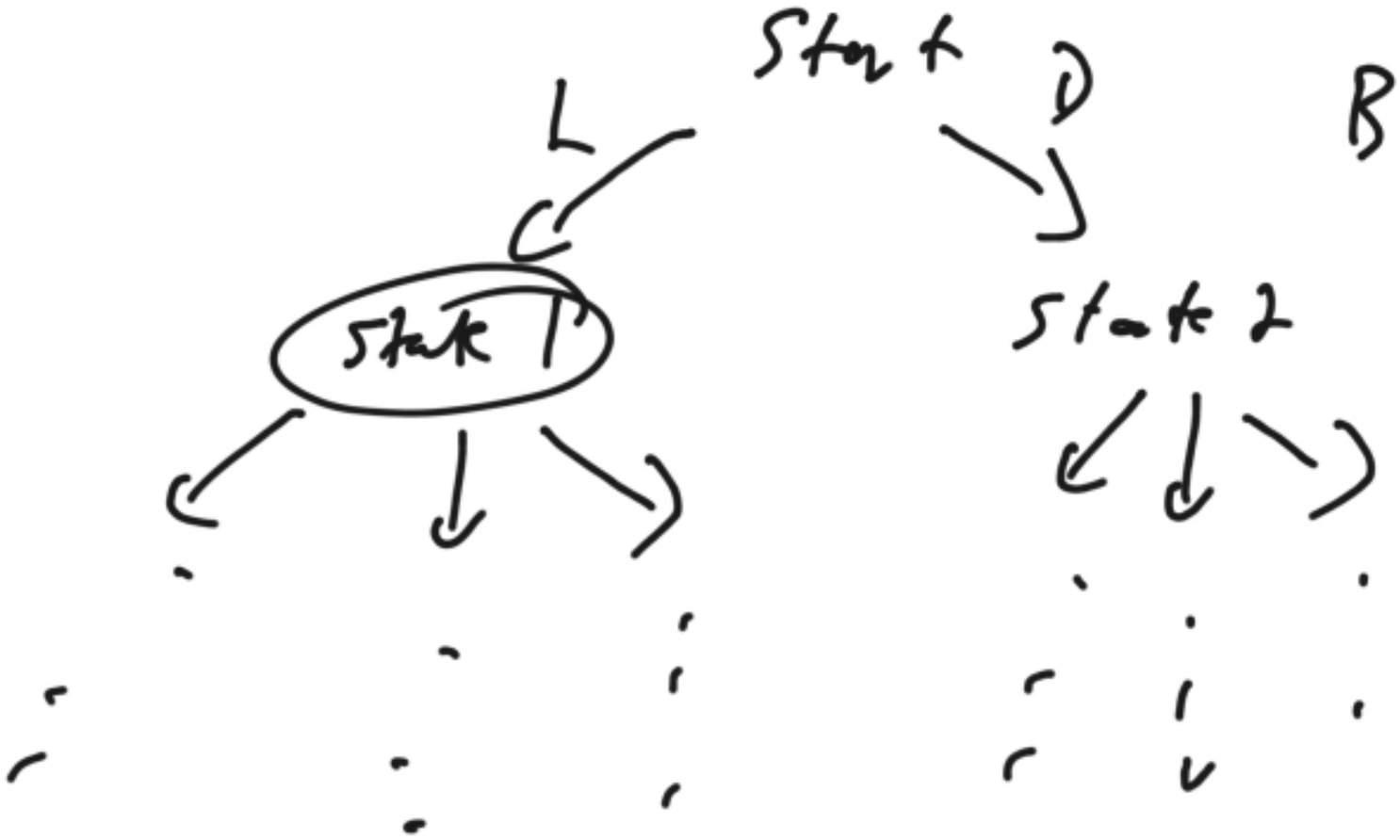


Branching factor

Greedy depth first search

get successors, the
sort them according to
the heuristic in
decreasing order.
Then push them to the
stack one-by-one

Best-First-Search:

using a heap instead of a queue.

put states on the heap organized

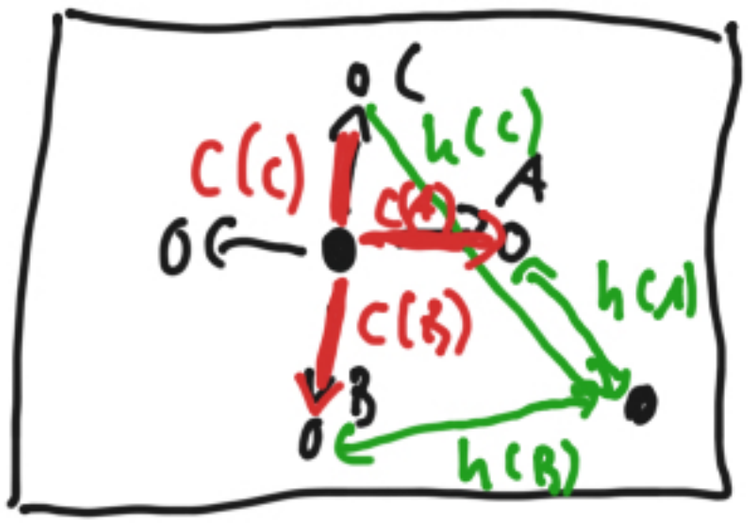
by heuristic value.

use (heuristic(state), state) pairs

heapq . heappush

heappop

A* - Search



for each possible next state we have

heuristic : h(state)

cost : c(state)

Compute:

$f(state) = h(state) + c(state)$

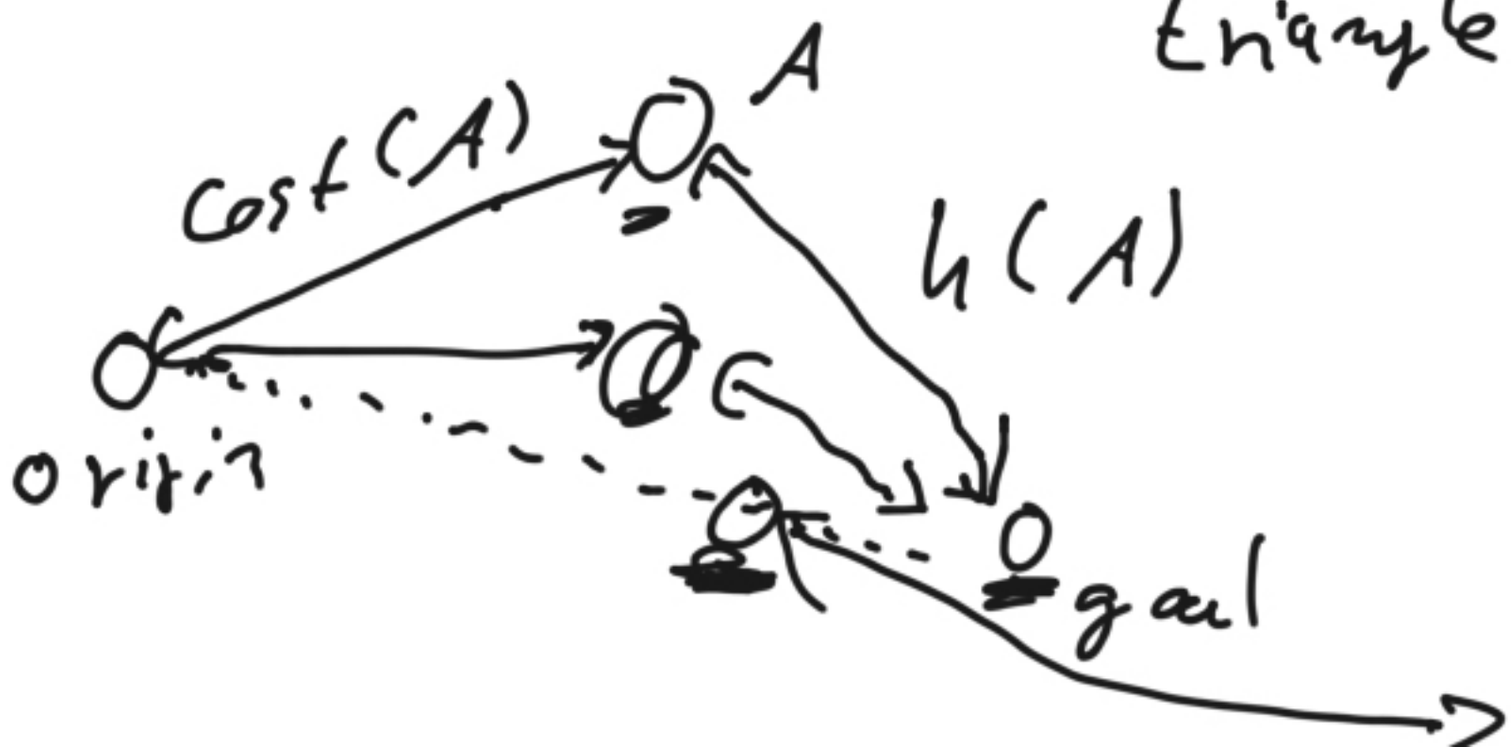
keep states on a heap organized by their f-value.

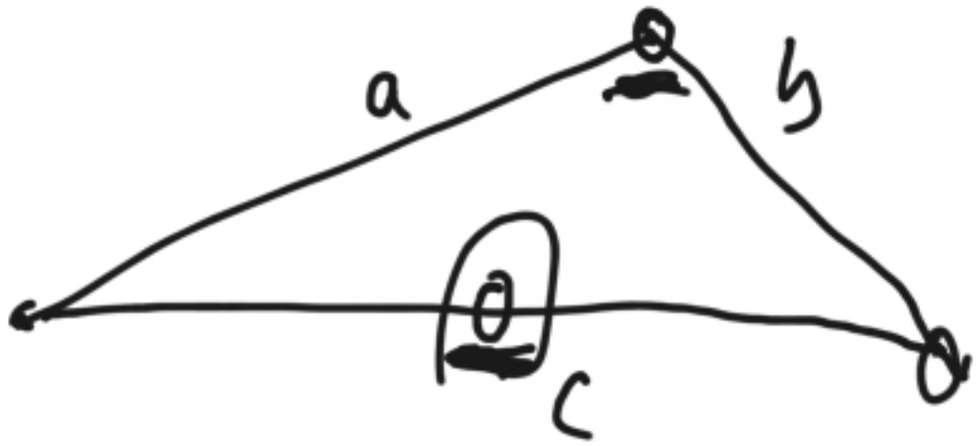
A* search is optimal (finds the shortest solution),

but only if the heuristic is admissible.

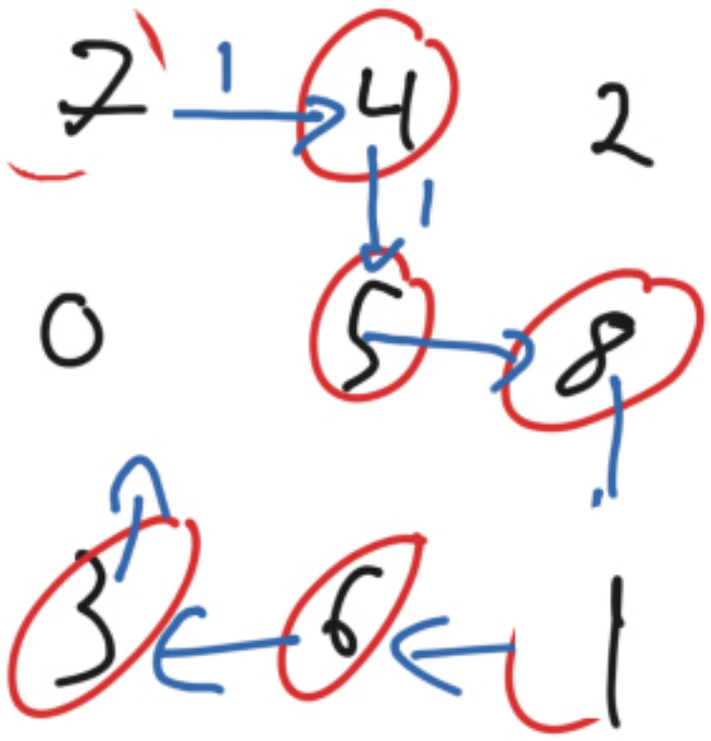
An admissible heuristic never overestimates the true distance to the goal.

Triangle inequality





$$a + b \geq c$$



misplaced tile

heuristic: 7

0 1 2

3 4 5

6 7 8

1: 3

4: 1

2: 0

5: 1

8: 1

3: 1

6: 1

7: 3