2]]
Chicken on	Chicken on	M on	M on	[[4, 5], [1], [2]]	[[4, 5], [1], [2]]
LEFT:1	LEFT:1	right:0	right:0	[[4, 3, 1],[],[2]]	[[4, 3, 1],[],[2]]
grain on	grain on	rigite.0	rigite.0	[[-, 5, 1],[],[2]]	[[-, -, +] ,[] ,[-]]
LEFT:1	LEFT:1	C on right:0	C on right:0	[[4, 3, 1],[2],[]]	[[4, 3],[],[2, 1]]
		boat is on	boat is on	11 / / 1/11	
		the left.	the left.	[[4, 3],[2, 1],[]]	[[4],[3],[2,1]]
Farmer on	Farmer on				
right:0	right:0			[[4],[2, 1],[3]]	[[4, 1], [3], [2]]
Fox on	Fox on				
right:0	right:0			[[4, 1], [2], [3]]	[[4] ,[3, 1] ,[2]]
Chicken on	Chicken on				
right:0	right:0	M on left:2	M on left:2	[[4, 1] ,[] ,[3, 2]]	[[4, 2],[3, 1],[]]
grain on	grain on			[[4] [4] [0 0]]	[[4 0 4] [0] []]
right:0	right:0	C on left:2	C on left:2	[[4],[1],[3, 2]]	[[4, 2, 1],[3],[]]
boat is on	boat is on	M on	M on	[[4 2] [4] [2]]	[[4 2] [2] [4]]
the LEFT.	the LEFT.	right:1	right:1	[[4, 2],[1],[3]]	[[4, 2], [3], [1]]
		C on right:1 boat is on	C on right:1 boat is on	[[4, 2, 1],[],[3]]	[[4],[3, 2],[1]]
		the right.	the right.	[[4, 2, 1],[3],[]]	[[4, 1] ,[3, 2] ,[]]
Farmer on	Farmer on	the right.	the right.	[[¬, ∠, ⊥],[¬],[]]	[[¬, +],[¬, 4],[]]
LEFT:0	LEFT:0			[[4, 2],[3, 1],[]]	[[4],[3, 2, 1],[]]
Fox on	Fox on			[[· / -] /[-/ -] /[]]	rr -1 /r-/ -/ -1 /lll
LEFT:1	LEFT:1			[[4],[3, 1],[2]]	[[],[3, 2, 1],[4]]

Chicken on	Chicken on				
LEFT:0 grain on	LEFT:0 grain on	M on left:3	M on left:3	[[4, 1], [3], [2]]	[[1],[3, 2],[4]]
LEFT:1	LEFT:1	C on left:2 M on	C on left:2 M on	[[4, 1],[3, 2],[]]	[[],[3, 2],[4, 1]]
5	5	right:0	right:0	[[4],[3, 2, 1],[]]	[[2],[3],[4, 1]]
Farmer on right:1	Farmer on right:1	C on right:1	_	[[],[3, 2, 1],[4]]	[[2, 1],[3],[4]]
Fox on right:0	Fox on right:0	boat is on the left.	boat is on the left.	[[1],[3, 2],[4]]	[[2],[3, 1],[4]]
Chicken on right:1	Chicken on right:1			[[1],[3],[4, 2]]	[[],[3, 1],[4, 2]]
grain on right:0	grain on right:0			[[],[3, 1],[4, 2]]	[[1],[3],[4, 2]]
boat is on the right.	boat is on the right.	M on left:0 C on left:2	M on left:0 C on left:2	[[2],[3, 1],[4]] [[2, 1],[3],[4]]	[[],[3],[4, 2, 1]] [[3],[],[4, 2, 1]]
_	_	M on right:3	M on right:3	[[2, 1],[],[4, 3]]	[[3, 1],[],[4, 2]]
Farmer on LEFT:1	Farmer on LEFT:1	C on right:1	•	[[2],[1],[4,3]]	[[3],[1],[4, 2]]
Fox on LEFT:1	Fox on LEFT:1	boat is on the right.	boat is on the right.	[[],[1],[4, 3, 2]]	[[3, 2],[1],[4]]
Chicken on LEFT:0	Chicken on LEFT:0			[[1],[],[4, 3, 2]]	[[3, 2, 1],[],[4]]
grain on LEFT:1	grain on LEFT:1			[[],[],[4, 3, 2, 1]]	[[3, 2],[],[4, 1]]
_	_	M on left:2	M on left:2	Length of solution path found: 28 edges	[[3],[2],[4,1]]
Farmer on right:0	Farmer on right:0	C on left:2	C on left:2	67 states expanded.	[[3, 1],[2],[4]]
Fox on right:0	Fox on right:0	M on right:1	M on right:1	MAX_OPEN_LENGTH = 2	[[3],[2,1],[4]]
Chicken on right:1	Chicken on right:1	C on right:1	_		[[],[2,1],[4,3]]
grain on right:0	grain on right:0	boat is on the left.	boat is on the left.		[[1],[2],[4,3]]
boat is on the LEFT.	boat is on the LEFT.				[[],[2],[4,3,1]] [[2],[],[4,3,1]]
Farmer on	Farmer on	M on left:0	M on left:1		[[2, 1],[],[4, 3]]
LEFT:0	LEFT:0	C on left:1	C on left:1		[[2],[1],[4,3]]
Fox on LEFT:0	Fox on LEFT:0	M on right:3	M on right:2		[[],[1],[4, 3, 2]]
Chicken on LEFT:0	Chicken on LEFT:0	C on right:2	C on right:2		[[1],[],[4, 3, 2]]

grain on LEFT:1	grain on LEFT:1	boat is on the right.	boat is on the right.	[[],[],[4, 3, 2, 1]] Length of solution path found: 40 edges
Farmer on right:1 Fox on	Farmer on right:1 Fox on			40 states expanded. MAX_OPEN_LENGTH
right:1 Chicken on	right:1 Chicken on	M on left:1	M on left:3	= 7
right:1	right:1	C on left:1	C on left:1	
grain on right:0	grain on right:0	M on right:2	M on right:0	
boat is on	boat is on	C an might 2	C:-	
the right.	the right.	C on right:2 boat is on	C on right:2 boat is on	
		the left.	the left.	
Farmer on LEFT:1 Fox on	Farmer on LEFT:1 Fox on			
LEFT:0 Chicken on	LEFT:0 Chicken on	M on left:0	M on left:0	
LEFT:1	LEFT:1	C on left:0	C on left:1	
grain on LEFT:1	grain on LEFT:1	M on right:3	M on right:3	
	LL1 1.1	C on right:3	_	
Farmer on	Farmer on	boat is on	boat is on	
right:0 Fox on	right:0 Fox on	the right.	the right.	
right:1	right:1			
		Length of		
Chicken on	Chicken on	solution path found: 7		
right:0	right:0	edges		
grain on	grain on	8 states		
right:0 boat is on	right:0 boat is on	expanded. MAX_OPEN_	M on left:1	
the LEFT.	the LEFT.	LENGTH = 3	C on left:1	
			M on	
			right:2 C on right:2	
Farmer on	Farmer on		boat is on	
LEFT:0	LEFT:0		the left.	
Fox on LEFT:0	Fox on LEFT:0			
Chicken on	Chicken on			
LEFT:1	LEFT:1			

grain on grain on LEFT:0 LEFT:0

Farmer on Farmer on right:1 right:1 Fox on Fox on right:1 right:1 Chicken on Chicken on right:0 right:0 grain on grain on

boat is on boat is on the right. the right.

right:1

right:1

LEFT:0

Farmer on Farmer on LEFT:1 LEFT:1 Fox on Fox on LEFT:0 LEFT:0 Chicken on Chicken on LEFT:1 LEFT:1 grain on grain on LEFT:0

Farmer on Farmer on right:0 right:0 Fox on Fox on right:1 right:1 Chicken on Chicken on right:0 right:0 grain on grain on right:1 right:1 boat is on boat is on the LEFT. the LEFT.

Farmer on Farmer on LEFT:0 LEFT:0 Fox on Fox on LEFT:0 LEFT:0 Chicken on Chicken on LEFT:0 LEFT:0

M on left:0 C on left:0 M on right:3

C on right:3 boat is on the right.

Length of solution path found: 9 edges 10 states expanded. MAX_OPEN_ LENGTH = 2

grain on grain on LEFT:0 LEFT:0

Farmer on Farmer on right:1 right:1 Fox on Fox on right:1 right:1 Chicken on Chicken on right:1 right:1 grain on grain on right:1 right:1 boat is on boat is on the right. the right.

Length of solution path solution path found: 7 found: 7 edges edges 8 states expanded.

MAX_OPEN_ LENGTH = 3 LENGTH = 3