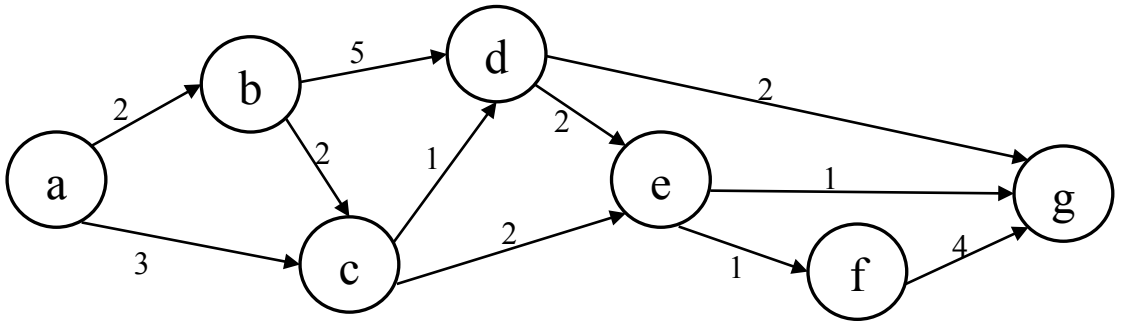
Artificial Intelligence
CSC 361

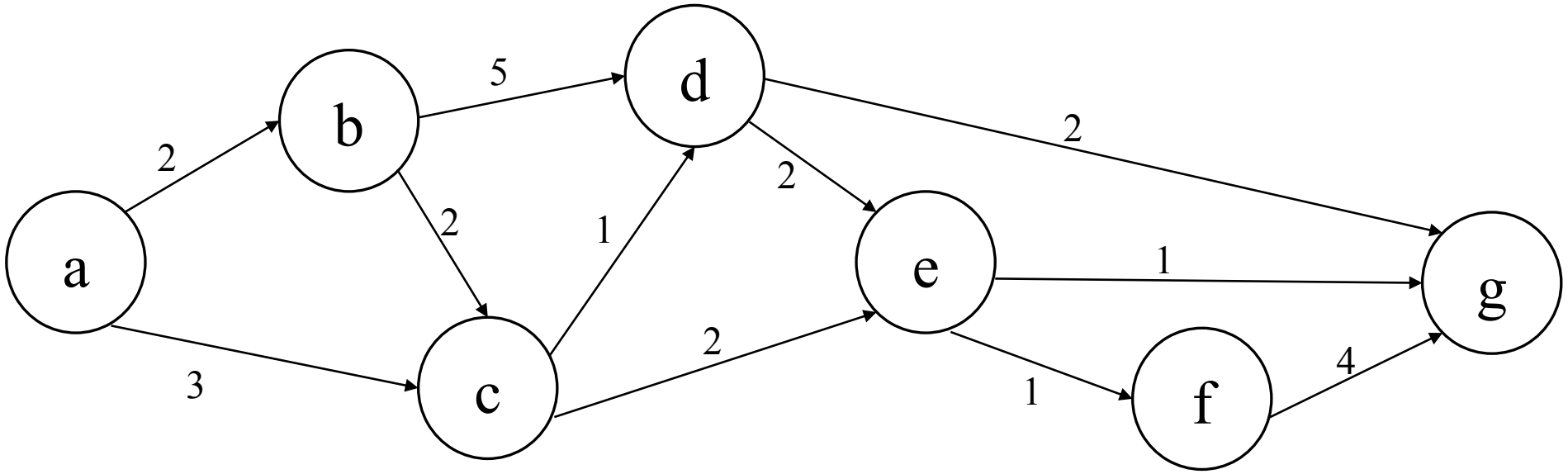
Tutorial#2

Question 1. Consider the search space of Figure 1, where state a is the initial state and g is the goal state.

Assume that the actions are ordered according to their resulting state alphabetically. For each of the algorithms: BFS, UCS, DFS and IDS **Give the following:**

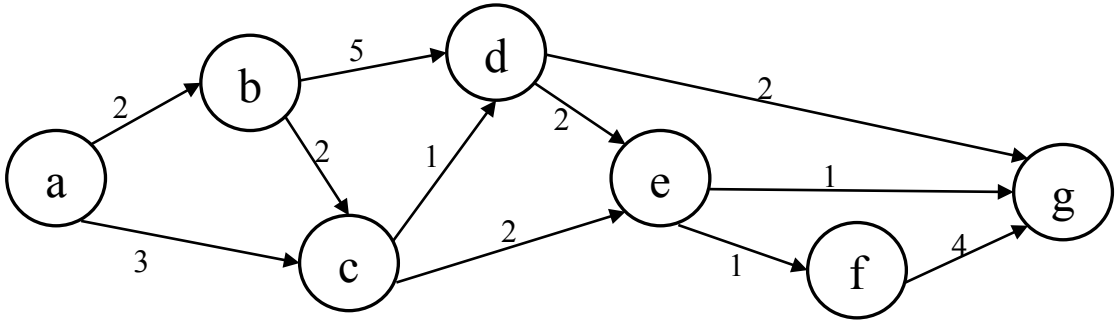
1. the order of node expansion,
2. the fringe (the order is important, indicate the priority when applicable),
3. the solution path,
4. the solution cost




a
b
c
d
e
f
g
2
3
5
2
1
2
2
1
2
4

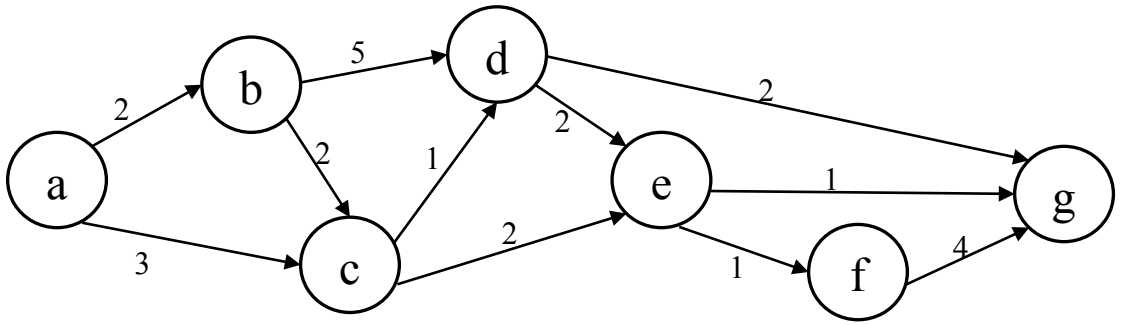
BFS

1. Order of Expansion: [a, b, c, c, d, d, e, d, e, e]
2. Fringe: [e, g, f, g, e, g, f, g, f, g].
3. Solution path: (a, b, d, g).
4. Solution cost: 9.



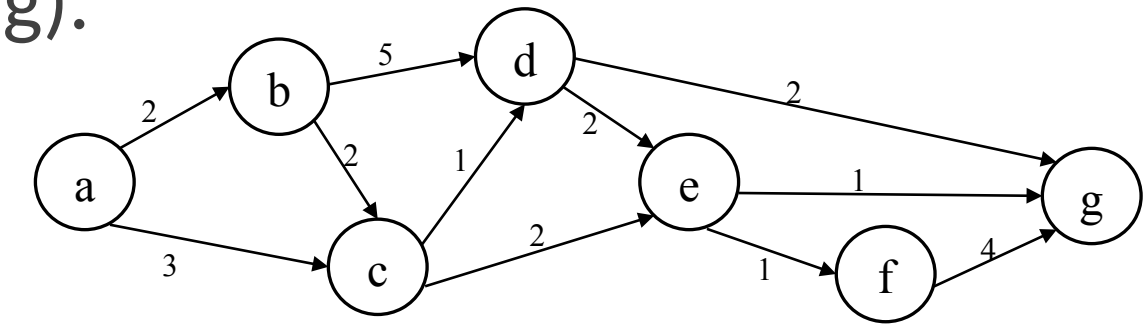
UCS

1. Order of Expansion: [a, b, c, c, d, e, d, e, e]
2. Fringe : [f/6, g/6, d/7, e/7, g/7, f/7, g/7, f/7, g/7].
3. Solution path : (a, c, d, g).
4. Solution cost : 6.

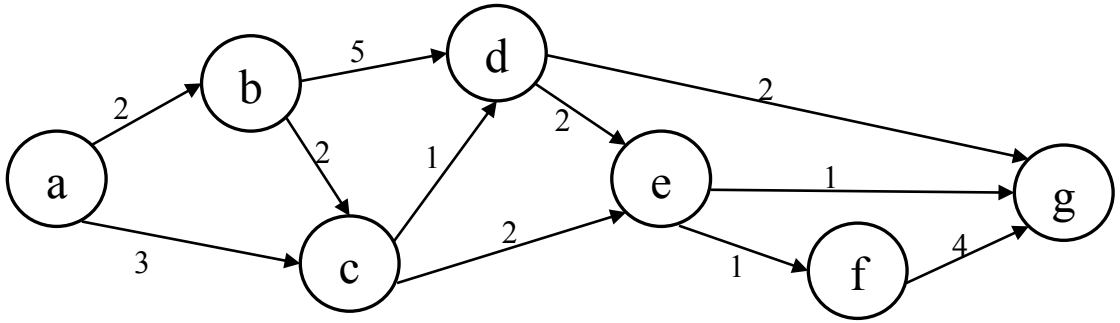


DFS

1. Order of Expansion: [a, b, c, d, e, f]
2. Fringe: [g, g, e, d, c].
3. Solution path : (a, b, c, d, e, f, g).
4. Solution cost: 12



IDS



Limit 0	Limit 1	Limit 2	Limit 3
–OE: [] –F: [] –S. path: NA –S. cost: NA	–OE: [a] –F: [] –S. path: NA –S. cost: NA	–OE: [a, b, c] –F: [] –S. path: NA –S. cost: NA	–OE: [a, b, c, d, e, d, e] –F: [c] –S. path: (a, b, d, g) –S. cost: 9