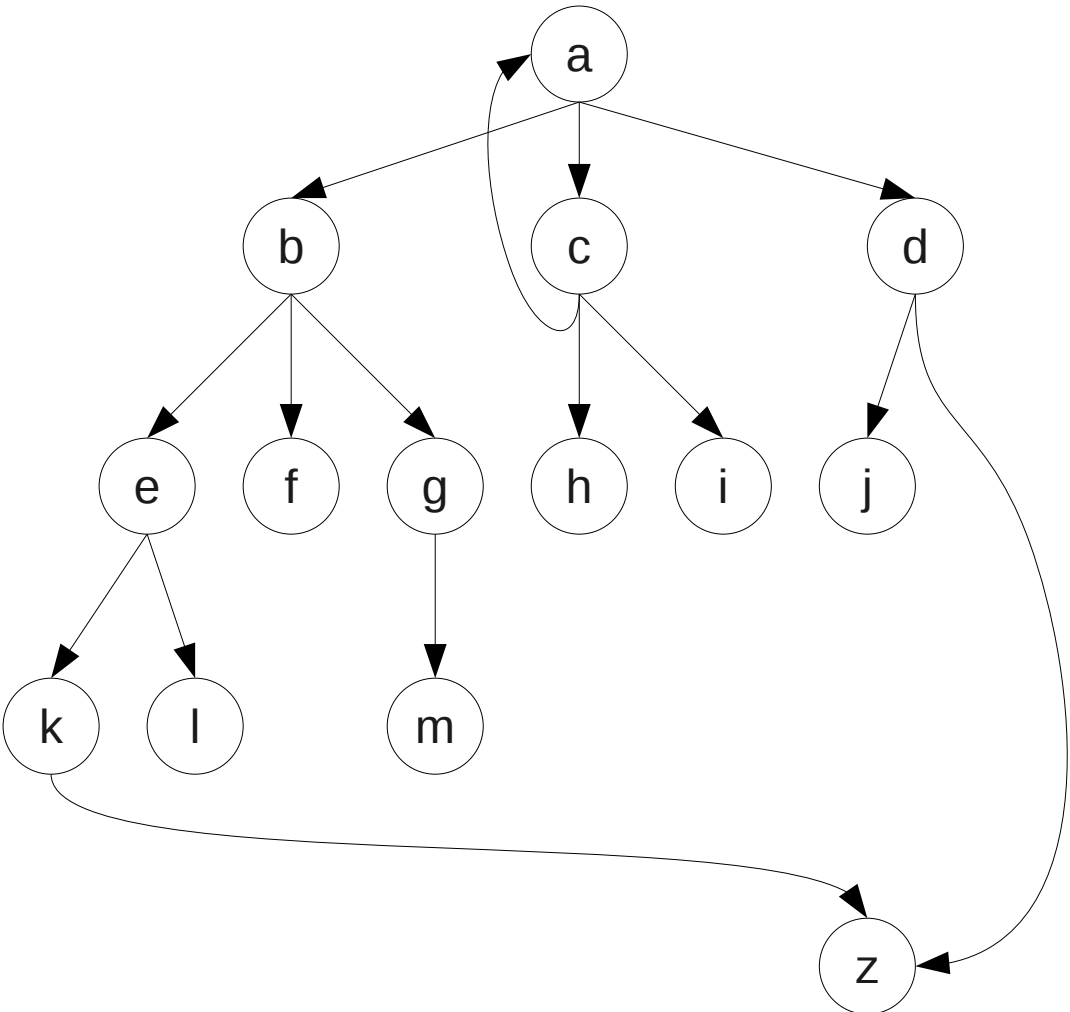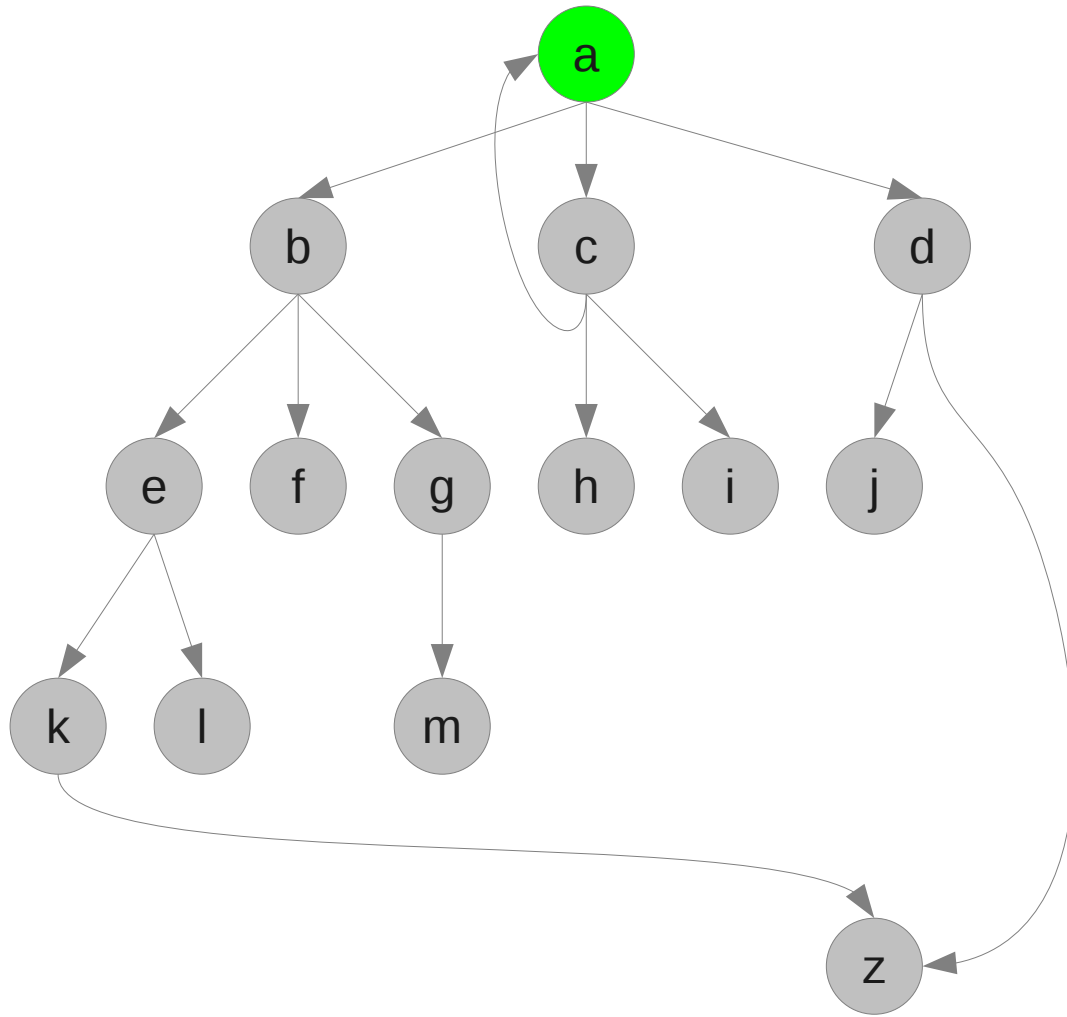Breadth-First Search: Find path from a to z

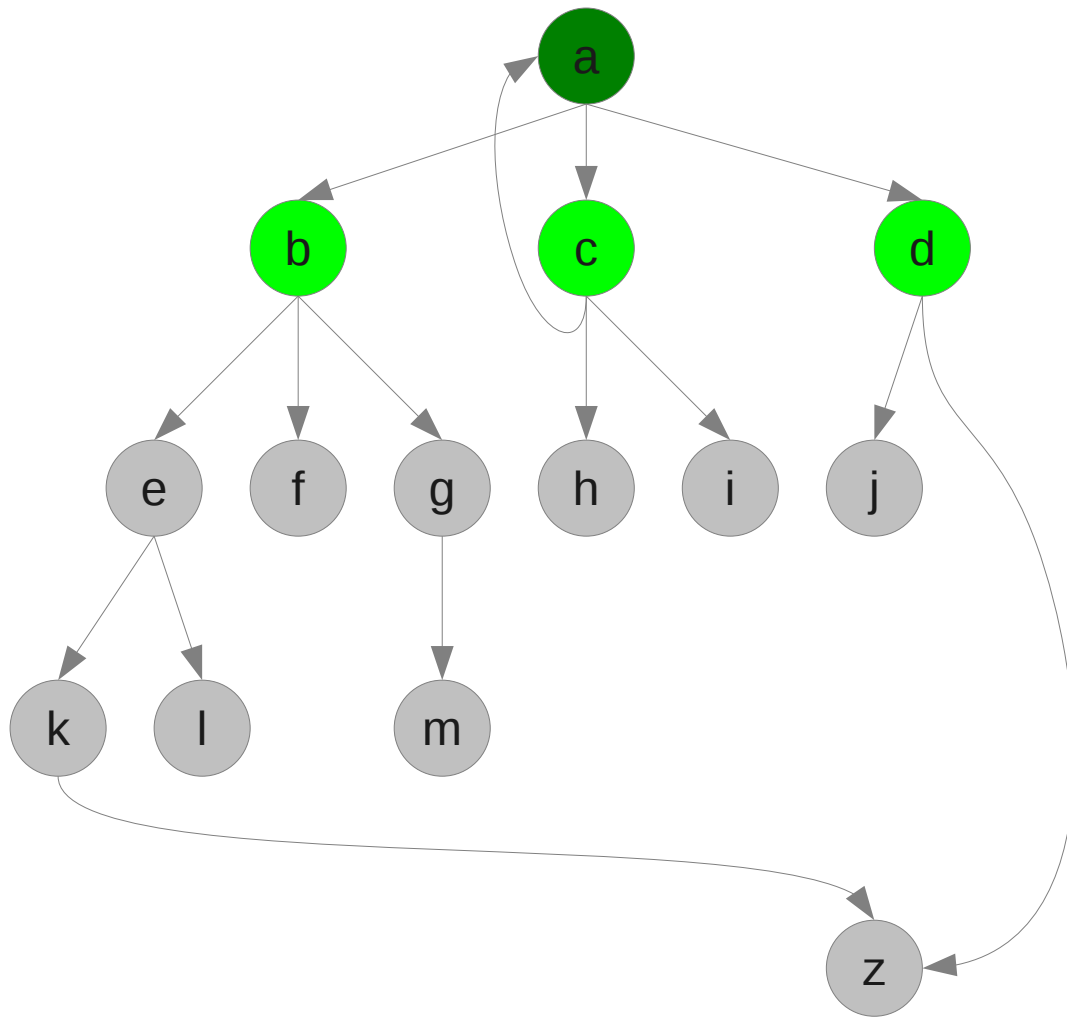

successors =
{'a': ['b', 'c', 'd'],
 'b': ['e', 'f', 'g'],
 'c': ['a', 'h', 'i'],
 'd': ['j', 'z'],
 'e': ['k', 'l'],
 'g': ['m'],
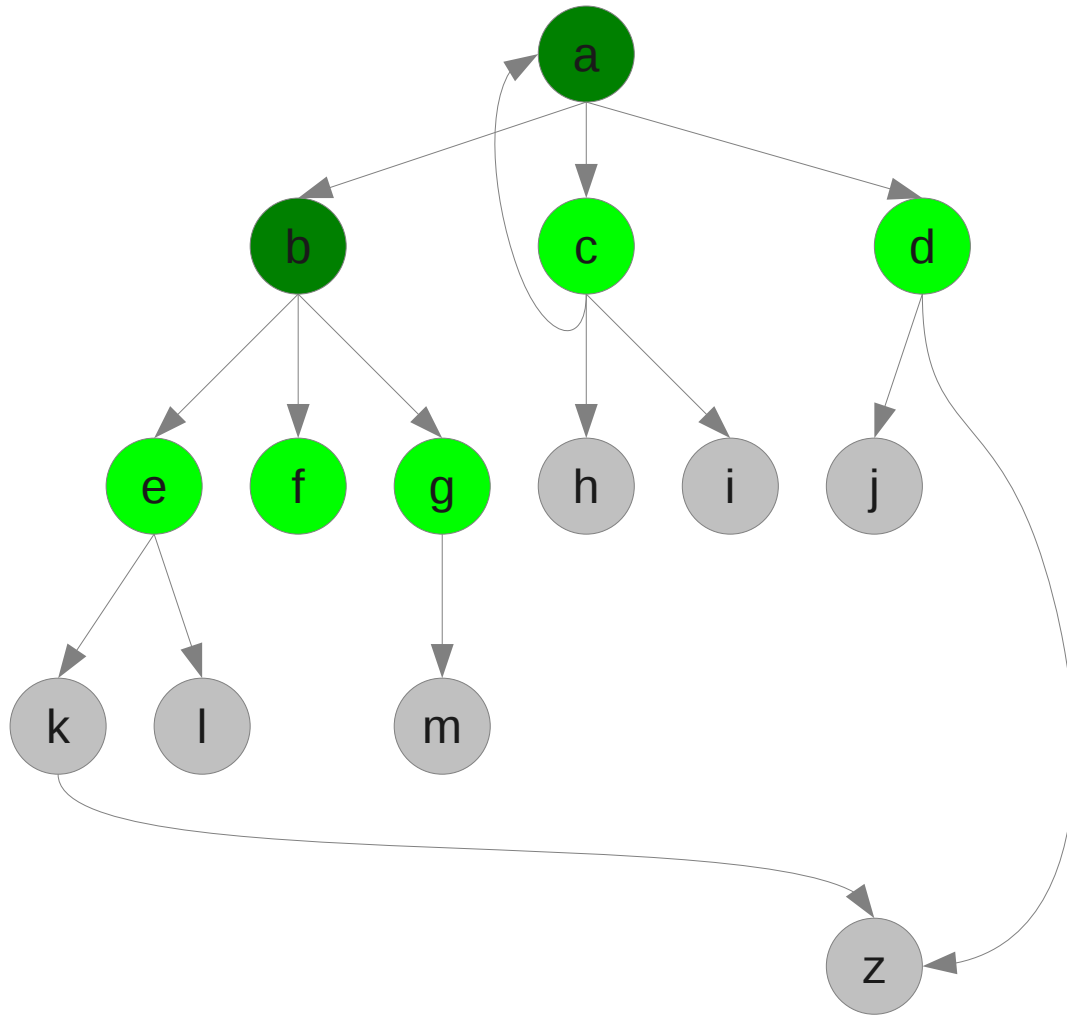 'k': ['z']}

unExpanded = [('a', None)]

expanded = {}
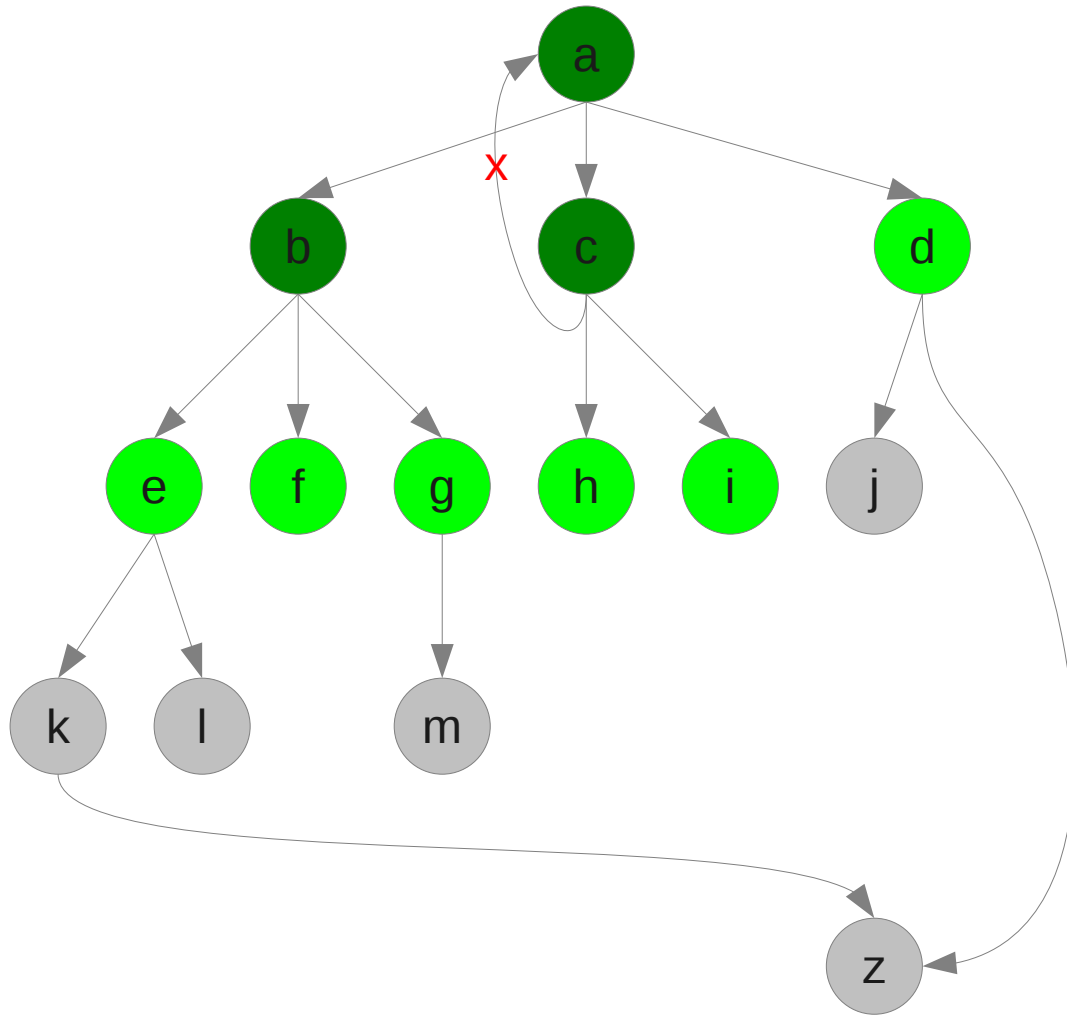
unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('b', 'a')]

expanded = {'a': None}
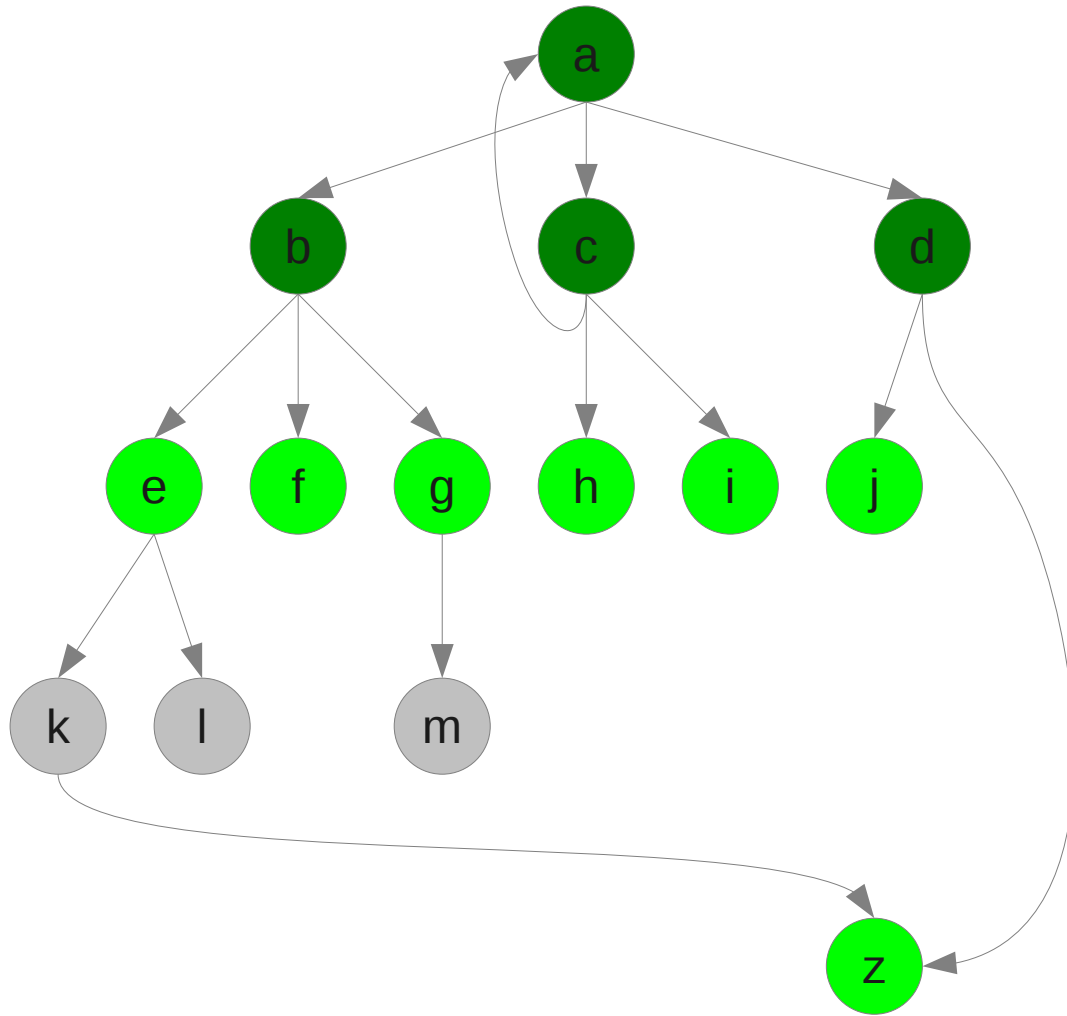
unExpanded = [('g', 'b'),
            ('f', 'b'),
            ('e', 'b'),
            ('d', 'a'),
            ('c', 'a')]

expanded = {'a': None,
            'b': 'a'}

unExpanded = [('i', 'c'),
              ('h', 'c'),
              ('g', 'b'),
              ('f', 'b'),
              ('e', 'b'),
              ('d', 'a')]

expanded = {'a': None,
            'b': 'a',
            'c': 'a'}

unExpanded = [('z', 'd'),
              ('j', 'd'),
              ('i', 'c'),
              ('h', 'c'),
              ('g', 'b'),
              ('f', 'b'),
              ('e', 'b')]

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
            'd': 'a'}

unExpanded = [('l', 'e'),
              ('k', 'e'),
              ('z', 'd'),
              ('j', 'd'),
              ('i', 'c'),
              ('h', 'c'),
              ('g', 'b'),
              ('f', 'b')]

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
            'd': 'a',
            'e': 'b'}

unExpanded = [('l', 'e'),
                ('k', 'e'),
                ('z', 'd'),
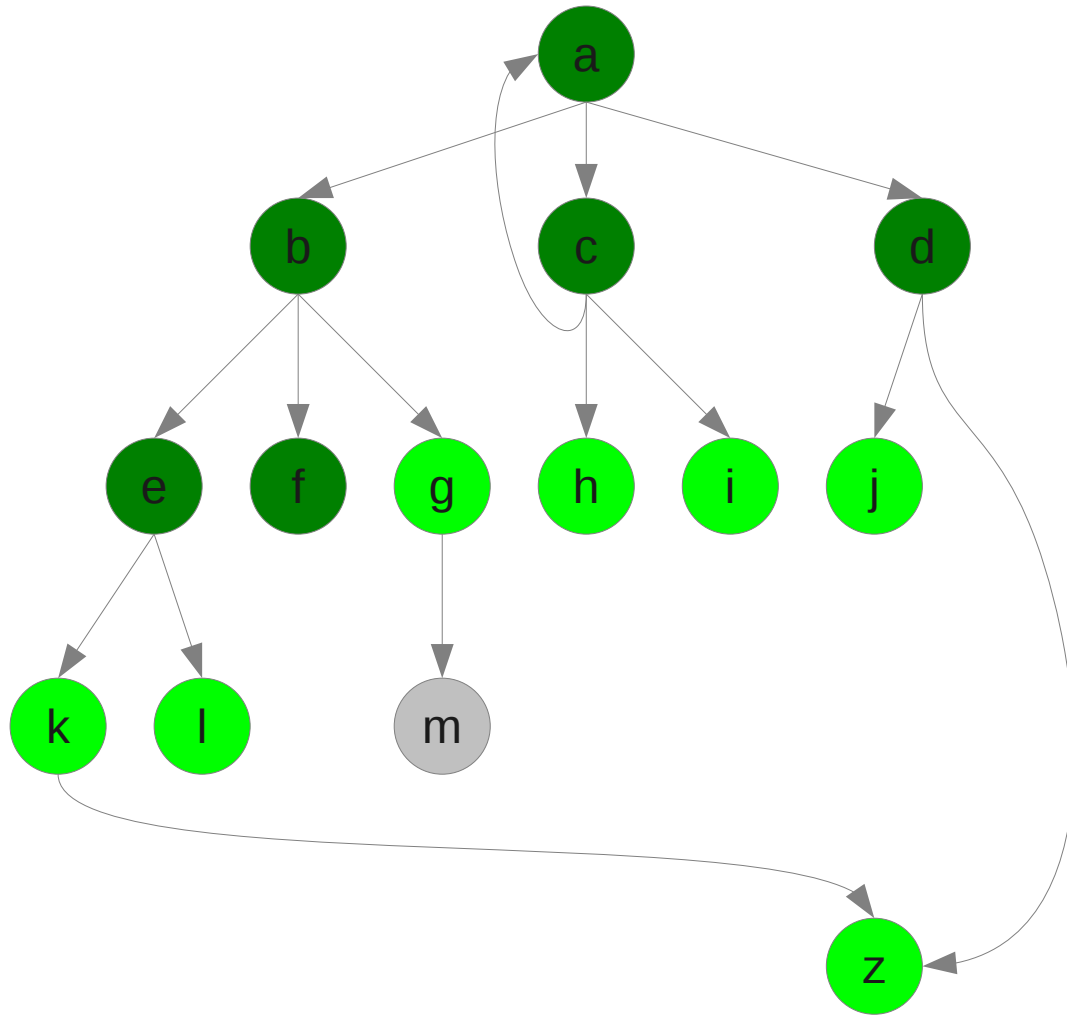   ('j', 'd'),
                ('i', 'c'),
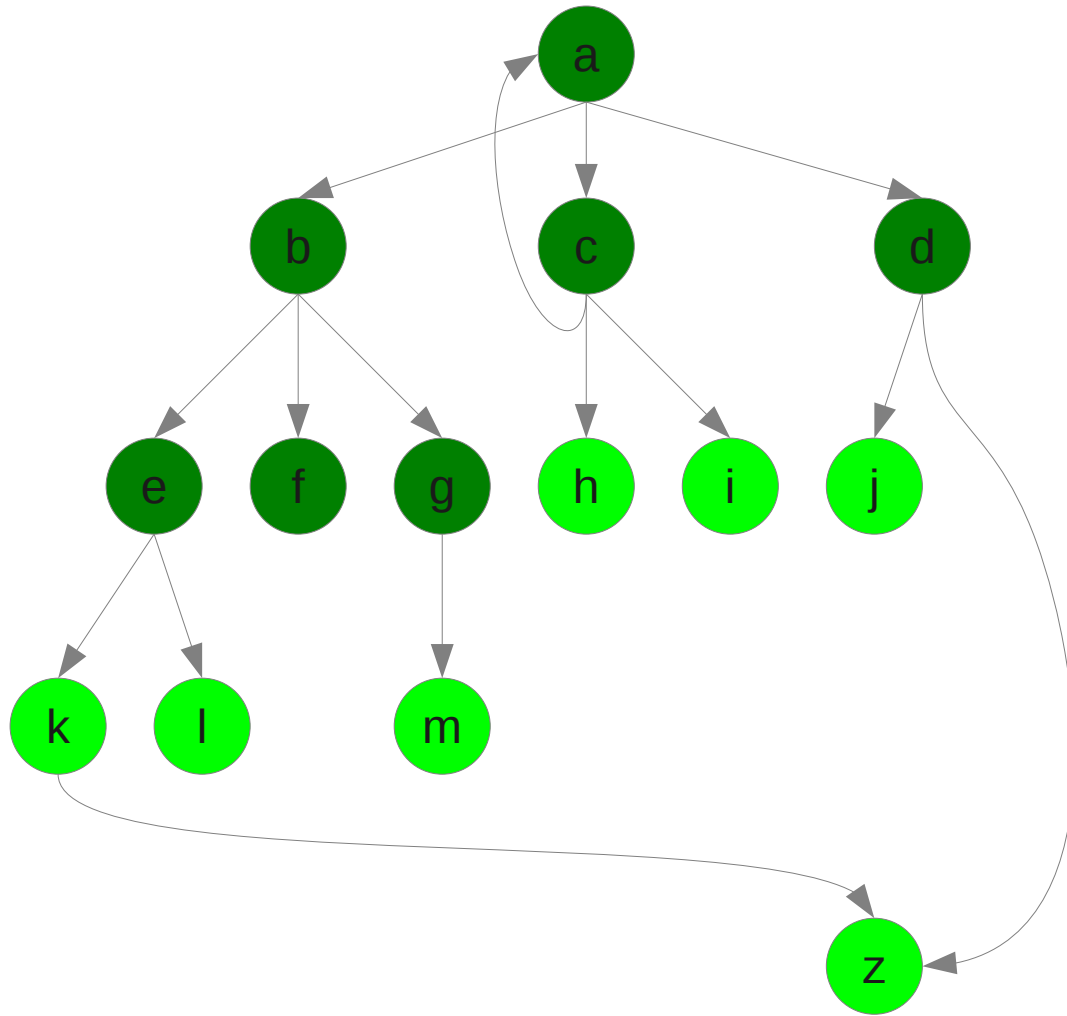   ('h', 'c'),
                ('g', 'b')]

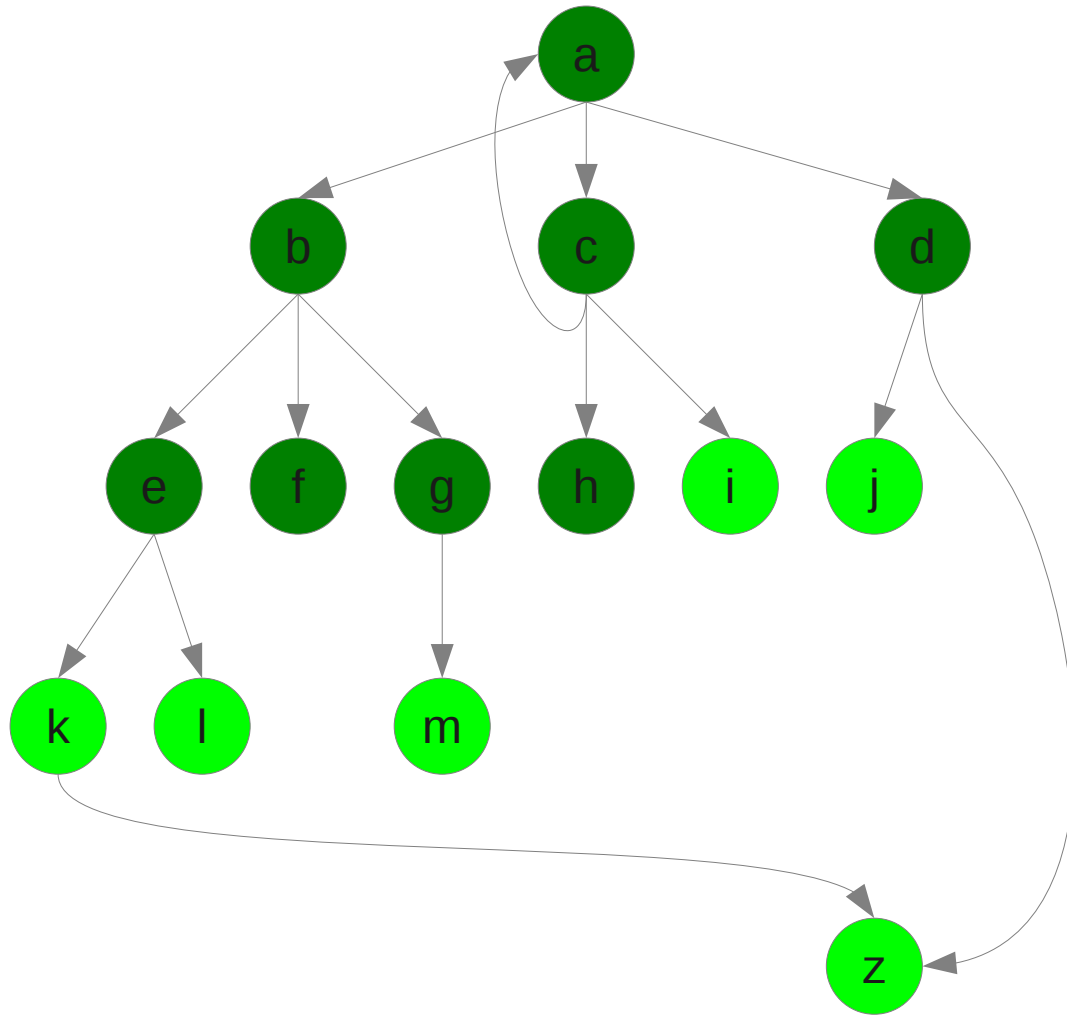expanded = {'a': None,
             'b': 'a',
             'c': 'a',
             'd': 'a',
             'e': 'b',
             'f': 'b'}

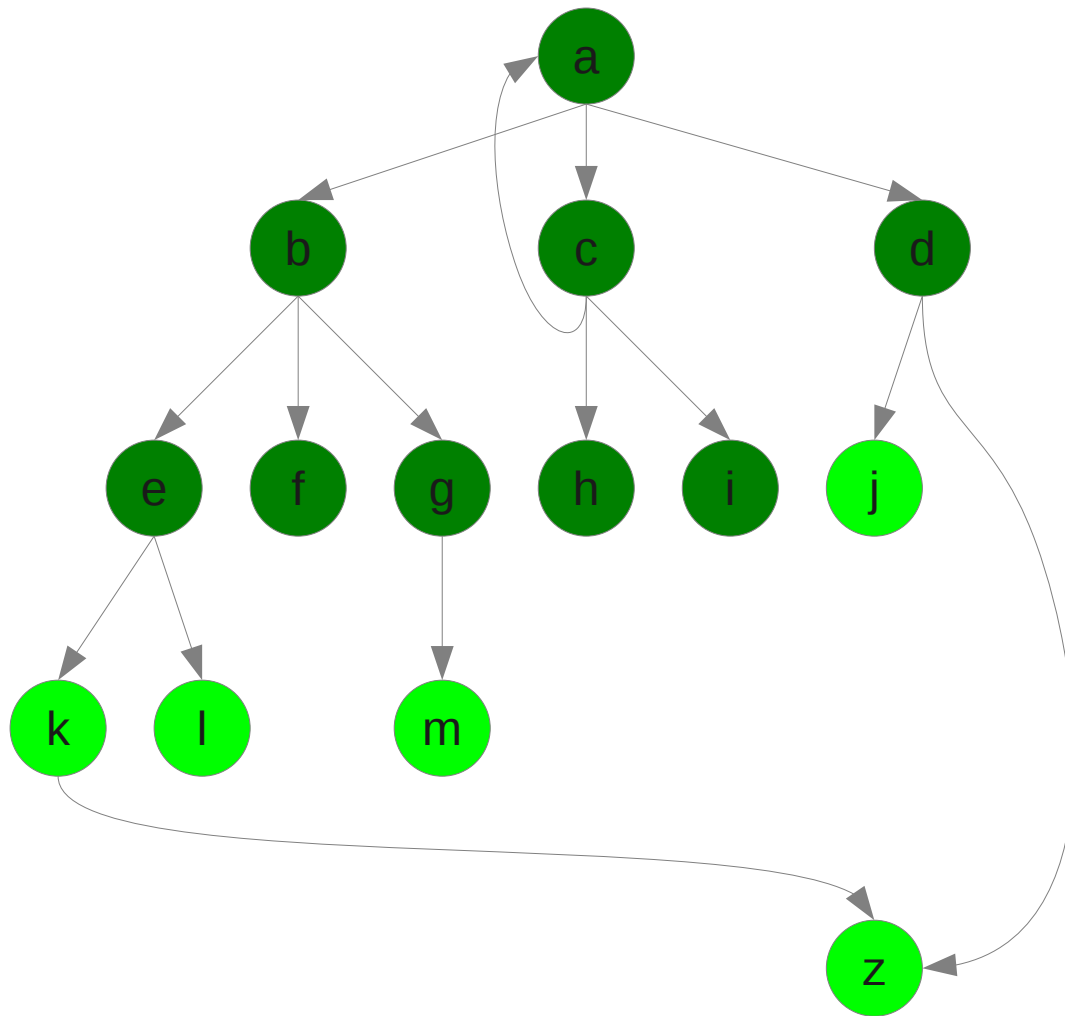unExpanded = [('m', 'g'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'd'),
              ('j', 'd'),
              ('i', 'c'),
              ('h', 'c')]

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
            'd': 'a',
            'e': 'b',
            'f' : 'b',
            'g': 'b'}

unExpanded = [('m', 'g'),
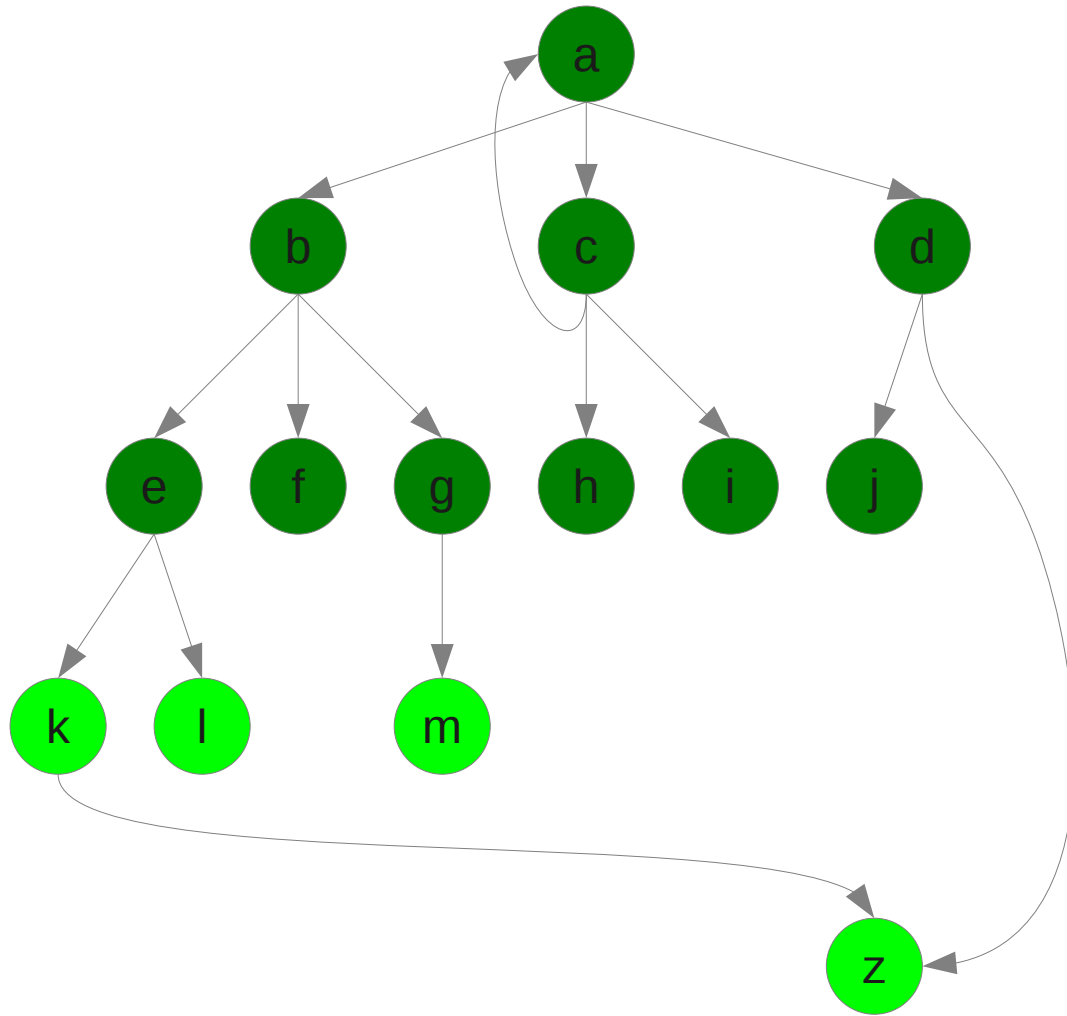   ('l', 'e'),
              ('k', 'e'),
              ('z', 'd'),
              ('j', 'd'),
              ('i', 'c')]

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
            'd': 'a',
            'e': 'b',
            'f' : 'b',
            'g': 'b',
            'h': 'c'}

unExpanded = [('m', 'g'),
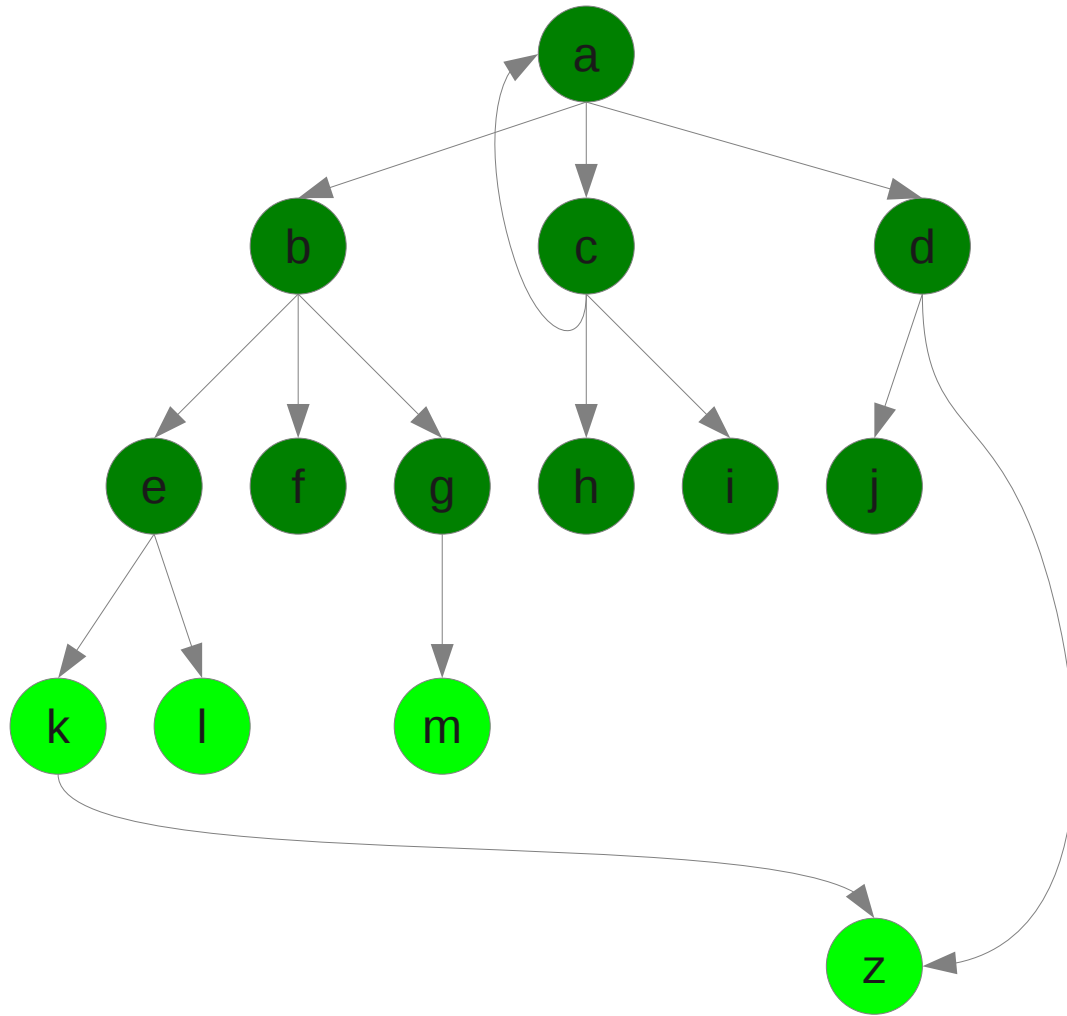   ('l', 'e'),
              ('k', 'e'),
              ('z', 'd'),
              ('j', 'd')]

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
            'd': 'a',
            'e': 'b',
            'f' : 'b',
            'g': 'b',
            'h': 'c',
            'i': 'c'}

unExpanded = [('m', 'g'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'd')]

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
            'd': 'a',
            'e': 'b',
            'f' : 'b',
            'g': 'b',
            'h': 'c',
            'i': 'c',
            'j': 'd'}

unExpanded = [('m', 'g'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'd')]

GOAL FOUND!

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
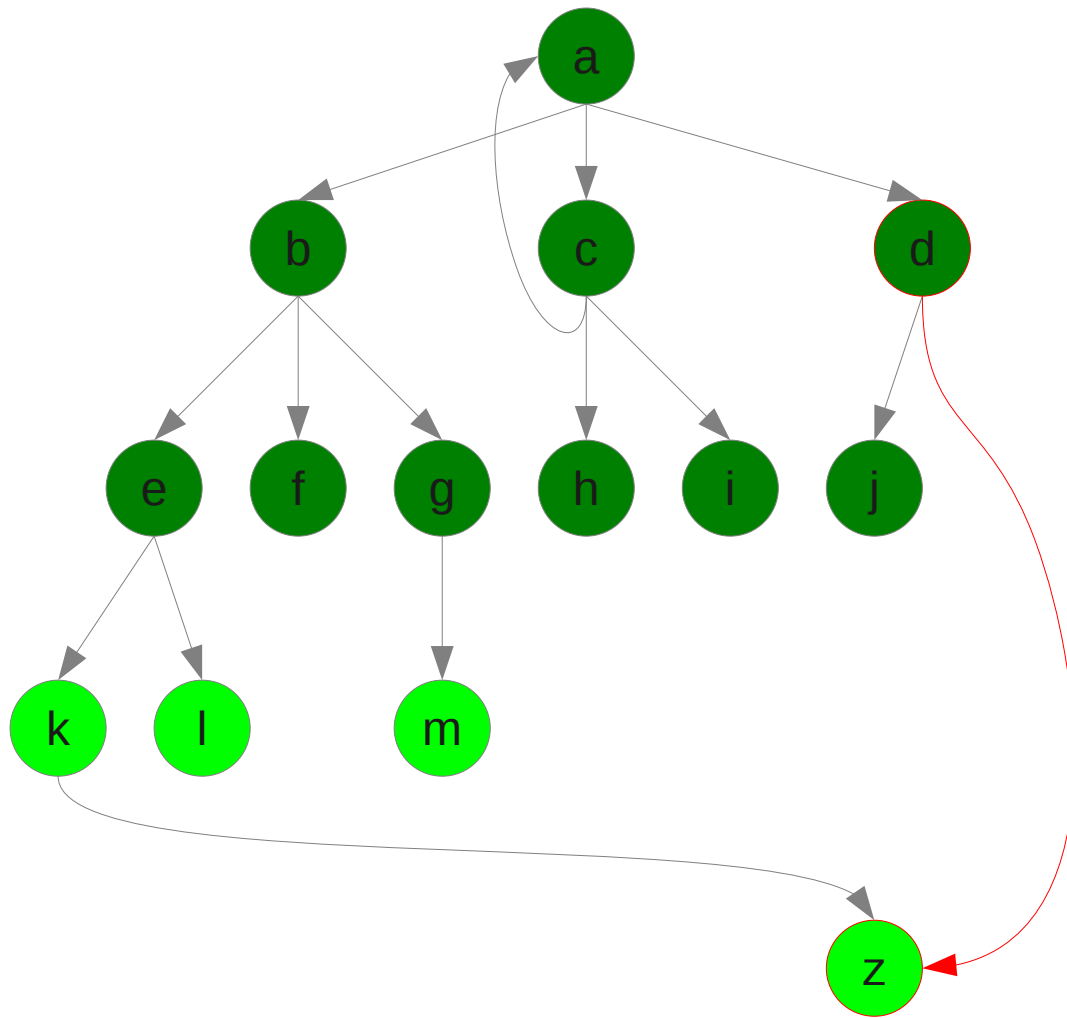   'd': 'a',
            'e': 'b',
            'f' : 'b',
            'g': 'b',
            'h': 'c',
            'i': 'c',
            'j': 'd'}

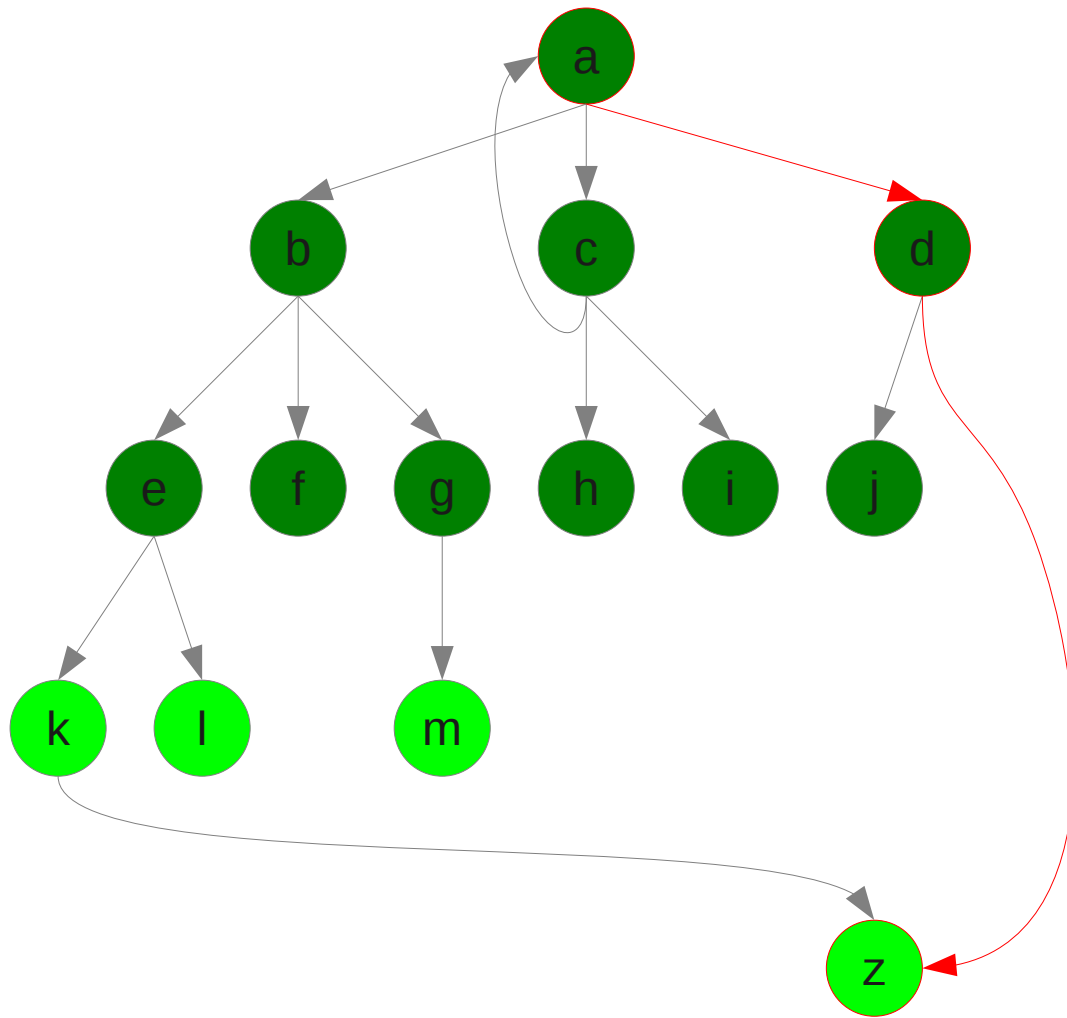unExpanded = [('m', 'g'),
               ('l', 'e'),
               ('k', 'e'),
               ('z', 'd')]

Building solution path:
    ['d', 'z']

expanded = {'a': None,
             'b': 'a',
             'c': 'a',
             'd': 'a',
             'e': 'b',
             'f' : 'b',
             'g': 'b',
             'h': 'c',
             'i': 'c',
             'j': 'd'}

unExpanded = [('m', 'g'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'd')]

Building solution path:
    ['a', 'd', 'z']

expanded = {'a': None,
            'b': 'a',
            'c': 'a',
            'd': 'a',
            'e': 'b',
            'f' : 'b',
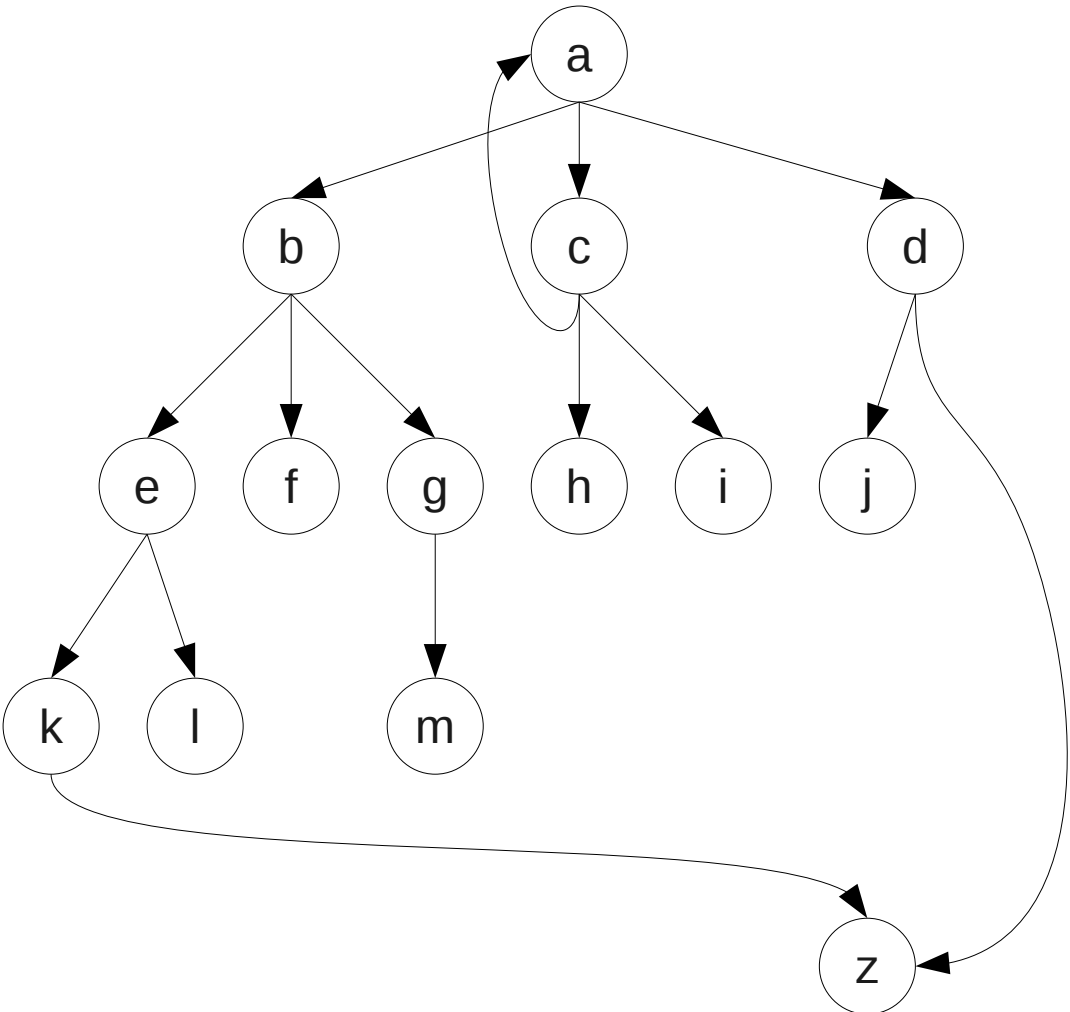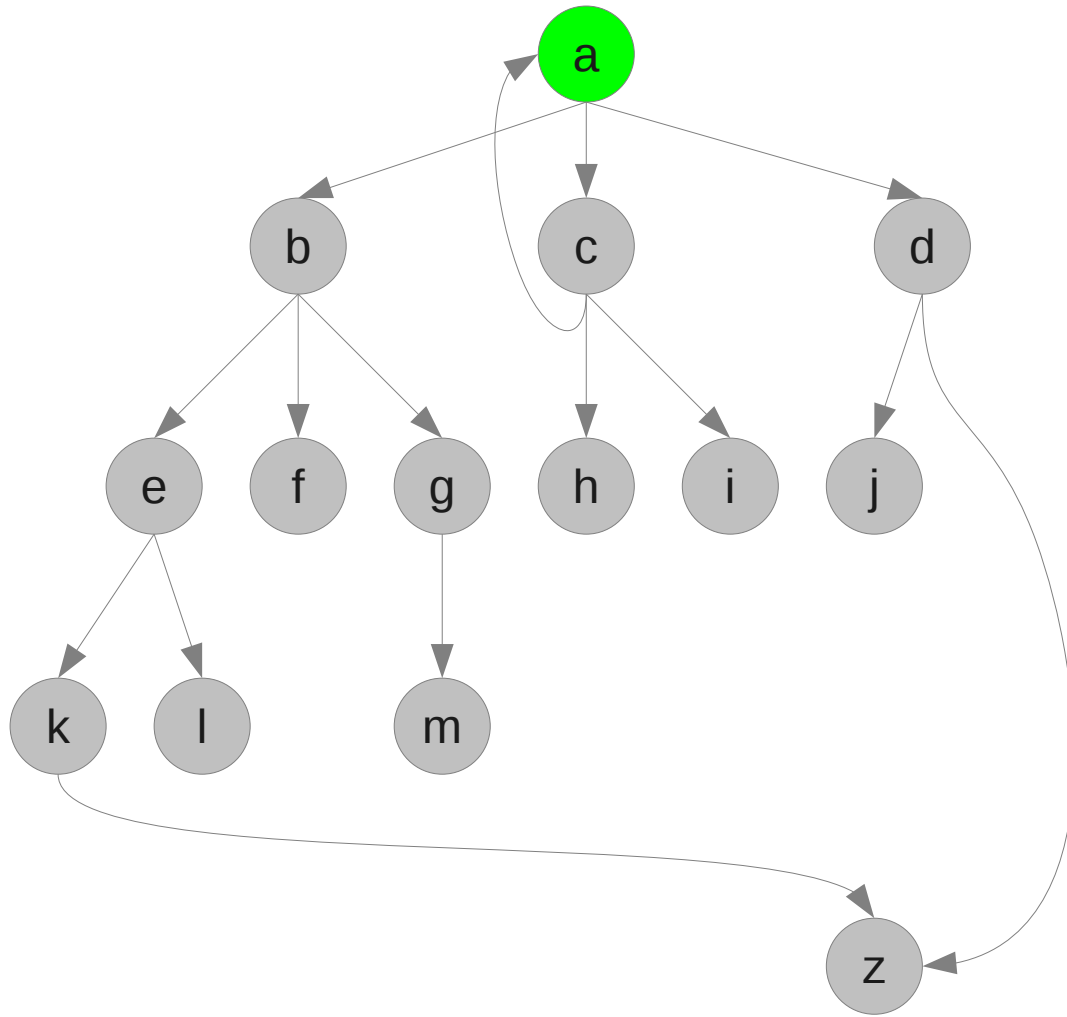   'g': 'b',
            'h': 'c',
            'i': 'c',
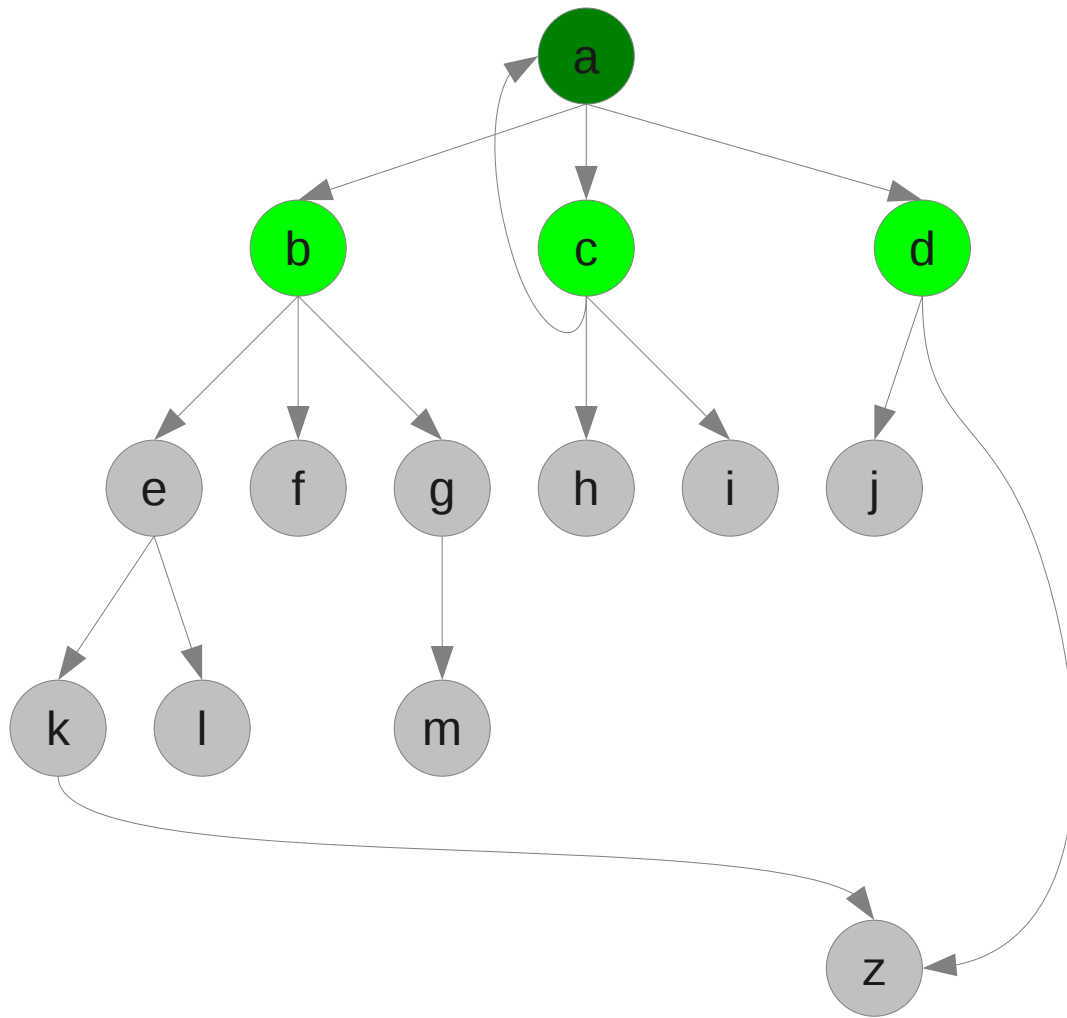   'j': 'd'}

Depth-First Search: Find path from a to z

successors =
          {'a': ['b', 'c', 'd'],
           'b': ['e', 'f', 'g'],
           'c': ['a', 'h', 'i'],
           'd': ['j', 'z'],
           'e': ['k', 'l'],
           'g': ['m'],
           'k': ['z']}
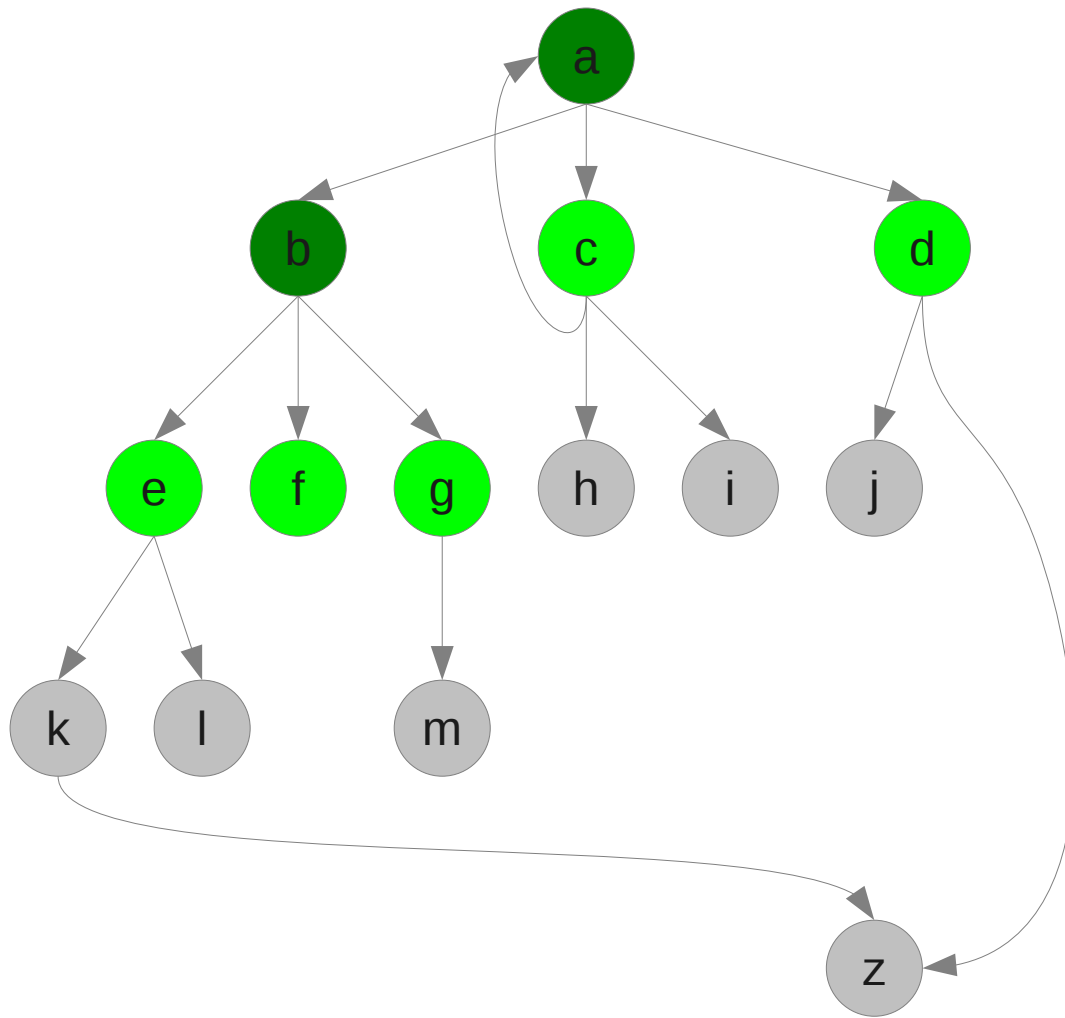
unExpanded = [('a', None)]

expanded = {}

unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('b', 'a')]
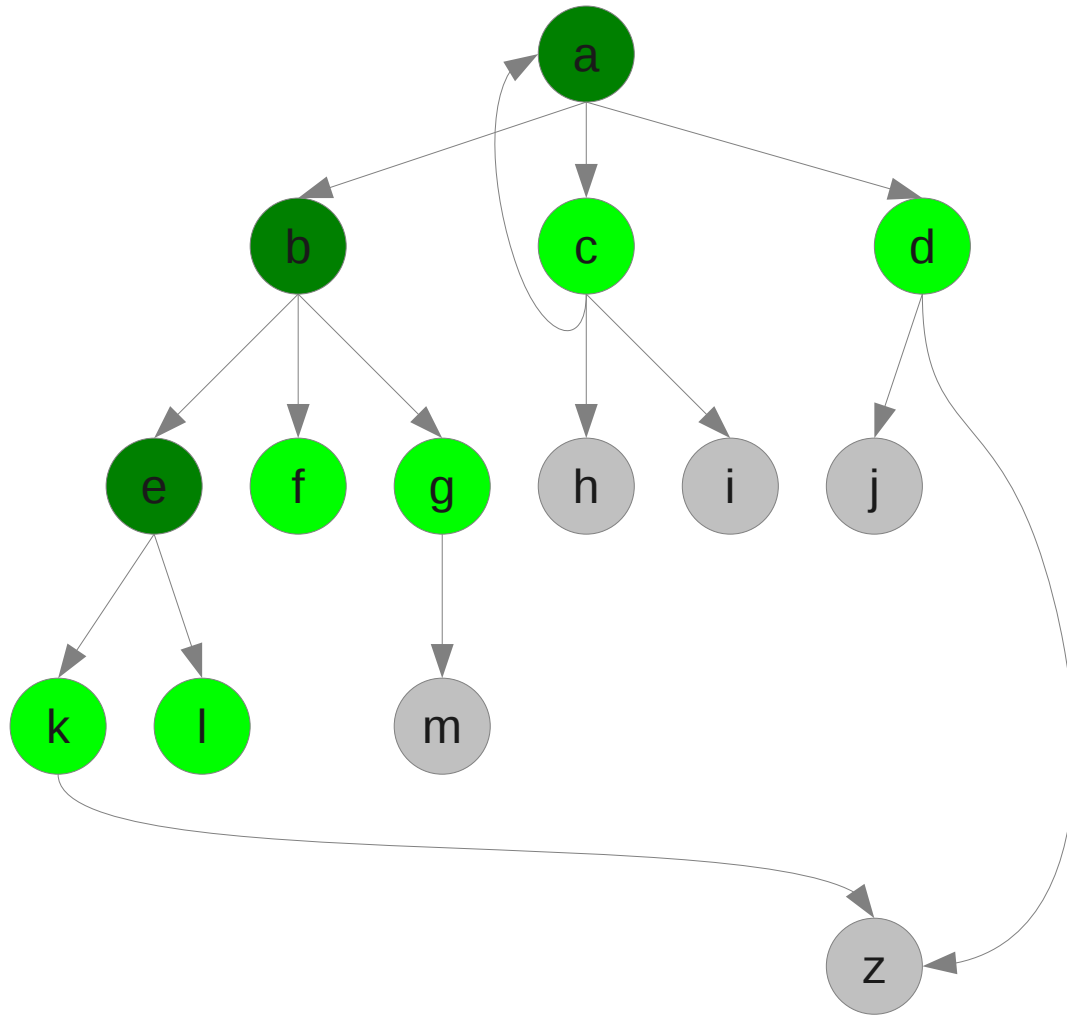
expanded = {'a': None}

unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('g', 'b'),
              ('f', 'b'),
              ('e', 'b')]

expanded = {'a': None,
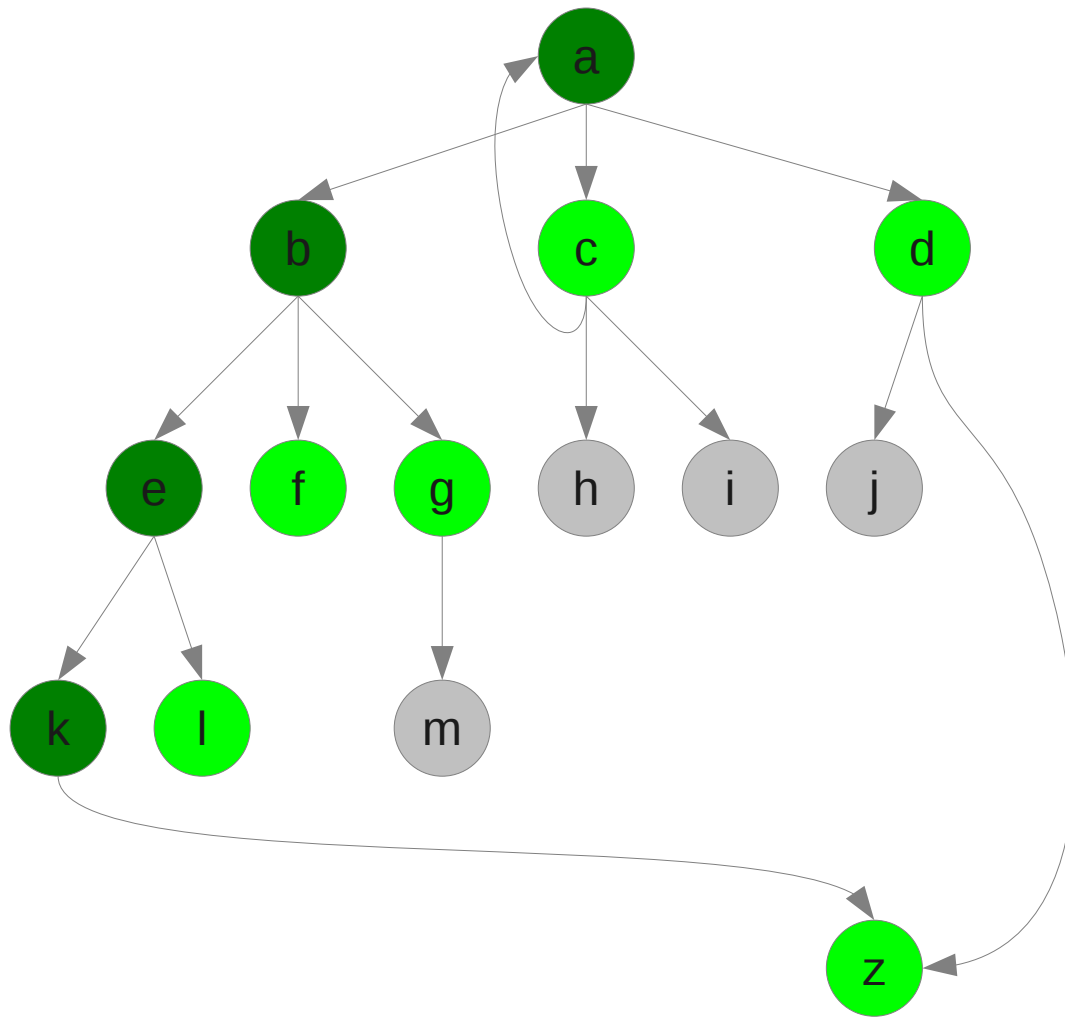   'b': 'a'}

Order in unExpanded
is different.

unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('g', 'b'),
              ('f', 'b'),
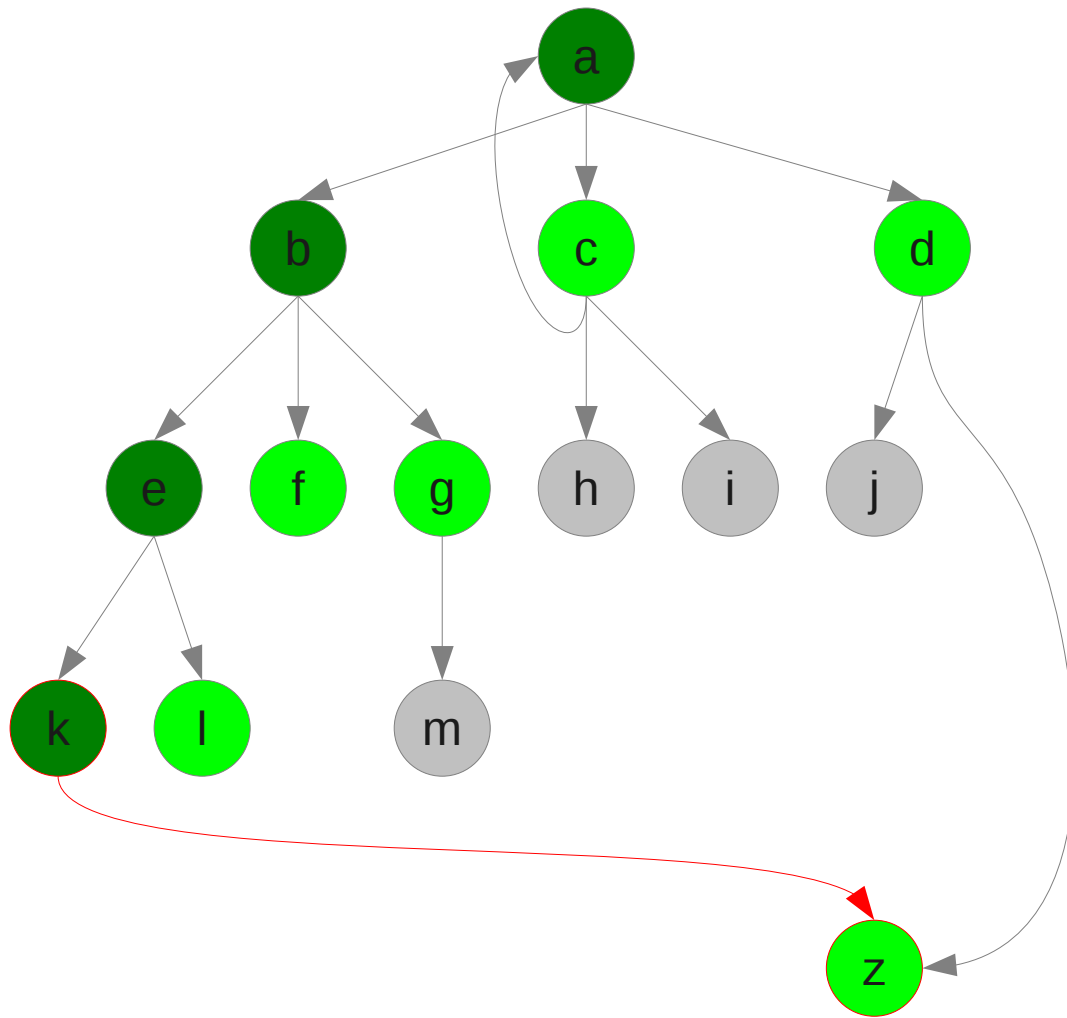   ('l', 'e'),
              ('k', 'e')]

expanded = {'a': None,
            'b': 'a',
            'e': 'b'}

unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('g', 'b'),
              ('f', 'b'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'k')]

GOAL FOUND.

expanded = {'a': None,
            'b': 'a',
            'e': 'b',
            'k': 'e'}

unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('g', 'b'),
              ('f', 'b'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'k')]

Build solution path:
    ['k', 'z']

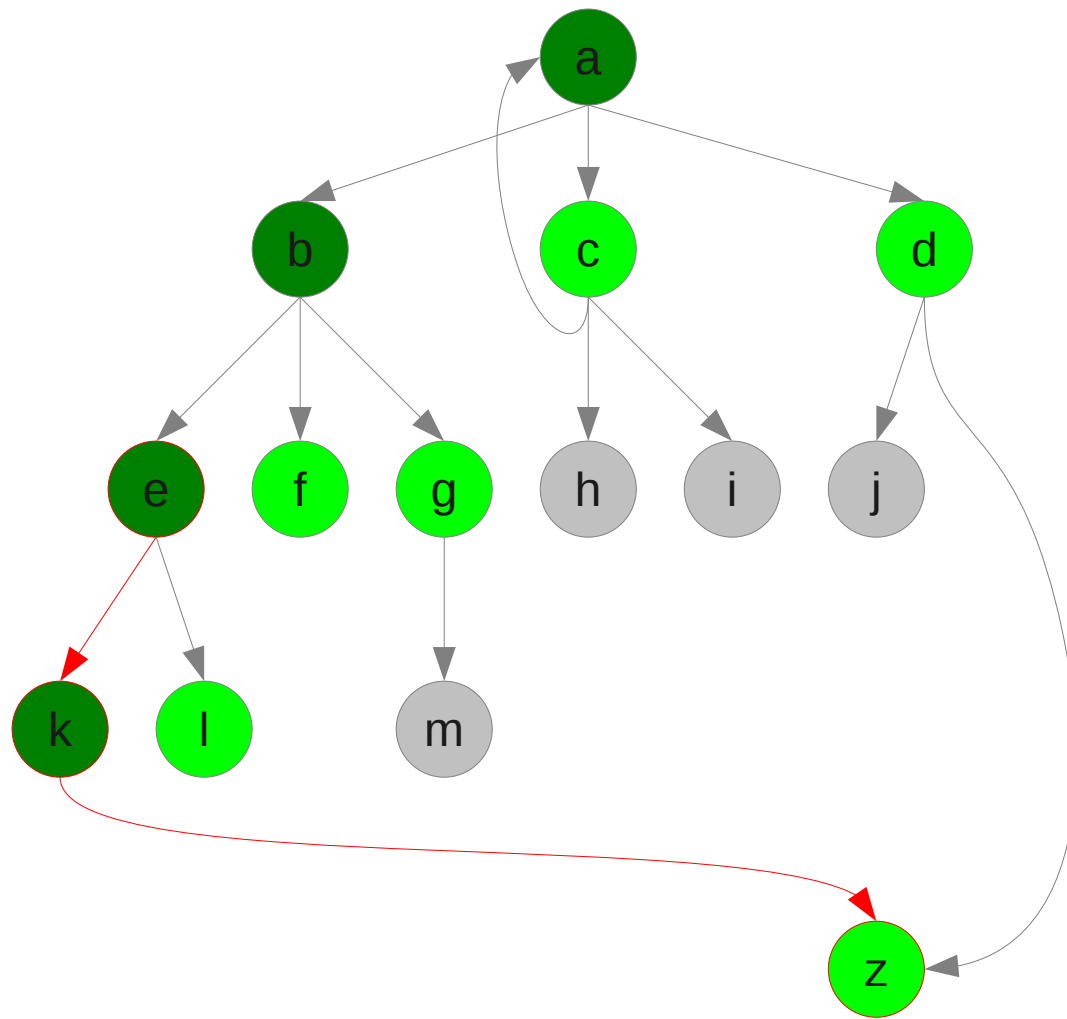expanded = {'a': None,
            'b': 'a',
            'e': 'b',
            'k': 'e'}

unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('g', 'b'),
              ('f', 'b'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'k')]

Build solution path:
    ['e', 'k', 'z']

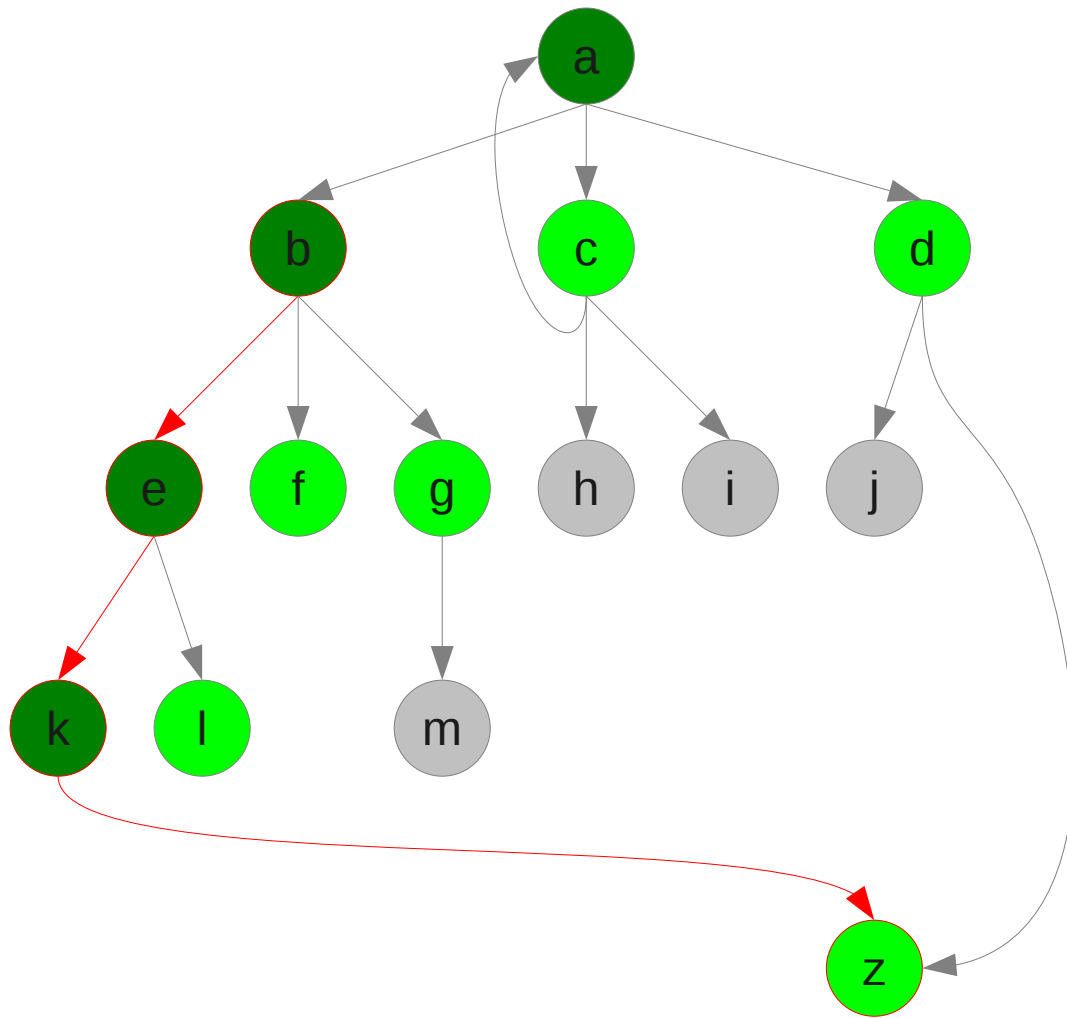expanded = {'a': None,
            'b': 'a',
            'e': 'b',
            'k': 'e'}

unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('g', 'b'),
              ('f', 'b'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'k')]

Build solution path:
    ['b', 'e', 'k', 'z']

expanded = {'a': None,
            'b': 'a',
            'e': 'b',
            'k': 'e'}

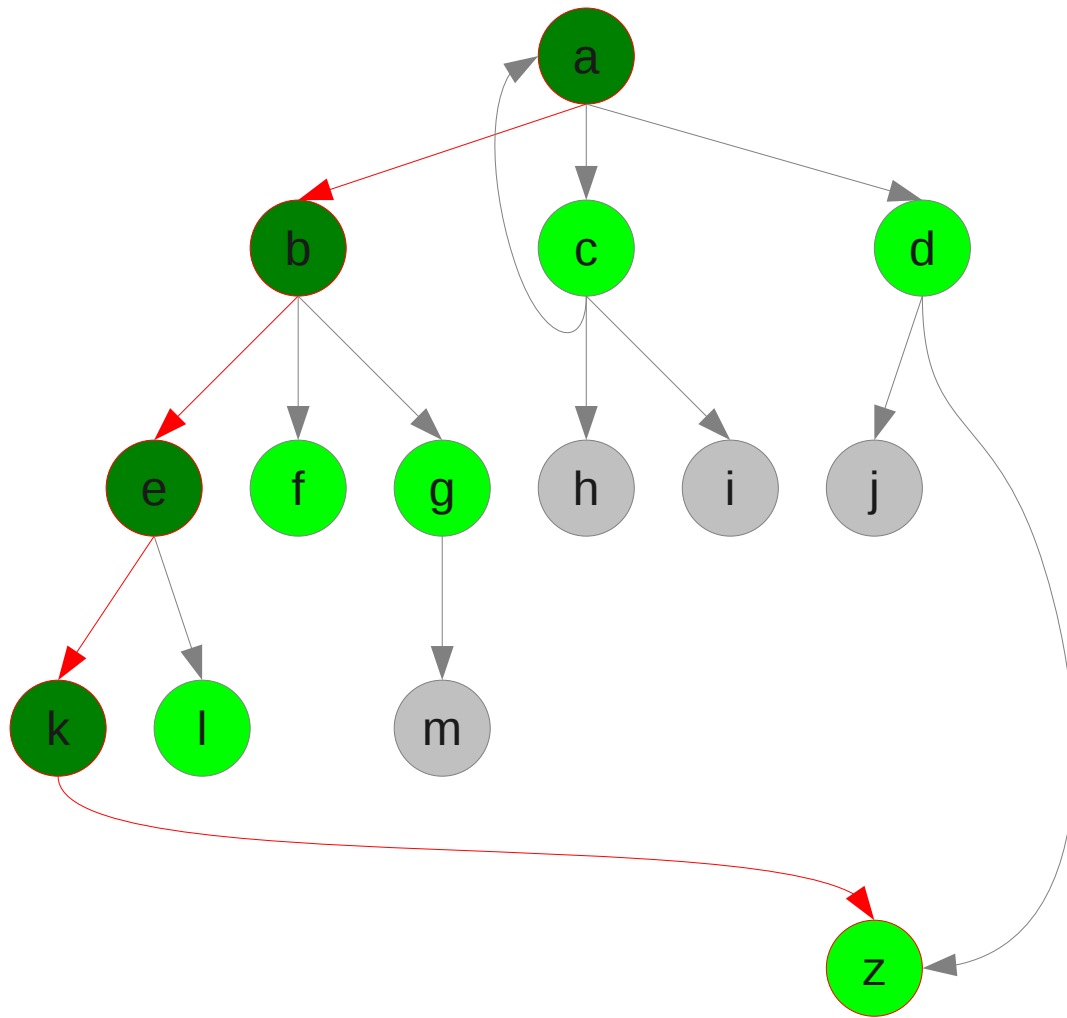unExpanded = [('d', 'a'),
              ('c', 'a'),
              ('g', 'b'),
              ('f', 'b'),
              ('l', 'e'),
              ('k', 'e'),
              ('z', 'k')]

Build solution path:
    ['a', 'b', 'e', 'k', 'z']

expanded = {'a': None,
            'b': 'a',
            'e': 'b',
            'k': 'e'}