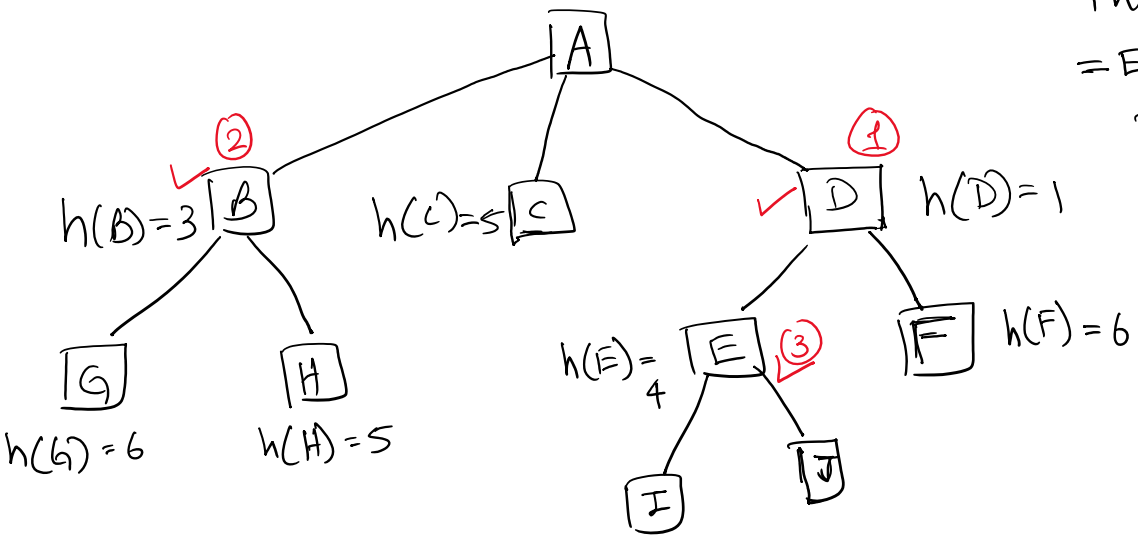
Monday, October 28, 2024 11:21 AM

☆ Best First Algorithm

h(Node) = Heuristic value of that node
= Estimated cost to reach to goal node from that node

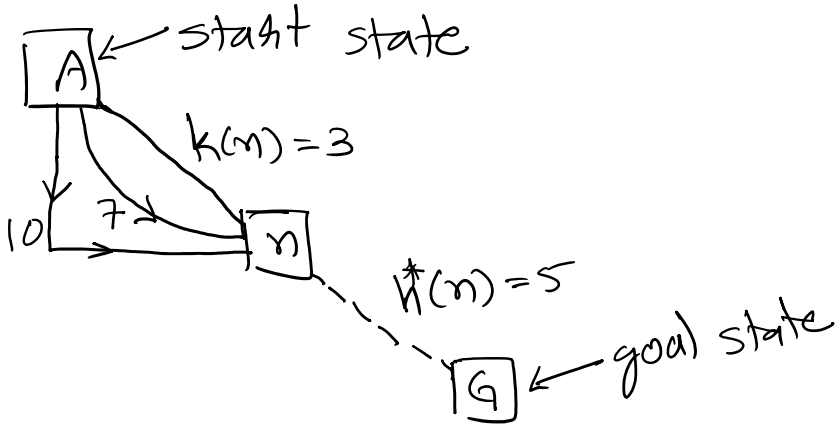


☆ Algorithm 'A' Family:

Any algorithm that considers an evaluation function $f(n) = k(n) + h^*(n)$ is called **Algorithm A** where

$k(n)$ = Actual cost to reach to node 'n' from the start node through the shortest path (minimum cost)

$h^*(n)$ = Heuristic value of node 'n'
(Estimate of the cost to reach to goal node from node 'n')



→ In case of multiple goal states:

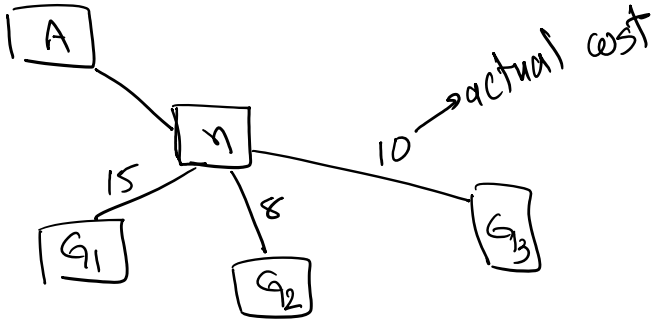
→ Let's say $h^*(n)$ is the heuristic value of node 'n' to reach to the nearest goal node. (actual cost)

$h(n, G_1) = 6$

$h(n, G_2) = 7$

$h(n, G_3) = 8$

$h^*(n)$



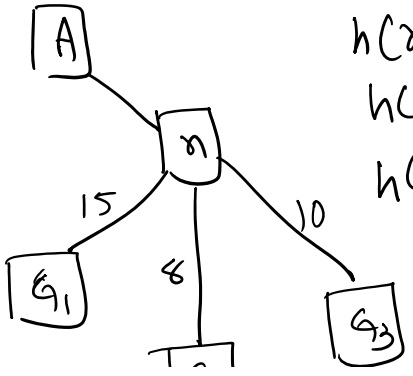
$$f(n) = k(n) + h^*(n)$$

☆ Algorithm A*:

If $h^*(n)$ is minimum of all $h(n, G_1), h(n, G_2), \ldots, h(n, G_n)$ then that type of Algorithm A are called A^* Algorithms.

The above example would become A^* algorithm if

$h(n, G_2) < h(n, G_1)$ & $h(n, G_2) < h(n, G_3)$



$h(n, G_1) = 6$

$h(n, G_2) = 4$

$h(n, G_3) = 8$

☆ Program logic:

Heuristic function = Manhattan Distance

h-value = black f-value = blue

g-value = red