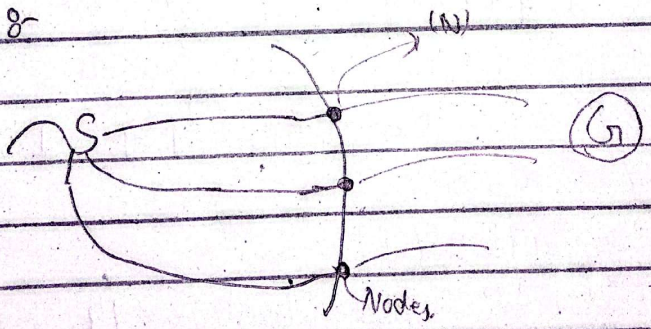
→ A^* algorithm :- It is the part of informed searching technique.

→ Informed searching teachnique means where I have already some knowledge about problem. and that knowledge is called that heuristic. means A^*

→ Note that in uniformed searching is known as blind search, where we dont have any knodlegle about that problem.
ex- DFS and BFS.

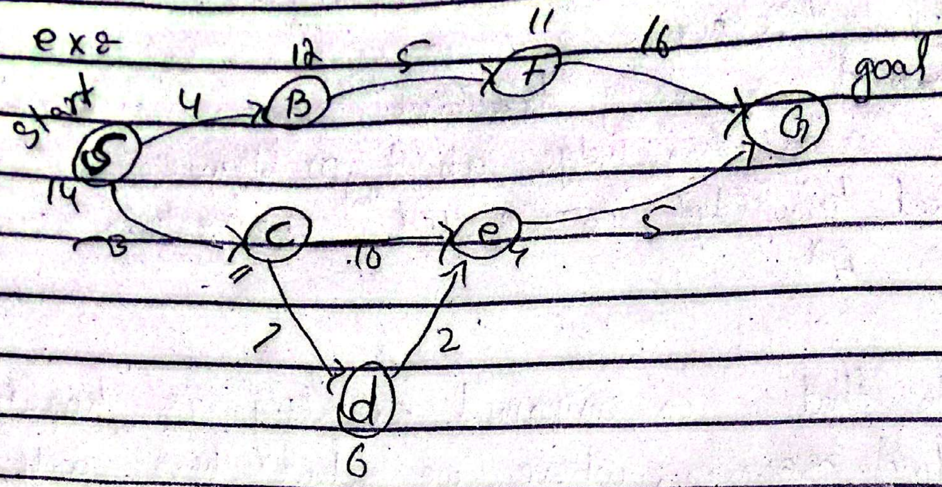
→ we use, in this A^*,
this eqn $f(N) = g(N) + h(N)$
- $g(N)$ → Actual cost from start node to n.
- $h(N)$ → Estimation cost from n to Goal node.

ex :-



So S sai n(nodes) tak wo actual cost hai jo mujy Nodes tak phonchanti hai, to whom we sai g(n)
and n(node) esi node jo mujy Goal state tak leky jae. and wo goal state mai kitny time mai leky jae yahi hai. its heuristic value.

ex8



Here S, B, C, F, e, G, d are the n(nodes)
and S to B edge weight is actual cost g(n)

aur jo nodes kai uper likhy hue hai
wo heuristic value hai, estimate values.

step 1:- S to S it self

$f(S) = 0 + 14 = 14.$

step 2

S → B = cost = g(n) = 4 + and B'ki heuristic val =12
4+12=16

or S → C
3 + 11 = 14
g(n) h(n)

so less is 14.

Now

SC

SC → sai hum e tak ja sakty hai
SC → sai —— d.

SC → e = 3+10 + 4 = 17 → heuristic value
S to c, c to e

SC → d
= 3 + 7 + 6 = 16 → this is less

So previously $S \to B = 16$
and Now $S \to C \to d = 16$
so we can explore Both.

Sol-

$SB \to f = 4+5+11 = 20$
$SB \to e = 4+12+4 = 20$

Now
$\Rightarrow$ SCd which we already done Now explore it
$SCd \to e = 3+7+2+4 = 16$ ✓ Min.

Now explore
$SCde$
$SCde \to G$
$12+5+0 = 17$
↳ Goal state by default value = 0.

so we can reach goal state at fix 17 minimum
this is the optimal.