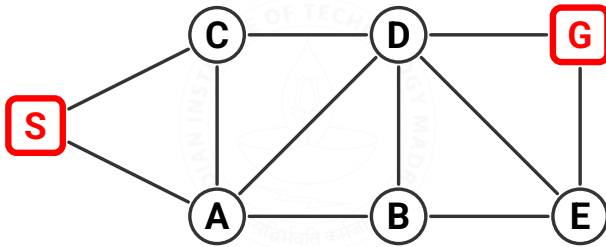


Practice Assignment: Example 1

Breadth First Search

Prepared by S. Baskaran

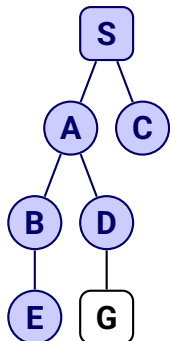
State Space



MoveGen returns nodes in ALPHABETICAL order.

S → A, C
A → B, C, D, S
B → A, D, E
C → A, D, S
D → A, B, C, E, G
E → B, D, G
G → D, E

Breadth First Search – Search Tree



Breadth First Search – Solution

OPEN and CLOSED carry pairs: (NODE,PARENT)

OPEN (S,null):[]
CLOSED []

1.
NODE S
close (S,null)
moveGen A:C:[]
newNodes A:C:[]
newPairs (A,S):(C,S):[]

OPEN (A,S):(C,S):[]
CLOSED (S,null):[]

2.
NODE A
close (A,S)
moveGen B:C:D:S:[]
newNodes B:D:[]
newPairs (B,A):(D,A):[]

OPEN (C,S):(B,A):(D,A):[]
CLOSED (A,S):(S,null):[]

3.
NODE C
close (C,S)
moveGen A:D:S:[]
newNodes []
newPairs []

OPEN (B,A):(D,A):[]
CLOSED (C,S):(A,S):(S,null):[]

4.
NODE B
close (B,A)
moveGen A:D:E:[]
newNodes E:[]
newPairs (E,B):[]

OPEN (D,A):(E,B):[]
CLOSED (B,A):(C,S):(A,S):(S,null):[]

5.
NODE D
close (D,A)
moveGen A:B:C:E:G:[]
newNodes G:[]
newPairs (G,D):[]

OPEN (E,B):(G,D):[]
CLOSED (D,A):(B,A):(C,S):(A,S):(S,null):[]

6.
NODE E
close (E,B)
moveGen B:D:G:[]
newNodes []
newPairs []

OPEN (G,D):[]
CLOSED (E,B):(D,A):(B,A):(C,S):(A,S):(S,null):[]

7.
NODE G
GOAL G

OPEN (G,D):[]
CLOSED (E,B):(D,A):(B,A):(C,S):(A,S):(S,null):[]

PATH S:A:D:G:[]