



UNIVERSITY OF ASIA PACIFIC

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING(CSE)

Course Title: Data Structures and Algorithms II Lab

Course Code: CSE 208

Report Name: Problem Statement (1-2) Assignment

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Sec: E

Submitted To,

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Problem Statement 01:

```
#include <stdio.h>

#include <stdlib.h>

#include <stdbool.h>

#define MAX 10

//Declaration of board size
int board[MAX];
int solutions = 0;

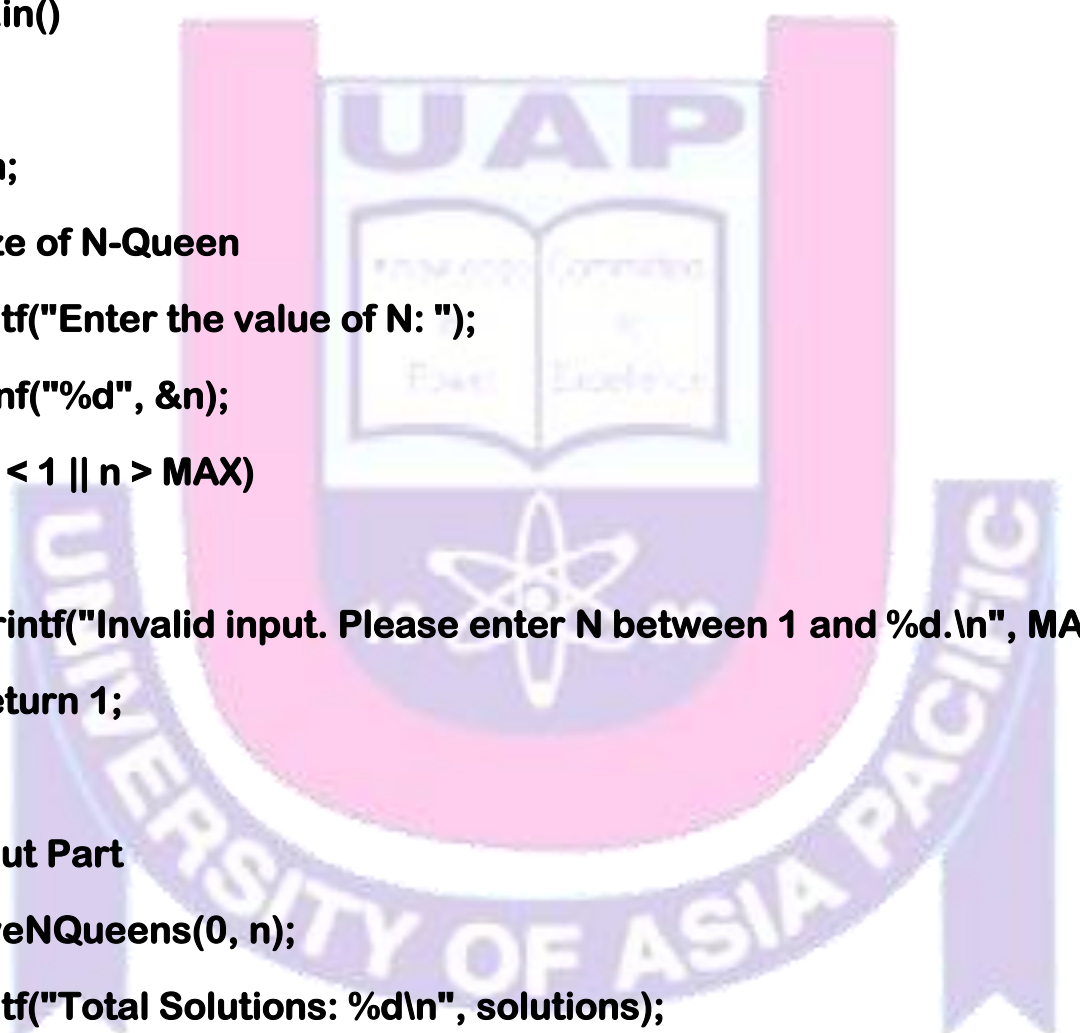
//Function to Check if Queen Position safe or not
bool isSafe(int row, int col)
{
    for (int i = 0; i < row; i++) //Loop through Row level
    {
        //Checking Column and Diagonal to ensure Queen safe
        if (board[i] == col || abs(board[i] - col) == abs(i - row))
            return false; //Not safe
    }
    return true; //If True Queen is safe
}

//Print the Solution by this Function
void printSolution(int n)
{
    printf("Solution %d:\n", ++solutions);
    for (int i = 0; i < n; i++)
```

```
{
    for (int j = 0; j < n; j++)
    {
        if (board[i] == j)
            printf("Q ");
        else
            printf(". ");
    }
    printf("\n");
}
printf("\n");
}

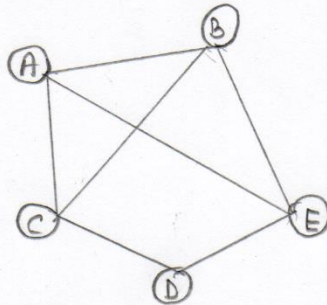
//using backtracking
void solveNQueens(int row, int n) //If already Q placed then print current
solve
{
    if (row == n)
    {
        printSolution(n);
        return;
    }
    for (int col = 0; col < n; col++) //Try to place the Queen
    {
        if (isSafe(row, col))
        {
```

```
        board[row] = col;
        solveNQueens(row + 1, n);
    }
}
}
int main()
{
    int n;
    //Size of N-Queen
    printf("Enter the value of N: ");
    scanf("%d", &n);
    if (n < 1 || n > MAX)
    {
        printf("Invalid input. Please enter N between 1 and %d.\n", MAX);
        return 1;
    }
    //Output Part
    solveNQueens(0, n);
    printf("Total Solutions: %d\n", solutions);
    return 0;
}
```

A large, semi-transparent watermark of the University of Asia Pacific (UAP) logo is centered in the background. The logo features a shield with an open book inside, containing the text 'Knowledge Committed to Faith Excellence'. Above the book, the letters 'UAP' are prominently displayed. Below the shield is a stylized atomic symbol. A banner at the bottom of the shield reads 'UNIVERSITY OF ASIA PACIFIC'.

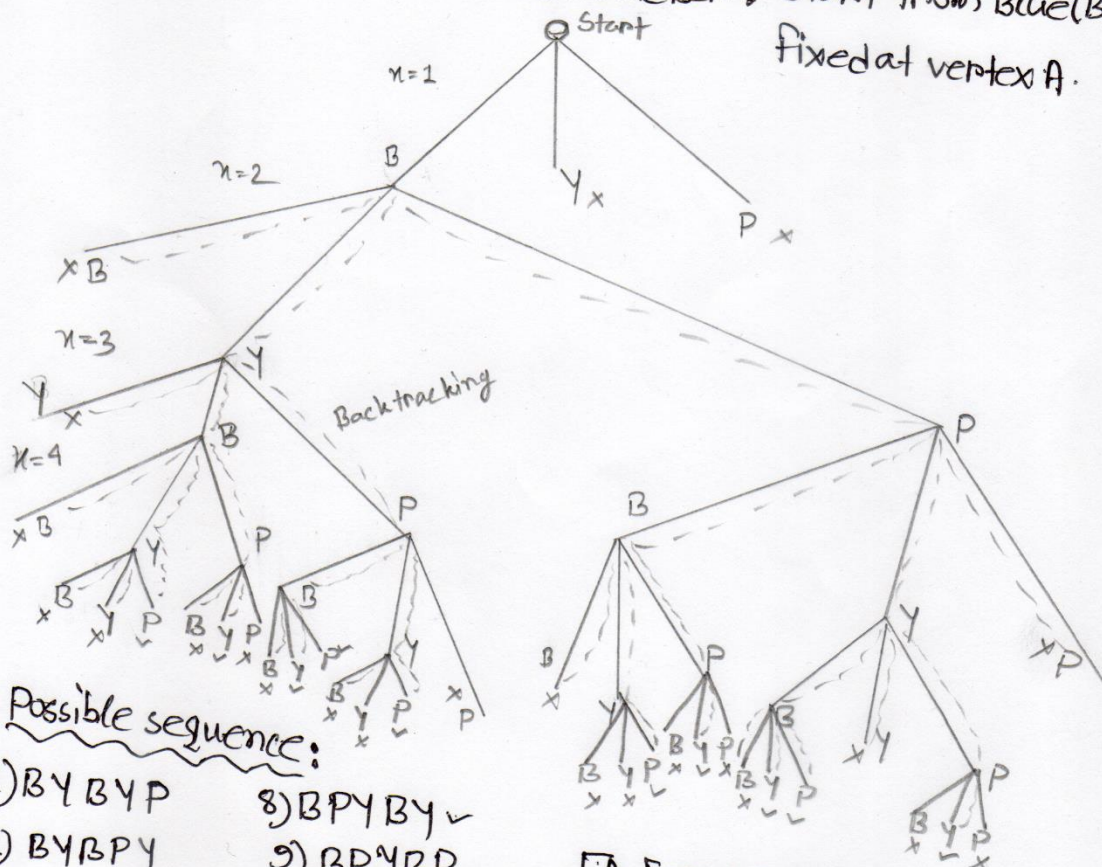
Problem Statement 02:

Problem Statement 2:



Here,
vertex = 5
 $\therefore n = 5$

Since, ID is 22201243 ; 3 a odd number : Start from Blue(B)
Fixed at vertex A.



Possible sequence:

- | | |
|------------|-------------|
| 1) BYBYP | 8) BPYBY ✓ |
| 2) BYBPY | 9) BPYBP |
| 3) BYPBY | 10) BPYPY ✓ |
| 4) BYPBP ✓ | |
| 5) BYPYP ✓ | |
| 6) BPBYP | |
| 7) BPBPY | |

[A, E and C, B is connected
So, only 4, 5, 8, 10 selected]

\therefore Original sequence are,
BYPBP, BYPYP, BPYBY, BPYPY