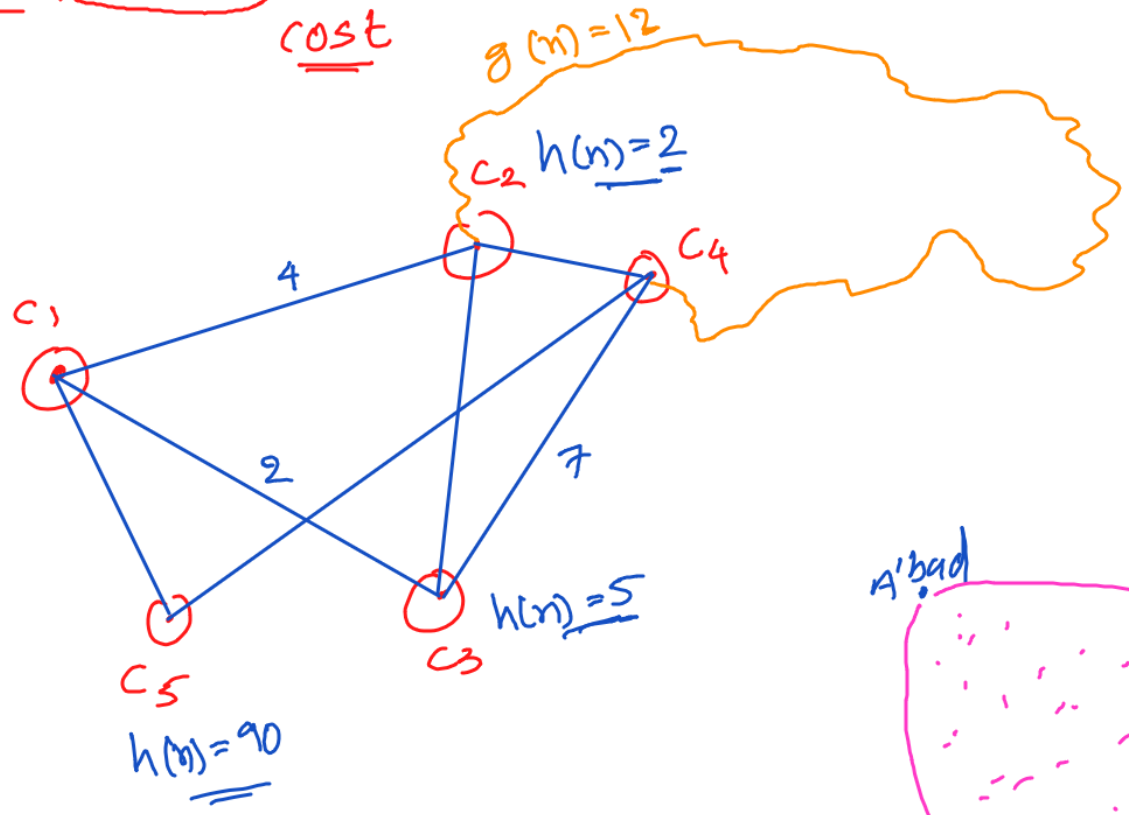
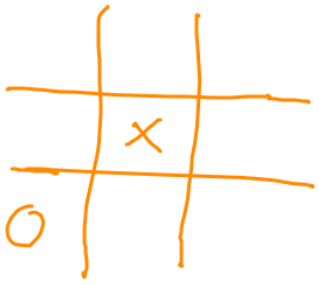
Heuristics: Estimated distance of current state from the goal state.

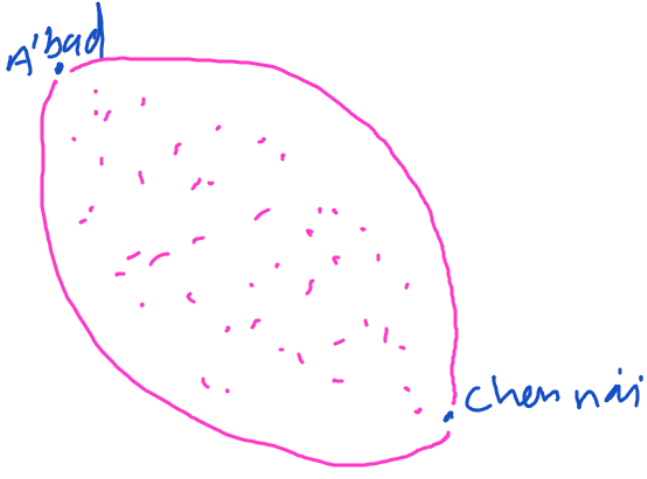




$9! \sim 3,60,000$

↓

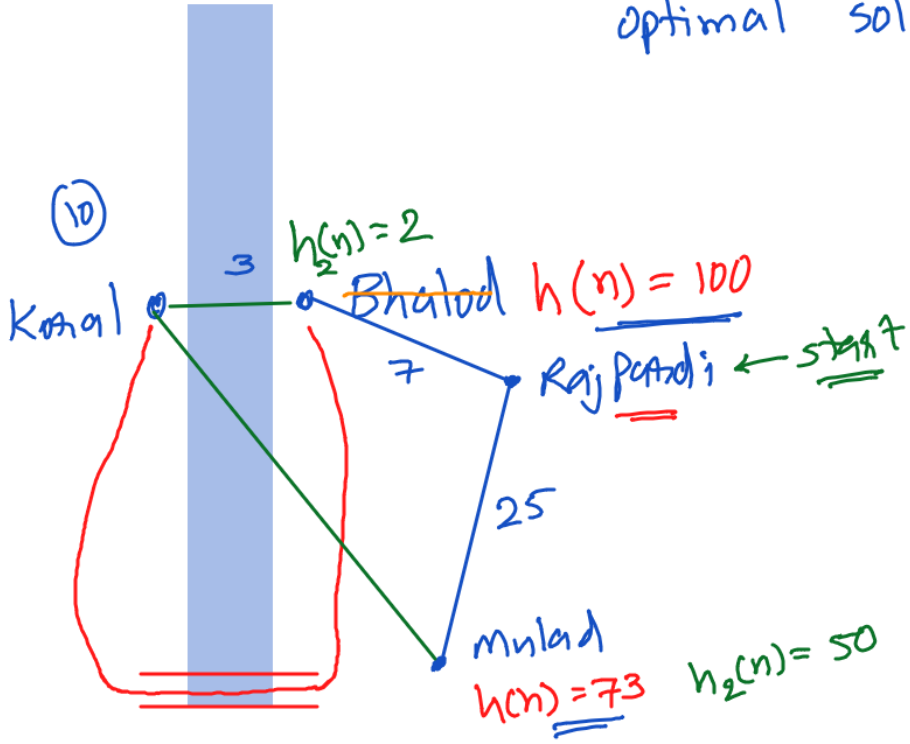
40



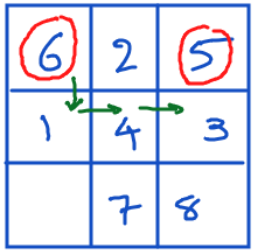
Admissible Heuristics & Inadmissible Heuristics

✓ Admissible - Never overestimates. $h(n) \leq h^*(n)$

✗ Inadmissible - May overestimate the cost. - Sometimes eliminates the optimal solution.



Problem Relaxation



1+0+1+1+1+1+1+1 = 8

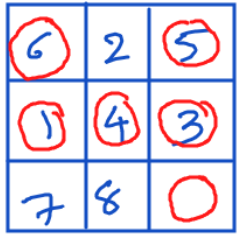
$h_1(n) = 8$

Hamming Distance

If $h_1(n)$ & $h_2(n)$ are both admissible Heuristic functions and if $h_1(n) >= h_2(n)$ then $h_1(n)$ is more preferred as it is more accurate.

3+0+2+1+1+1+2+1+1 = 12

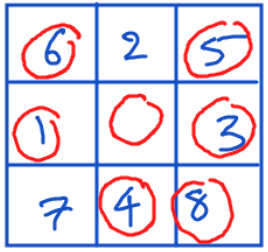
$h_2(n) = 12$



$h_1(n) = 6$

3+0+2+1+1+1+0+0+0 = 8

$h_2(n) = 8$



$h_1(n) = 7$

Manhattan Distance

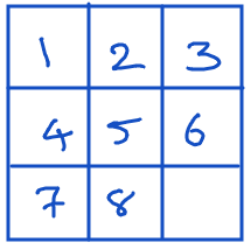
3+0+2+1+2+1+0+2+1 = 12

$h_2(n) = 12$

$g(n) \geq 12$ eg $g(n) = 15$

error in $h_2(n) = 15 - 12 = 3$

error in $h_1(n) = 15 - 7 = 8$



Informed Searches (Heuristic Search Strategies):

Graph Search:

1. Algorithm A:
   Special Case: A* Algorithm

Local Search:

1. Hill Climbing

2. Simulated Annealing