Farmer, Fox, Chicken, and Grain		Missionaries and Cannibals		4-Disk Towers of Hanoi
BFS	DFS	BFS	DFS	
			len(OPEN)=1;	
len(OPEN)=3;	len(OPEN)=3;	len(OPEN)=3;	len(CLOSED)=	
len(CLOSED)=	len(CLOSED)=	len(CLOSED)=	10; COUNT =	
8; COUNT = 8	8; COUNT = 8	8; COUNT = 8	10	
		Congratulatio	Congratulatio	
		ns on	ns on	
Congratulatio	Congratulatio	successfully	successfully	
ns on	ns on	guiding the	guiding the	
successfully	successfully	missionaries	missionaries	
transfer all	transfer all	and cannibals	and cannibals	
passengers	passengers	across the	across the	
from LEFT to	from LEFT to	river!	river!	
right!	right!	Solution	Solution	
Solution	Solution	path:	path:	
path:	path:			
Farmer on	Farmer on			
LEFT:1	LEFT:1	M on left:3	M on left:3	
Fox on	Fox on			
LEFT:1	LEFT:1	C on left:3	C on left:3	
Chicken on	Chicken on	M on	M on	
LEFT:1	LEFT:1	right:0	right:0	
grain on	grain on			
LEFT:1	LEFT:1	C on right:0	C on right:0	
		boat is on	boat is on	
		the left.	the left.	
Farmer on	Farmer on			
right:0	right:0			
Fox on	Fox on			
right:0	right:0			
Chicken on	Chicken on			
right:0	right:0	M on left:2	M on left:2	
grain on	grain on			
right:0	right:0	C on left:2	C on left:2	
boat is on	boat is on	M on	M on	
the LEFT.	the LEFT.	right:1	right:1	
		C on right:1	C on right:1	
		boat is on	boat is on	
		the right.	the right.	
Farmer on	Farmer on			
LEFT:0	LEFT:0			
Fox on	Fox on			
LEFT:1	LEFT:1			

Chicken on LEFT:0   Chicken on LEFT:0
grain on LEFT:1   grain on LEFT:1

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

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

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

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

M on left:3   M on left:3
C on left:2   C on left:2
M on right:0   M on right:0
C on right:1   C on right:1
boat is on the left.   boat is on the left.

M on left:0   M on left:0
C on left:2   C on left:2
M on right:3   M on right:3
C on right:1   C on right:1
boat is on the right.   boat is on the right.

M on left:2   M on left:2
C on left:2   C on left:2
M on right:1   M on right:1
C on right:1   C on right:1
boat is on the left.   boat is on the left.

M on left:0   M on left:1
C on left:1   C on left:1
M on right:3   M on right:2
C on right:2   C on right:2

grain on LEFT:1   grain on LEFT:1

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

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

M on left:1   M on left:3
C on left:1   C on left:1
M on right:2   M on right:0
C on right:2   C on right:2
boat is on the left.   boat is on the left.

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

M on left:0   M on left:0
C on left:0   C on left:1
M on right:3   M on right:3
C on right:3   C on right:2
boat is on the right.   boat is on the right.

Farmer on right:0   Farmer on right:0
Fox on right:1   Fox on right:1

Length of solution path found: 7 edges
8 states expanded.
MAX_OPEN_ LENGTH = 3

Chicken on right:0   Chicken on right:0
grain on right:0   grain on right:0
boat is on the LEFT.   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 left.

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

grain on LEFT:0   grain on LEFT:0

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

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

C on right:3
boat is on the right.

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

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

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

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

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

grain on LEFT:0	grain on LEFT:0
Farmer on right:1	Farmer on right:1
Fox on right:1	Fox on right:1
Chicken on right:1	Chicken on right:1
grain on right:1	grain on right:1
boat is on the right.	boat is on the right.
Length of solution path found: 7 edges	Length of solution path found: 7 edges
8 states expanded.	8 states expanded.
MAX_OPEN_ LENGTH = 3	MAX_OPEN_ LENGTH = 3

BFS	DFS
len(OPEN)=14;	len(OPEN)=5;
len(CLOSED)=67;	len(CLOSED)=40;
COUNT = 67	COUNT = 40

The Tower Transport is Triumphant!

The Tower Transport is Triumphant!

Solution path:	Solution path:
[[4, 3, 2, 1] ,[] ,[]]	[[4, 3, 2, 1] ,[] ,[]]
[[4, 3, 2] ,[1] ,[]]	[[4, 3, 2] ,[1] ,[]]
[[4, 3] ,[1] ,[2]]	[[4, 3] ,[1] ,[2]]
[[4, 3, 1] ,[] ,[2]]	[[4, 3, 1] ,[] ,[2]]
[[4, 3, 1] ,[2] ,[]]	[[4, 3] ,[] ,[2, 1]]
[[4, 3] ,[2, 1] ,[]]	[[4] ,[3] ,[2, 1]]
[[4] ,[2, 1] ,[3]]	[[4, 1] ,[3] ,[2]]
[[4, 1] ,[2] ,[3]]	[[4] ,[3, 1] ,[2]]
[[4, 1] ,[] ,[3, 2]]	[[4, 2] ,[3, 1] ,[]]
[[4] ,[1] ,[3, 2]]	[[4, 2, 1] ,[3] ,[]]
[[4, 2] ,[1] ,[3]]	[[4, 2] ,[3] ,[1]]
[[4, 2, 1] ,[] ,[3]]	[[4] ,[3, 2] ,[1]]
[[4, 2, 1] ,[3] ,[]]	[[4, 1] ,[3, 2] ,[]]
[[4, 2] ,[3, 1] ,[]]	[[4] ,[3, 2, 1] ,[]]
[[4] ,[3, 1] ,[2]]	[[] ,[3, 2, 1] ,[4]]

[[4, 1] ,[3] ,[2]]   [[1] ,[3, 2] ,[4]]

[[4, 1] ,[3, 2] ,[]]   [[] ,[3, 2] ,[4, 1]]

[[4] ,[3, 2, 1] ,[]]   [[2] ,[3] ,[4, 1]]

[[] ,[3, 2, 1] ,[4]]   [[2, 1] ,[3] ,[4]]

[[1] ,[3, 2] ,[4]]   [[2] ,[3, 1] ,[4]]

[[1] ,[3] ,[4, 2]]   [[] ,[3, 1] ,[4, 2]]

[[] ,[3, 1] ,[4, 2]]   [[1] ,[3] ,[4, 2]]

[[2] ,[3, 1] ,[4]]   [[] ,[3] ,[4, 2, 1]]
[[2, 1] ,[3] ,[4]]   [[3] ,[] ,[4, 2, 1]]

[[2, 1] ,[] ,[4, 3]]   [[3, 1] ,[] ,[4, 2]]

[[2] ,[1] ,[4, 3]]   [[3] ,[1] ,[4, 2]]

[[] ,[1] ,[4, 3, 2]]   [[3, 2] ,[1] ,[4]]

[[1] ,[] ,[4, 3, 2]]   [[3, 2, 1] ,[] ,[4]]

[[] ,[] ,[4, 3, 2, 1]]   [[3, 2] ,[] ,[4, 1]]
Length of solution
path found: 28 edges   [[3] ,[2] ,[4, 1]]

67 states expanded.   [[3, 1] ,[2] ,[4]]
MAX_OPEN_LENGTH
= 2   [[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]]
Length of solution
path found: 40 edges

40 states expanded.
MAX_OPEN_LENGTH
= 7