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Problem Statement : Implement a solution for a Constraint Satisfaction Problem using Branch and Bound and Backtracking for n-queens problem or a graph coloring problem.

In [1]:
```python
def issafe(arr,x,y,n):
    for row in range(x):
        if arr[row][y] ==1:
            # Checking column attack
            return False
    row = x
    col = y
    #Checking Diagonal Attack
    while row>=0 and col>=0:
        if arr[row][col]==1:
            return False
        row-=1
        col-=1

    row = x
    col = y
    #Checking Anti Diagonal Attack
    while row>=0 and col<n:
        if arr[row][col]==1:
            return False
        row-=1
        col+=1

    return True

def nQueen(arr,x,n):
    if x>=n:
        return True

    for col in range(n):
        if issafe(arr,x,col,n):
            arr[x][col]=1
            if nQueen(arr,x+1,n):
                return True
            arr[x][col] = 0

    return False



def main():
    n = int(input("Enter number of Queens : "))
    arr = [[0]*n for i in range(n)]

    if nQueen(arr,0,n):
        for i in range(n):
            for j in range(n):
                print(arr[i][j],end=" ")
            print()

if __name__ == '__main__':
    main()
```

```
Enter number of Queens : 8
1 0 0 0 0 0 0 0
0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 1
0 0 0 0 0 1 0 0
0 0 1 0 0 0 0 0
0 0 0 0 0 0 1 0
0 1 0 0 0 0 0 0
0 0 0 1 0 0 0 0
```

In [ ]: