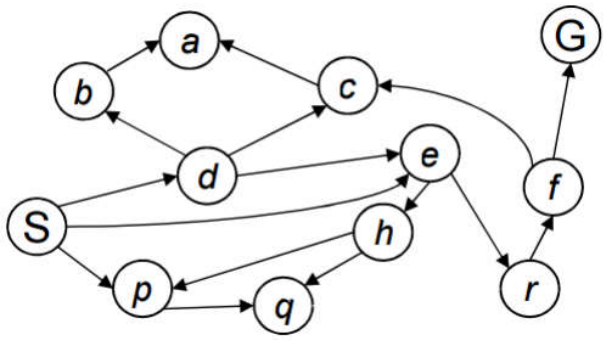
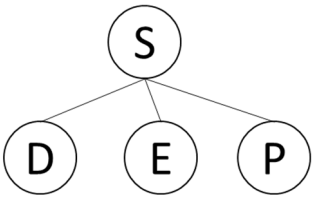
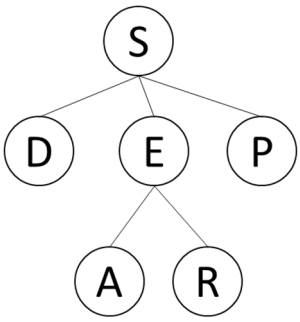
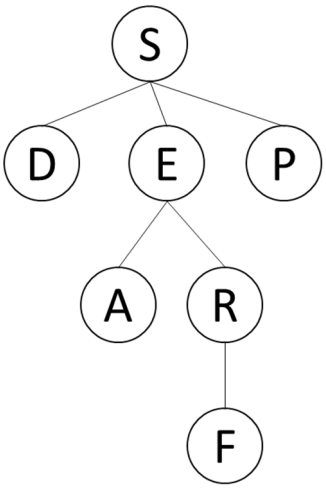
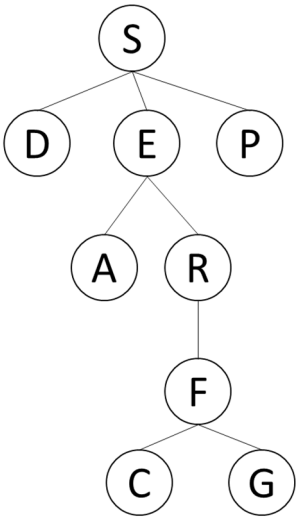
COSC 4340 Artificial Intelligence

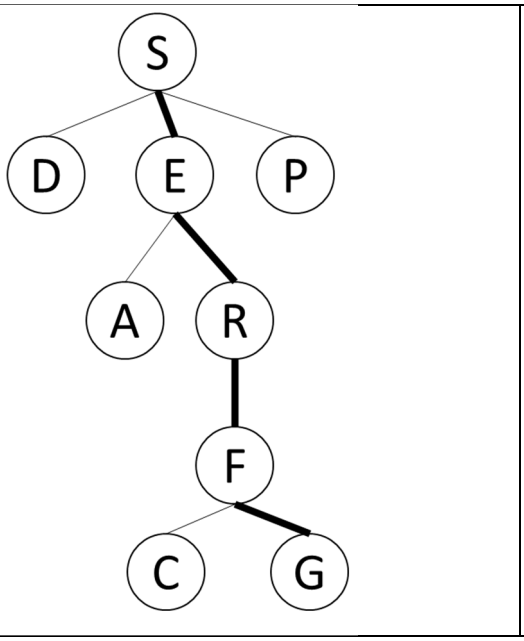
Homework 1

1. Solve the program in Slide p.37 (Tree-search algorithm).



Search Tree:	Fringe:
1) Search tree starts with the start state S. 	Fringe = {S}
2) We want to expand the search tree by adding S's successors, D, E and P: 	S is removed from the fringe now because it's expanded, and we add S's successors, D, E, P in the fringe. Fringe = {D, E, P}
3) Next, we pick one from the fringe (randomly in Tree-Search). Let's pick E for our expansion. Expand the search with E's successors, A and R: 	E is removed from the fringe now, and we add E's successors A and R in the fringe. Fringe = {D, P, A, R}

4) Next, we pick one from the fringe (randomly in Tree-Search). Let's pick R for our expansion. Expand the tree with R's successors:  	R is removed from the fringe now, and we add R's successor F in the fringe. Fringe = {D, P, A, F}
5) Next, we pick one from the fringe (randomly in Tree-Search). Let's pick F for our expansion. Expand the tree with F's successors, C and G:  	F is removed from the fringe now, and we add F's successors C and G in the fringe. Fringe = {D, P, A, C, G}
6) Next, we pick one from the fringe (randomly in Tree-Search). Let's pick G for our expansion. Because G is a goal state. Return S → E → R → F → G as our solution.	Fringe = {D, P, A, C}



2. Solve the problem in Slide p.51 (BFS).
3. Solve the problem in Slide p.65 (UCS).
4. Solve the problem in Slide p.73 (DFS).