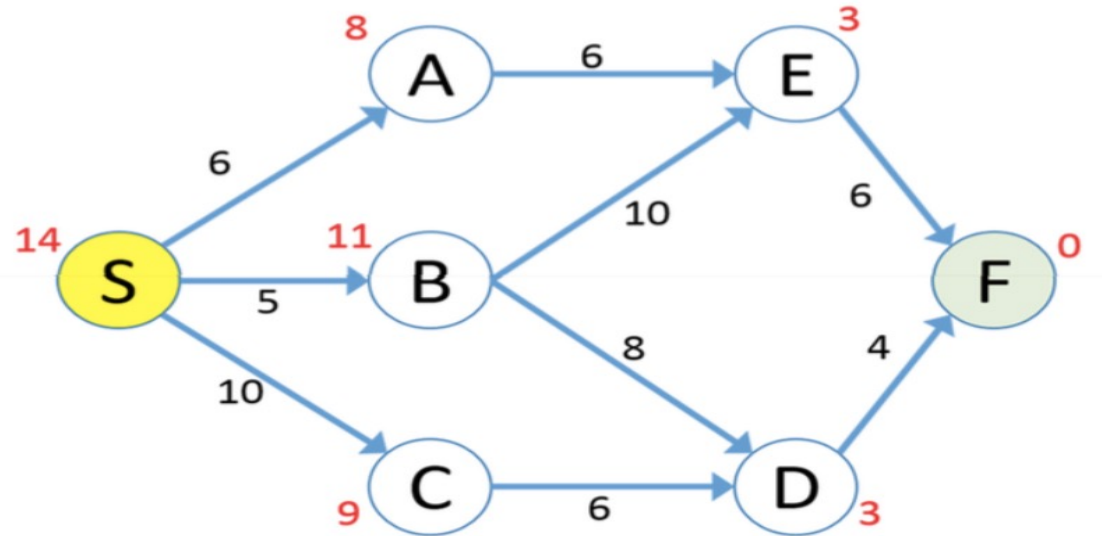


Good morning !!!

EXERCISE AND SOLUTION (A*)

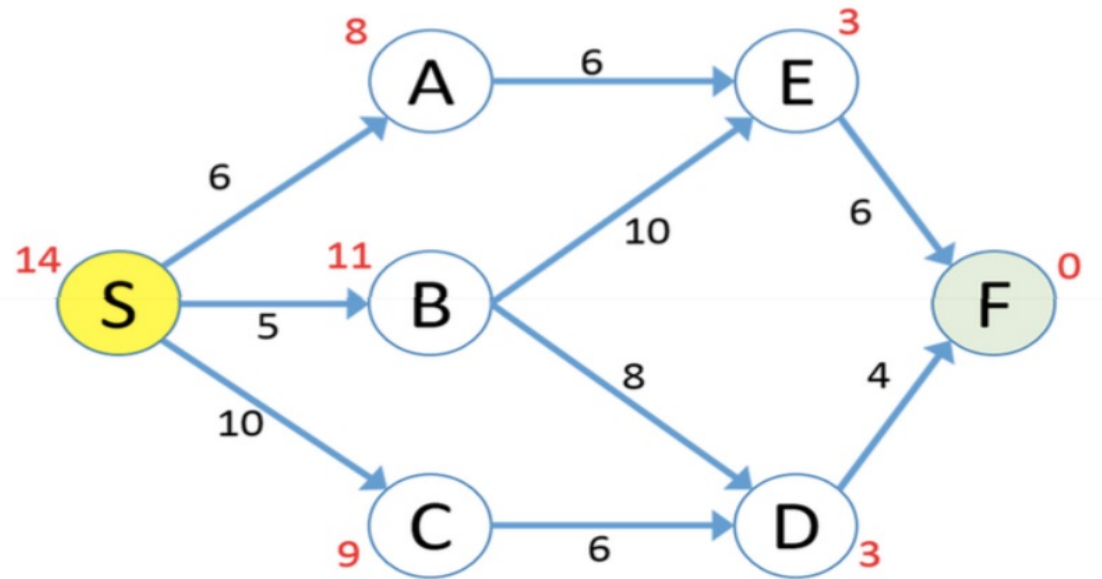
Exercise: A*



Consider this graph:

- Each arc is labelled with the length (in black)
- We must go from node S to node F determining the path with algorithm A*.
- Each node is labelled with an **estimation** of the **distance** from this node to F (in red)

Exercise: A*



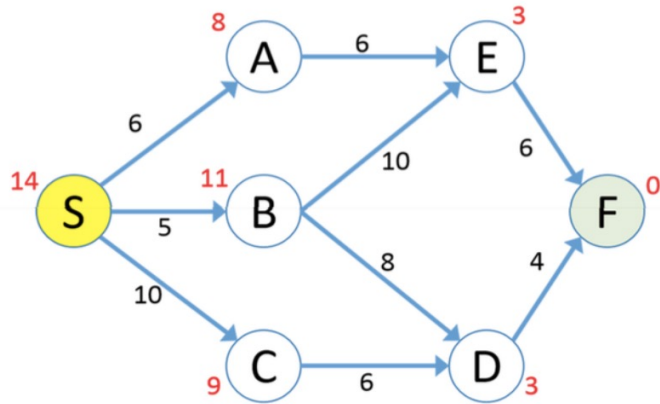
- Show the search tree obtained via A* by applying the tree search algorithm without removing the repeated nodes, by specifying the order of the expanded nodes (using a number inside square close to the node)

Review: A* search

- Evaluation function $f(n) = g(n) + h(n)$
 - $g(n)$ = **path cost** from the start node to node n
 - $h(n)$ = **estimated cost** of the cheapest path from n to goal
 - $f(n)$ = **estimated cost** of the cheapest solution through n

- Expand first the node with the **lowest** value of **f**

Solution:

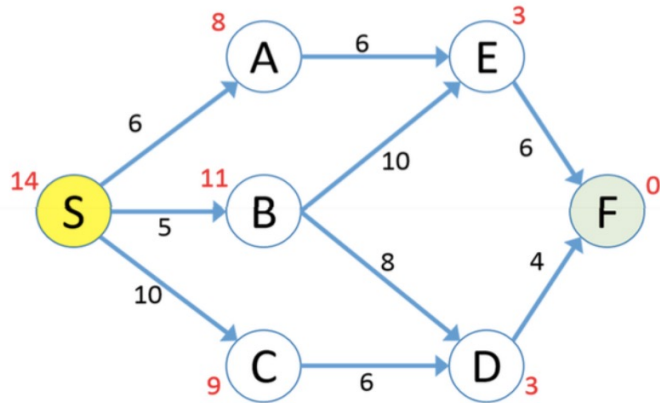


Review: **A***

Given a node n : $f(n) = g(n) + h(n)$

We **expand first** the node with the **lowest value of f**

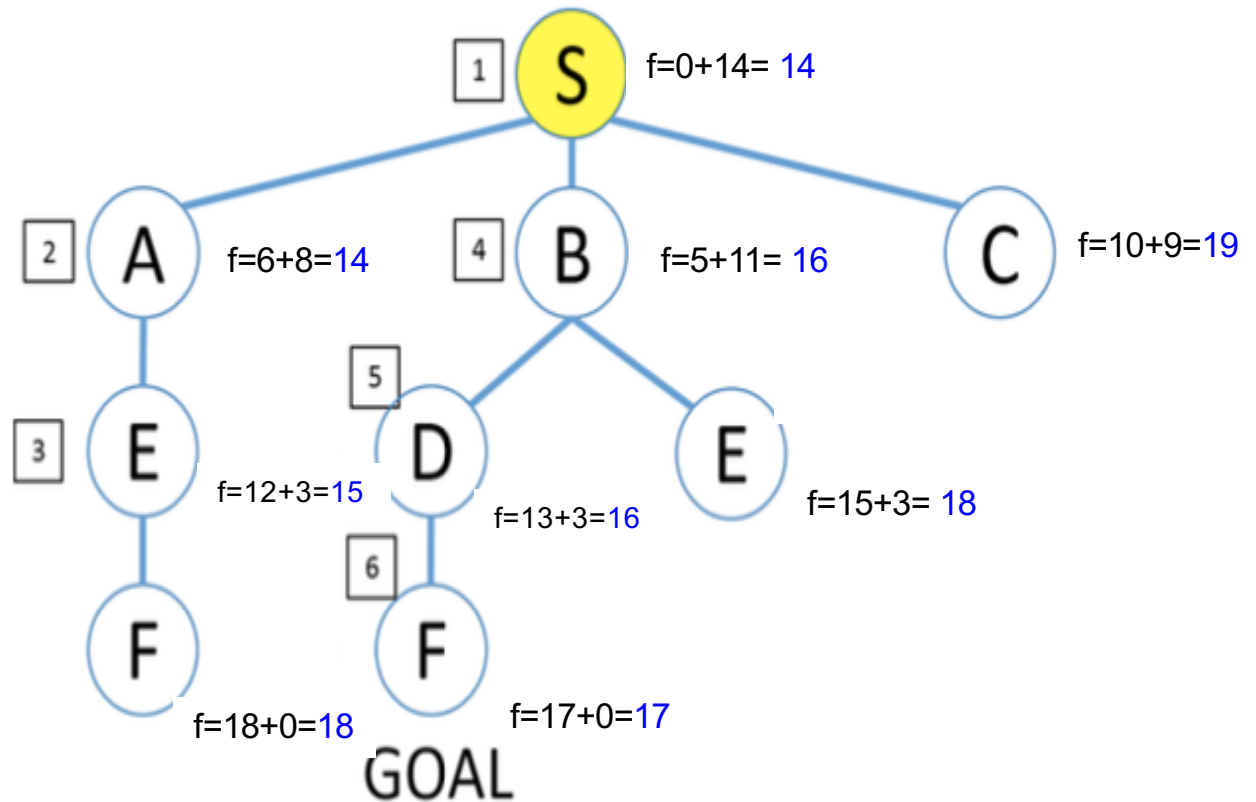
Solution:



Review: **A***

Given a node n : $f(n) = g(n) + h(n)$

We **expand first** the node with the **lowest value of f**



Path returned: **S, B, D, F**