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**Roll : 22**

**Batch: T2**

## **A\* Algorithm 8 puzzle**

```
def h(self, start, goal):
    temp = 0
    for i in range(0, self.n):
        for j in range(0, self.n):
            if start[i][j] != goal[i][j] and start[i][j] != '_':
                temp += 1
    return temp

def process(self):
    print("enter the start state matrix \n")
    start = self.accept()
    print("enter the goal state matrix \n")
    goal = self.accept()
    start = Node(start, 0, 0)
    start.fval = self.f(start, goal)
    self.open.append(start)
    print("\n\n")
    while True:
        cur = self.open[0]
        print("=====\n")
        for i in cur.data:
            for j in i:
                print(j, end=" ")
            print("")
        # if the difference between current and goal node is 0 we have reached the goal node
        if (self.h(cur.data, goal) == 0):
            break
        for i in cur.generate_child():
            i.fval = self.f(i, goal)
            self.open.append(i)
        self.closed.append(cur)
        del self.open[0]
        self.open.sort(key=lambda x: x.fval, reverse=False)
```

```
puz = Puzzle(3)
puz.process()
```

OUTPUT :

Output :

Enter the start state matrix

1 2 3

\_ 4 6

7 5 8

Enter the goal state matrix

1 2 3

4 5 6

7 8 9

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1 2 3

\_ 4 6

7 5 8

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1 2 3

4 \_ 6

7 5 8

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1 2 3

4 5 6

7 \_ 8

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1 2 3

4 5 6

7 8 \_