

Depth-first search

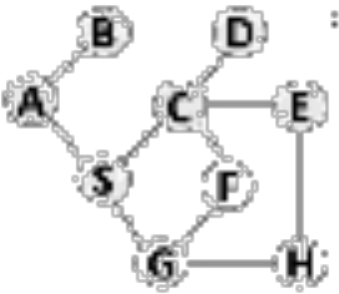
Break ties by choosing the earliest letter in the alphabet.

Expanded nodes

Open nodes (fringe)

S
 A
 B
 C
 D
 E
 H
 G (from H) Solution: G-H-E-C-S

S(0)
 A(1), C(1), G(1)
 C(1), G(1), B(2)
 C(1), G(1)
 G(1), D(2), E(2), F(2)
 G(1), E(2), F(2)
 G(1), F(2), H(3)
 G(1)fromS, F(2), G(4)fromH



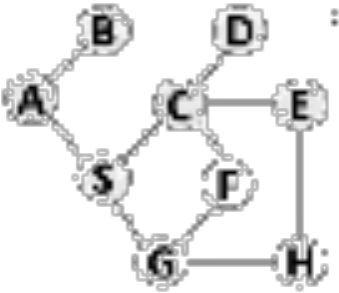
Breadth-first search

Expanded nodes

Open nodes (fringe)

S
 A
 C
 G Solution: G-S

S(0)
 A(1), C(1), G(1)
 C(1), G(1), B(2)
 G(1), B(2), D(2), E(2), F(2)



Iterative Deepening Search

Expanded

- S
- A
- C
- G

Solution: G-S

Open

S(0) depth-first to level 0

S(0) depth-first to level 1

- A(1), C(1), G(1)
- C(1), G(1)
- G(1)

S(0) depth-first to level 2

- S
- A
- B
- C
- D
- E

- A(1), C(1), G(1)
- C(1), G(1), B(2)
- C(1), G(1)
- G(1), D(2), E(2), F(2)
- G(1), E(2), F(2)
- G(1), F(2)



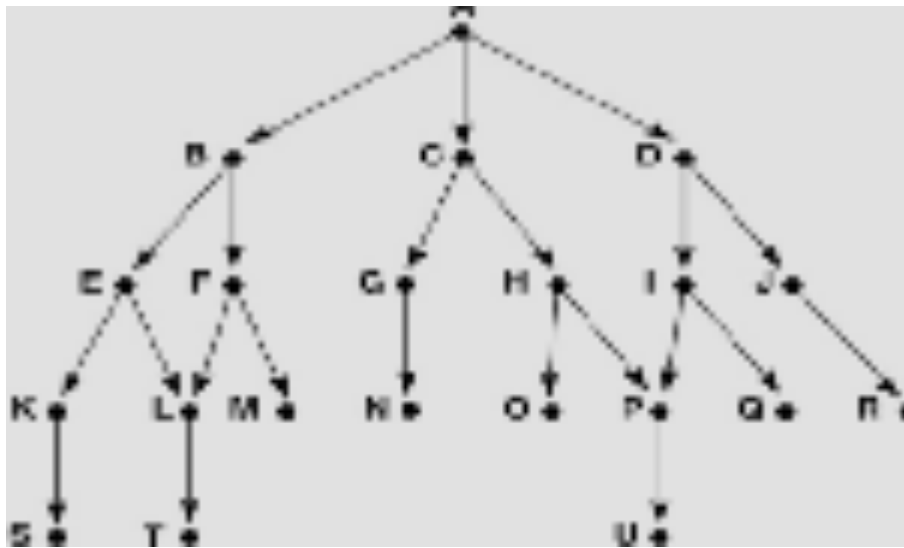
Depth-first Search

Expanded

Open

	A(0)
A	B(1), C(1), D(1)
B	C(1), D(1), E(2), F(2)
E	C(1), D(1), F(2), K(3), L(3)
K	C(1), D(1), F(2), L(3), S(4)
S	C(1), D(1), F(2), L(3)
L	C(1), D(1), F(2), T(4)
T	C(1), D(1), F(2)
F	C(1), D(1), M(3)
M	C(1), D(1)
C	D(1), G(2), H(2)
G	Solution: G-C-A

A node cannot be expanded twice.



Iterative Deepening – goal is G

Expanded

Open

A(0) depth-first to level 0
failure

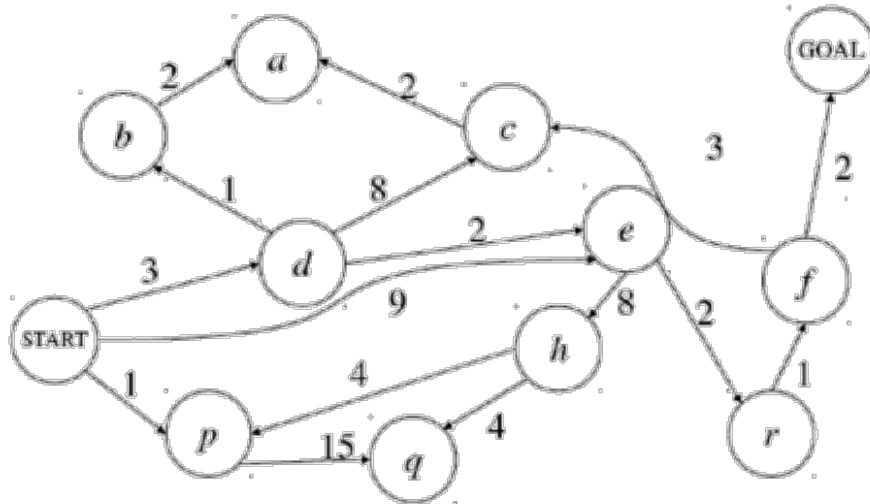
A(0) depth-first to level 1

A	B(1), C(1), D(1)
B	C(1), D(1)
C	D(1)
D	failure

A(0) depth-first to level 2

A	B(1), C(1), D(1)
B	C(1), D(1), E(2), F(2)
E	C(1), D(1), F(2)

F C(1), D(1)
 C D(1), G(2), H(2)
 G Solution: G-C-A



Uniform-cost search (greedy)

Expanded	Open
Start	Start
	d(3), e(9), p(1)
p	d(3), e(9), q(16)
d	e(9), q(16), b(4), c(11), e(5)
b	e(9), q(16), c(11), e(5) from d, a(6)
e from d	q(16), c(11), a(6), h(13), r(7)
a	q(16), c(11), h(13), r(7)
r	q(16), c(11), h(13), f(8)
f	q(16), c(11), h(13), c(11), goal(10)
goal	Solution: goal-f-r-e-d-start