CS 312: AI Lab Report
Lab 1 - Group 15

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1 Pseudo Code

1.1 MoveGen(State)

The function takes a state as input and returns a set of states that are reachable from the input state in one step.

Algorithm 1 MoveGen(state)

```
1: procedure MoveGen(state)
2:     Initialize Result vector
3:     for Neighbours of State in Preferred Order do
4:         if n is a Valid State then
5:             Result.append(x,y)
6:     return Result                    ▷ This is the set of valid neighbours
```

1.2 GoalTest(State)

Returns true if the input state is goal and false otherwise.

Algorithm 2 GoalTest(State)

```
1: procedure GoalTest(State)
2:     if State.value == '*' then
3:         return true
4:     return false                     ▷ This state is not a goal state
```

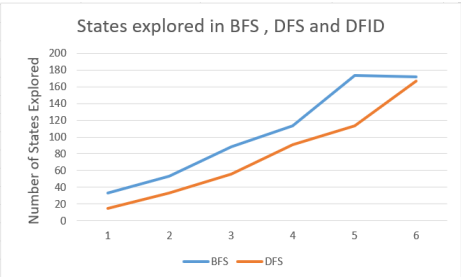
2 Maze Generation Settings

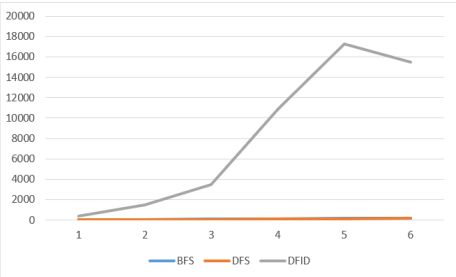
Number of cells across (1..N): 5
Number of cells up/down (1..N): 5
Type of maze: Text (cell size in characters)
Width of each cell (2..N): 3
Height of each cell (2..N): 2
Random Number Seed (optional):
Generate

3 Results and Plots

3.1 Statistics for Order: Down, Up, Right, Left

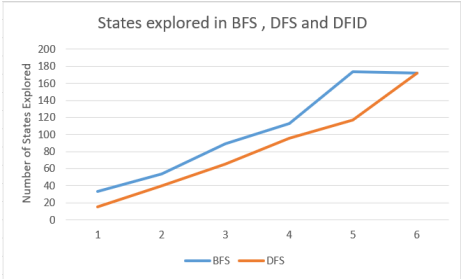
Number	Algorithm	Horizontal Cells	Vertical Cells	States Explored	Path Length	Preference
	BFS	3	3	33	15	DURL
	DFS	3	3	15	15	DURL
1	DFID	3	3	392	15	DURL
	BFS	4	4	53	32	DURL
	DFS	4	4	33	32	DURL
2	DFID	4	4	1500	32	DURL
	BFS	5	5	88	53	DURL
	DFS	5	5	56	53	DURL
3	DFID	5	5	3462	53	DURL
	BFS	6	6	113	46	DURL
	DFS	6	6	91	46	DURL
4	DFID	6	6	10857	46	DURL
	BFS	7	7	174	93	DURL
	DFS	7	7	113	93	DURL
5	DFID	7	7	17292	93	DURL
	BFS	8	8	172	78	DURL
	DFS	8	8	167	78	DURL
6	DFID	8	8	15508	78	DURL

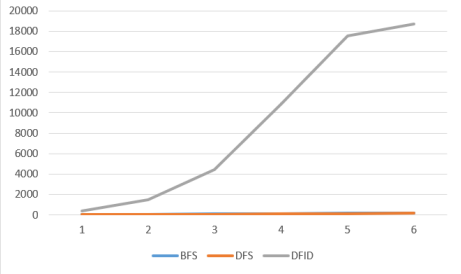




3.2 Statistics for Order: Up, Down, Left, Right

Number	Algorithm	Horizontal Cells	Vertical Cells	States Explored	Path Length	Preference
	BFS	3	3	33	15	UDLR
	DFS	3	3	15	15	UDLR
1	DFID	3	3	392	15	UDLR
	BFS	4	4	54	32	UDLR
	DFS	4	4	40	32	UDLR
2	DFID	4	4	1507	32	UDLR
	BFS	5	5	89	53	UDLR
	DFS	5	5	65	57	UDLR
3	DFID	5	5	4405	53	UDLR
	BFS	6	6	113	46	UDLR
	DFS	6	6	96	48	UDLR
4	DFID	6	6	10865	46	UDLR
	BFS	7	7	174	93	UDLR
	DFS	7	7	117	95	UDLR
5	DFID	7	7	17519	93	UDLR
	BFS	8	8	172	78	UDLR
	DFS	8	8	172	82	UDLR
6	DFID	8	8	18686	78	UDLR





4 Conclusion

The number of States explored and Solution path length changes with a different preferred order. Thus , we conclude that the result depends on the order in which the nodes are added into the list.

Algorithm	Dependence on order of neighbours added	
	No. States Explored	Path Length
BFS	Yes	No
DFS	Yes	Yes
DFID	Yes	No