BlindSearches

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<DFS>

	Human,	Farmer, Fox,	4-Disk Towers of
	Robots and	Chicken, and	Hanoi
	Ferry	Grain	
the path	H on left:3	F on left:1	[[4, 3, 2, 1],[],[]]
	R on left:3	f on left:1	[[4, 3, 2],[1],[]]
	H on	c on left:1	[[4, 3],[1],[2]]
	right:0	g on left:1	[[4, 3, 1],[],[2]]
	R on	F on right:0	[[4, 3],[],[2, 1]]
	right:0	f on right:0	[[4],[3],[2,1]]
	ferry is on the	c on right:0	[[4, 1],[3],[2]]
	left.	g on right:0	[[4],[3,1],[2]]
		ferry is on the	[[4, 2],[3, 1],[]]
		left.	[[4, 2, 1],[3],[]]
	H on left:2		[[4, 2],[3],[1]]
	R on left:2		[[4],[3,2],[1]]
	H on	F on left:0	[[4, 1],[3, 2],[]]
	right:1	f on left:1	[[4],[3,2,1],[]]
	R on	c on left:0	[[],[3, 2, 1],[4]]
	right:1	g on left:1	[[1],[3,2],[4]]
	ferry is on the	F on right:1	[[],[3, 2],[4, 1]]
	right.	f on right:0	[[2],[3],[4,1]]
		c on right:1	[[2, 1],[3],[4]]
		g on right:0	[[2],[3,1],[4]]
	H on left:3	ferry is on the	[[],[3,1],[4,2]]
	R on left:2	right.	[[1],[3],[4,2]]
	H on		[[],[3],[4, 2, 1]]
	right:0		[[3],[],[4, 2, 1]]
	R on	F on left:1	[[3, 1],[],[4, 2]]
	right:1	f on left:1	[[3],[1],[4,2]]
	ferry is on the	c on left:0	[[3, 2],[1],[4]]
	left.	g on left:1	[[3, 2, 1],[],[4]]
		F on right:0	[[3, 2],[],[4, 1]]

	f on right:0	[[3],[2],[4,1]]
0	c on right:1	[[3, 1],[2],[4]]
2	g on right:0	[[3],[2,1],[4]]
on	ferry is on the	[[],[2,1],[4,3]]
	left.	[[1],[2],[4,3]]
on		[[],[2],[4,3,1]]
		[[2],[],[4, 3, 1]]
the	F on left:0	[[2, 1],[],[4, 3]]
	f on left:0	[[2],[1],[4,3]]
	c on left:0	[[],[1],[4, 3, 2]]
	g on left:1	[[1],[],[4, 3, 2]]
2	F on right:1	[[],[],[4,3,2,1]]
2	f on right:1	
on	c on right:1	
	g on right:0	
on	ferry is on the	
	right.	
the		
	F on left:1	
	f on left:0	
1	c on left:1	
l	g on left:1	
on	F on right:0	
	f on right:1	
on	c on right:0	
	g on right:0	
the	ferry is on the	
	left.	
3	F on left:0	
	f on left:0	
on	c on left:1	
	g on left:0	
on	F on right:1	
	on on the 2 on on the 3 on	c on right:1 g on right:0 ferry is on the left. on the F on left:0 f on left:0 g on left:1 F on right:1 on c on right:1 g on right:0 on ferry is on the right. the F on left:1 f on left:0 c on left:1 g on right:0 f on right:1 on c on right:1 on f on right:0 f on right:1 on c on left:1 g on left:1 g on left:1 f on left:0 c on left:1 g on left:0 the ferry is on the left.

. 1 . 0	C 1.1
right:2	f on right:1
ferry is on the	c on right:0
left.	g on right:1
	ferry is on the
	right.
H on left:0	
R on left:1	
H on	F on left:1
right:3	f on left:0
R on	c on left:1
right:2	g on left:0
ferry is on the	F on right:0
right.	f on right:1
	c on right:0
	g on right:1
H on left:1	ferry is on the
R on left:1	left.
H on	
right:2	
R on	F on left:0
right:2	f on left:0
ferry is on the	c on left:0
left.	g on left:0
	F on right:1
	f on right:1
H on left:0	c on right:1
R on left:0	g on right:1
H on	ferry is on the
right:3	right.
	right.
right:3	
ferry is on the	
right.	
(b) 9 edges	
(c) 10	
<bfs></bfs>	

(a)
H on left:3
R on left:3
H on
right:0
R on
right:0
ferry is on the
left.
H on left:2
R on left:2
H on
right:1
R on
right:1
ferry is on the
right.
right.
11 162
H on left:3
R on left:2
H on
right:0
R on
right:1
ferry is on the
left.
H on left:0
R on left:2
H on
right:3
R on

	right:1		
	ferry is on the		
	right.		
	H on left:2		
	R on left:2		
	H on		
	right:1		
	R on		
	right:1		
	ferry is on the		
	left.		
	H on left:0		
	R on left:1		
	H on		
	right:3		
	R on		
	right:2	_	10
the length of path	9	7	40
the number of nodes	10	7	40
expanded			

<BFS>

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the path	H on left:3	F on left:1	[[4, 3, 2, 1],[],[]]
	R on left:3	f on left:1	[[4, 3, 2],[1],[]]
	H on	c on left:1	[[4, 3],[1],[2]]
	right:0	g on left:1	[[4, 3],[],[2, 1]]
	R on	F on	[[4],[3],[2,1]]
	right:0	right:0	[[4, 1],[3],[2]]
	ferry is on the	f on	[[4, 1],[3, 2],[]]

left.	right:0	[[4],[3, 2, 1],[]]
	c on	[[],[3,2,1],[4]]
	right:0	[[],[3,2],[4,1]]
H on left:2	g on	[[2],[3],[4,1]]
R on left:2	right:0	[[2, 1],[3],[4]]
H on	ferry is on	[[2, 1],[],[4, 3]]
right:1	the left.	[[2],[1],[4,3]]
R on		[[],[1],[4,3,2]]
right:1		[[],[],[4,3,2,1]]
ferry is on the	F on left:0	
right.	f on left:1	
	c on left:0	
	g on left:1	
H on left:3	F on	
R on left:2	right:1	
H on	f on	
right:0	right:0	
R on	c on	
right:1	right:1	
ferry is on the	g on	
left.	right:0	
	ferry is on	
	the right.	
H on left:0		
R on left:2		
H on	F on left:1	
right:3	f on left:1	
R on	c on left:0	
right:1	g on left:1	
ferry is on the	F on	
right.	right:0	
	f on	
	right:0	
H on left:2	c on	
R on left:2	right:1	
H on	g on	

. 1 .		. 1 . 0	1	
right:1		right:0		
R	on	ferry is	on	
right:1		the left.		
ferry is on	the			
left.				
		F on left:)	
		f on left:0		
H on left:(0	c on left:(
R on left:1	L	g on left:		
Н	on	F	on	
right:3		right:1		
R	on	f	on	
right:2		right:1		
		С	on	
		right:1		
		g	on	
		right:0		
		ferry is	on	
		the right.		
		F on left:		
		f on left:0		
		c on left:1		
		g on left:		
		F	on	
		right:0		
		f	on	
		right:1		
		c c	on	
		right:0	OII	
			on	
		g right:0	OII	
			0.70	
		ferry is	on	
		the left.		

F on left:0 f on left:0 c on left:1 g on left:0 F on right:1 f on right:1 c on right:0 g on right:1 ferry is on the right. F on left:1 f on left:0 c on left:1 g on left:0 F on right:0 f on right:1 c on right:0 g on right:1 ferry is on the left. F on left:0 f on left:0 c on left:0

		g on left:0	
		F on	
		right:1	
		f on	
		right:1	
		c on	
		right:1	
		g on	
		right:1	
		ferry is on	
		the right.	
the length of path	7	7	15
the number of nodes	10	9	70
expanded			

(i) why the maximum length of the OPEN list is more for one algorithm than the other

Because BFS search uses width to search, which increases the length of the open list. On the other hand, DFS uses the depth to search, so it is arranged in an open list in order of depth. That's why the maximum length of the OPEN list is more for BFS than DFS.

(ii) why the solution PATH length is different for one algorithm from that of the other

BFS arrives at a goal node via optimal path. However, DFS may arrive at a goal node via very non-optimal path. There are situations DFS can arrive at a goal node by not using the shortest path. That's why sometimes the length of the path of DFS is longer than BFS.