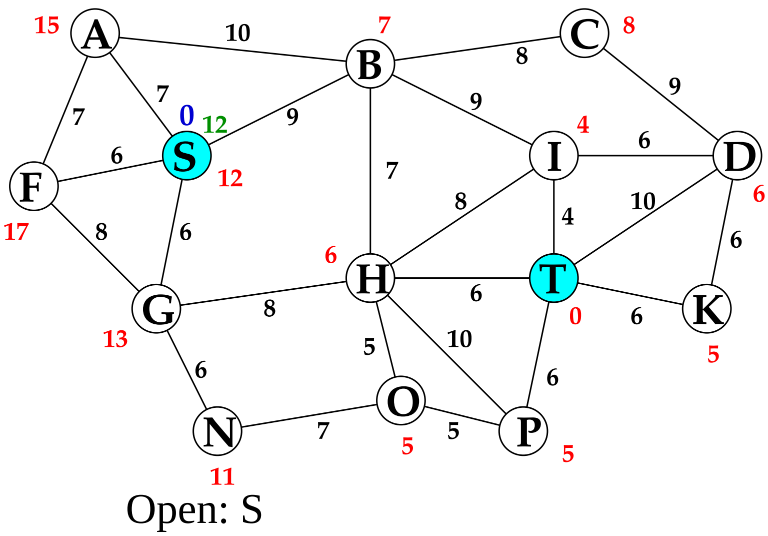
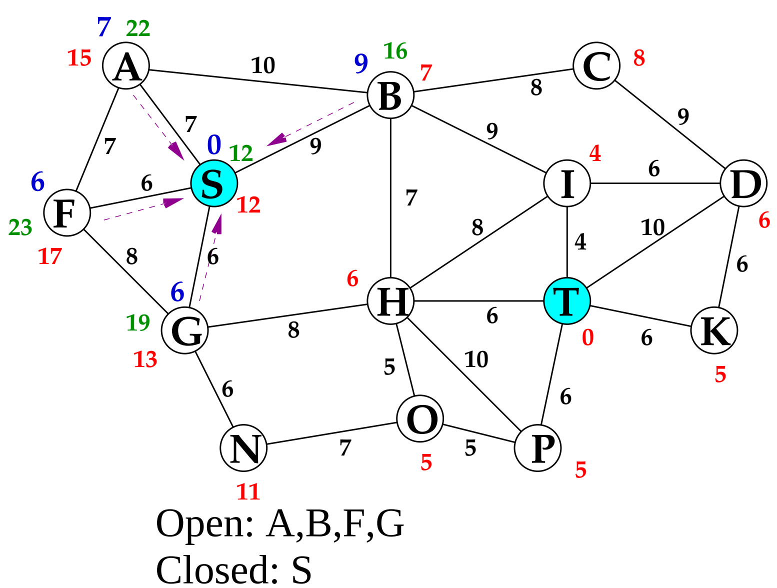
A Small Example of Using the A^* Algorithm

Edge weights are shown in black. Values of f are shown in blue. Values of h are shown in red. Values of g are shown in green.

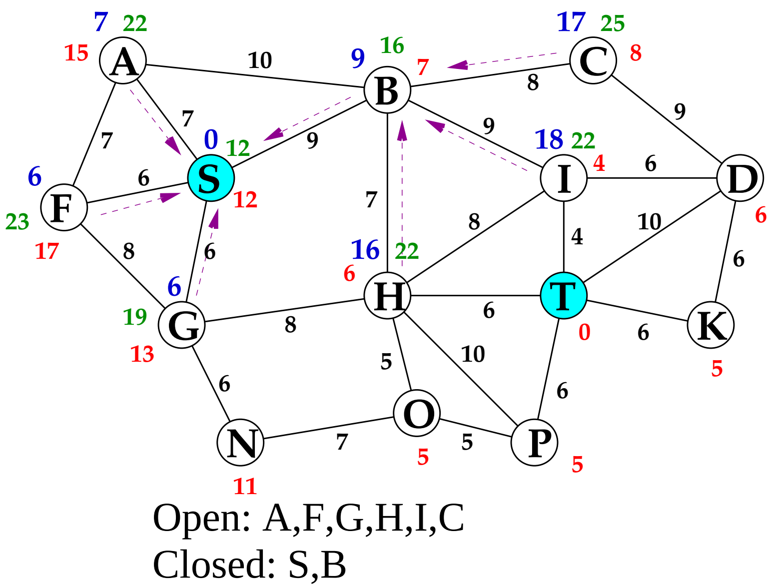
There is only one open node, the start node, S. $f(S) = 0$, while $g(S) = f(S) + h(S)$. S is the only open node, and there are no closed nodes.



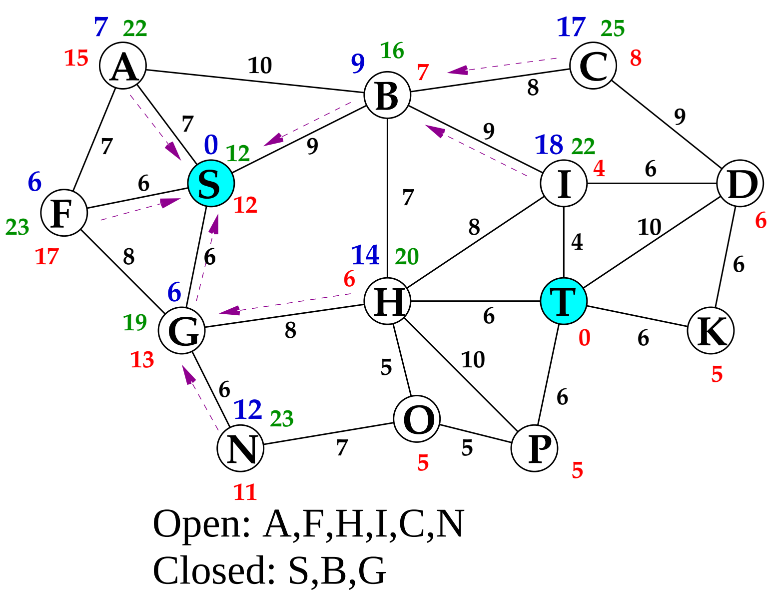
$f(S) = 12$ is the smallest (actually, the only) value of f among open nodes. We pick S to be the current node, and compute f and g for each out-neighbor of S. Back pointers are dashed purple arrows. S is now closed, and A, B, F, G are now open.



The smallest value of g among the open nodes $g(B)$, so B becomes the current node. We compute f and g for outneighbors of B, but only for those which were neither open nor closed. Now, B is closed and C, I, H are open.

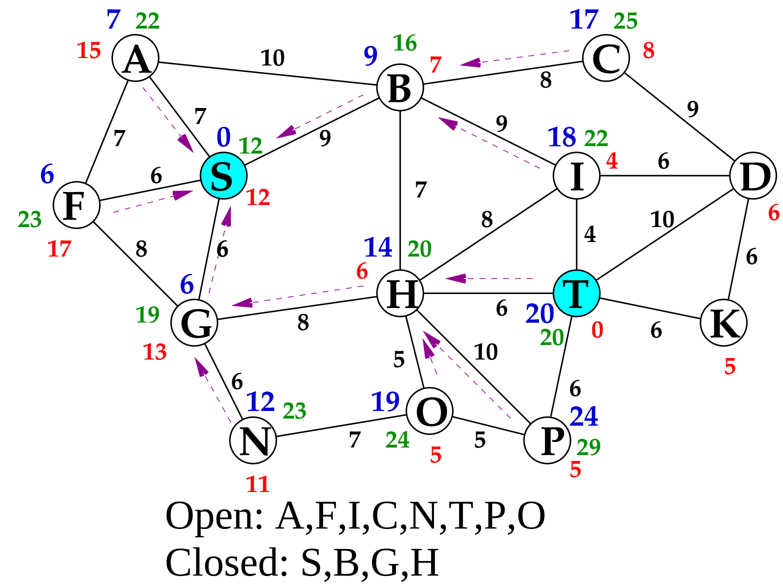


The current node is G.



We recompute $f(H) = 14$ since that is smaller than the previous value, 16. The back pointer of H changes to G.

The current node is H. We compute values of f and g.



We have $f(T) = 20$, the length of the path S, G, H, T. Can we be sure that we are done?