

## Set 1

INPUT : List : [2, 1, 8, 4, 5, 7, 3, 6]

OUTPUT :

```
. . Q . . . . .
. . . . . Q . .
. . . . . . . Q
. . . . Q . . .
. . . Q . . . .
. . . . . Q .
Q . . . . . .
. Q . . . . .
```

The INPUT and OUTPUT to the following code is as given above. Find out the one line codes each at position (i) and (ii) that will generate the OUTPUT, with the given INPUT as shown above

```
def gen_instance(board_position):
    board = [[0] * 8 for _ in range(8)]
    for i in range(8):
        (i)
    return board

def print_board(board):
    for row in board:
        (ii)

myboard = [2, 1, 8, 4, 5, 7, 3, 6]
myboard_instance = gen_instance(myboard)
print_board(myboard_instance)
```

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## Set 2

INPUT : List : [7, 2, 1, 6, 4, 3, 5, 0]

OUTPUT :

```
. . . . . . . Q
. . Q . . . . .
. Q . . . . .
. . . . . Q .
. . . . Q . .
. . . Q . . .
. . . . Q . .
Q . . . . .
```

The INPUT and OUTPUT to the following code is as given above. Find out the one line codes each at position (i) and (ii) that will generate the OUTPUT, with the given INPUT as shown above

```
def gen_instance(board_position):
    board = [[0] * 8 for _ in range(8)]
    for i in range(8):
        (i)
    return board

def print_board(board):
    for row in board:
        (ii)

myboard = [7, 2, 1, 6, 4, 3, 5, 0]
myboard_instance = gen_instance(myboard)
print_board(myboard_instance)
```

## Set 3

- Write a code in Python to generate the following 8 Puzzle Problem instance
- Compute the Manhattan Distance heuristics

Initial State

1		7
2	5	6
3	4	8

Goal State

1	2	3
4	5	6
7	8	

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## Set 4

- Write a code in Python to generate the following 8 Puzzle Problem instance
- Compute the Number of Misplaced Tiles heuristics

Initial State

6	5	4
1	2	7
7	3	

Goal State

1	6	7
2	5	8
3	4	

---

## Set 5

- Write a code in Python to generate the following 8 Queen Problem instance
  - The Queens are in the following cells
  - $\{A1, B2, C3, D4, E5, F6, G7, H8\}$
  - Compute the heuristics
- 

## Set 6

- Write a code in Python to generate the following 8 Queen Problem instance
  - The Queens are in the following cells
  - $\{A5, B3, C1, D6, E2, F7, G6, H5\}$
  - Compute the heuristics
- 

## Set 7

- For the given instance of 8 Puzzle Problem, compute the next best move using Hill Climbing
- Consider number of misplaced tiles as heuristics

Initial State

1	5	7
3	2	8
4	6	

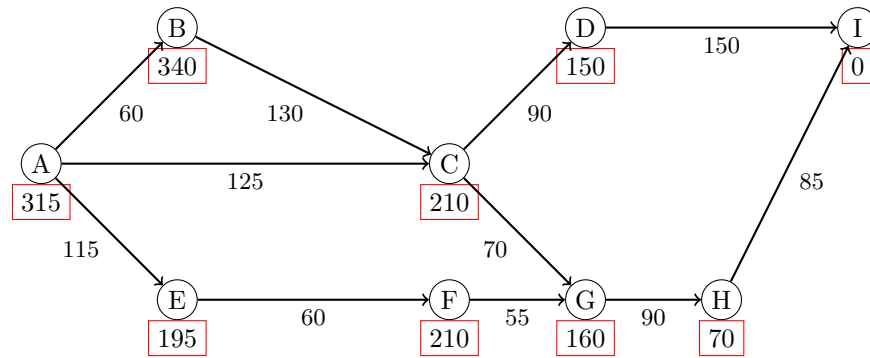
Goal State

1	2	3
4	5	6
7	8	

---

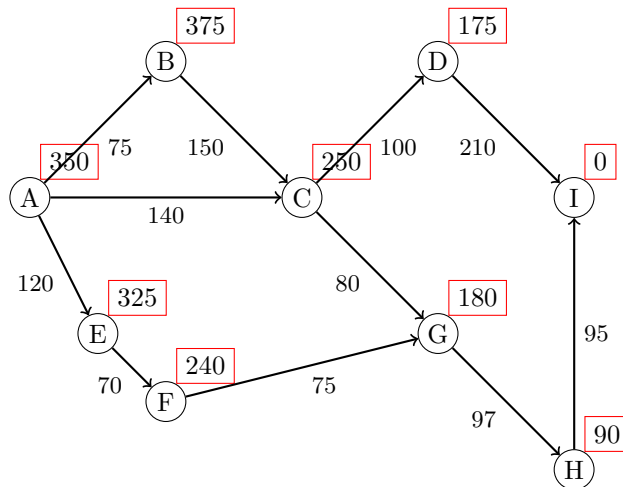
## Set 8

Apply A\* algorithm to find the least cost path to the goal state I, for the following state space, with A as the start state.



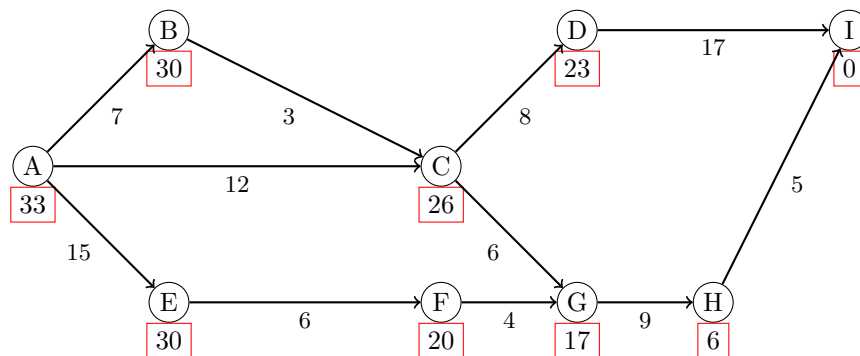
## Set 9

Apply Greedy Best First to the following state space.



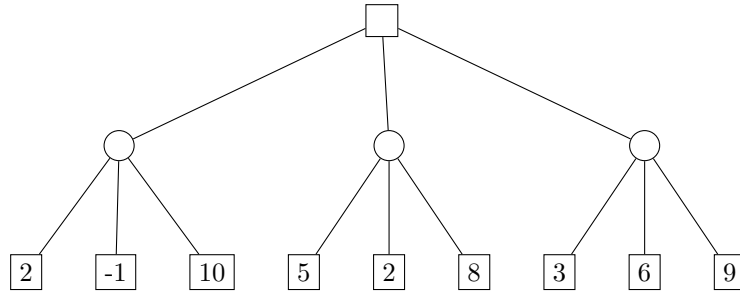
## Set 10

Apply A\* to the following state space.



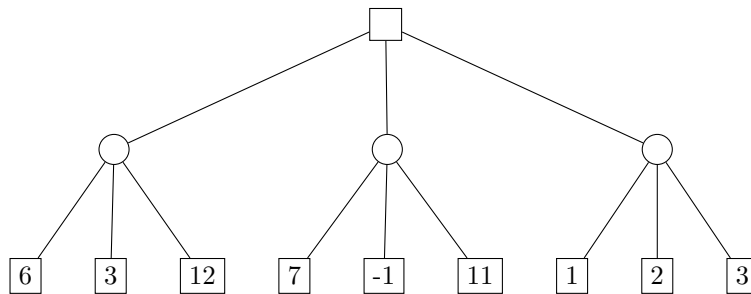
## Set 11

Perform Alpha Beta Pruning on the following game tree



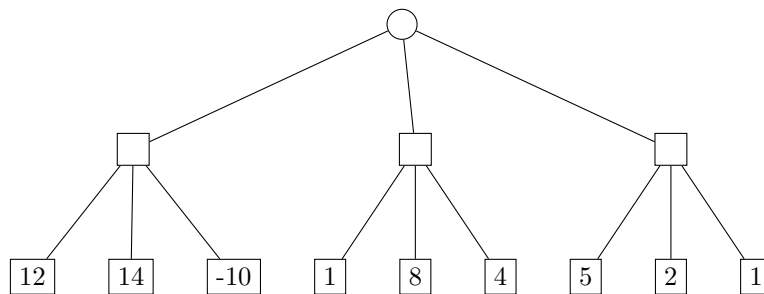
## Set 12

Perform Alpha Beta Pruning on the following game tree



## Set 13

Perform Alpha Beta Pruning on the following game tree

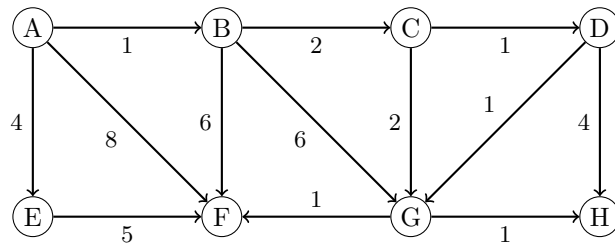


## Set 14

- Generate a two level game tree with Min Node at the root.
- Run MinMax Algorithm to compute the next best move.

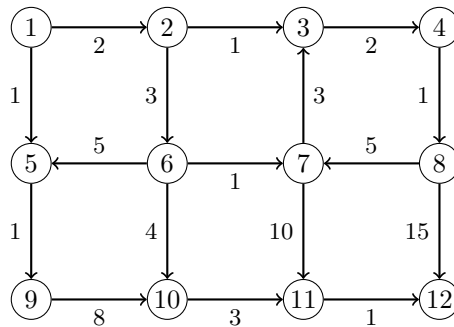
## Set 15

- Perform UCS algorithm on the following state space.
- Start State : A
- Goal States : F and H



## Set 16

- Perform UCS algorithm on the following state space.
- Start State : 1
- Goal States : 12



## Set 17

- Apply A\* algorithm on the following state space.
- Start State : S
- Goal States : G

