

## Algorithms Level 3



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## Problem # 05/3 Solution Using C++

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

using namespace std;

int RandomNumber(int From, int To)
{
    //Function to generate a random number
    int randNum = rand() % (To - From + 1) + From;
    return randNum;
}

void FillMatrixWithRandomNumbers(int arr[3][3], short Rows, short Cols)
{
    for (short i = 0; i < Rows; i++)
    {
        for (short j = 0; j < Cols; j++)
        {
            arr[i][j] = RandomNumber(1, 100);
        }
    }
}

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



## Problem # 05/3 Solution Using C++

```
int ColSum(int arr[3][3], short Rows, short ColNumber)
{
    int Sum = 0;
    for (short i = 0; i <= Rows - 1; i++)
    {
        Sum += arr[i][ColNumber];
    }

    return Sum;
}

void SumMatixColsInArray(int arr[3][3], int arrSum[3], short Rows,
short Cols)
{
    for (short i = 0; i < Cols; i++)
    {
        arrSum[i] = ColSum(arr, Rows, i);
    }
}

void PrintColsSumArray(int arr[3], short length)
{
    cout << "\nThe the following are the sum of each col in the
matrix:\n";
    for (short i = 0; i < length; i++)
    {
        cout << " Col " << i + 1 << " Sum = " << arr[i] << endl;
    }
}
```



```
int main()
{
    //Seeds the random number generator in C++, called only once
    srand((unsigned)time(NULL));

    int arr[3][3];
    int arrSum[3];

    FillMatrixWithRandomNumbers(arr, 3, 3);
    cout << "\nThe following is a 3x3 random matrix:\n";
    PrintMatrix(arr, 3, 3);
    SumMatixColsInArray(arr, arrSum, 3,3);

    PrintColsSumArray(arrSum, 3);
    system("pause>0");
}
```