

## Algorithms Level 3



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**Mohammed Abu-Hadhoud**

MBA, PMOC, PgMP®, PMP®, PMI-RMP®, CM, ITILF, MCPD, MCSD



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## Problem # 17/3 Solution Using C++

```
#include <iostream>
#include <string>
#include <iomanip>

using namespace std;

void PrintMatrix(int arr[3][3], short Rows, short Cols)
{
    for (short i = 0; i < Rows; i++)
    {
        for (short j = 0; j < Cols; j++)
        {
            //printf(" %0*d ", 2, arr[i][j]);
            cout << setw(3) << arr[i][j] << " ";
        }
        cout << "\n";
    }
}

short CountNumberInMatrix(int Matrix1[3][3], int Number, short Rows, short Cols)
{
    short NumberCount = 0;
    for (short i = 0; i < Rows; i++)
    {
        for (short j = 0; j < Cols; j++)
        {
            if (Matrix1[i][j] == Number)
            {
                NumberCount++;
            }
        }
    }
    return NumberCount;
}
```



## Problem # 17/3 Solution Using C++

```
bool IsNumberInMatrix(int Matrix1[3][3], int Number, short Rows,
short Cols)
{
    short NumberCount = 0;
    for (short i = 0; i < Rows; i++)
    {
        for (short j = 0; j < Cols; j++)
        {
            if (Matrix1[i][j] == Number)
            {
                return true;
            }
        }
    }
    return false;
}

int main()
{
    int Matrix1[3][3] = { {77,5,12},{22,20,1},{1,0,9} };

    cout << "\nMatrix1:\n";
    PrintMatrix(Matrix1, 3, 3);

    int Number;
    cout << "\nPlease Enter the number to look for in matrix? ";
    cin >> Number;

    //Using Count is a slower method
    if (CountNumberInMatrix(Matrix1, Number, 3, 3) > 0)
        cout << "\nYes it is there.\n";
    else
        cout << "\nNo: It's NOT there.\n";

    //This is faster method
    if (IsNumberInMatrix(Matrix1, Number, 3, 3))
        cout << "\nYes it is there.\n";
    else
        cout << "\nNo: It's NOT there.\n";

    system("pause>0");
}
```