# CS 2123 Data Structures Recitation - Recitation Exercise 03

Write a program that ask user to enter two integers X and Y, and two doubles minZ maxZ.
It then allocates a dynamic 2D array consisting of X rows and Y columns of double values, and sets each value in the 2D array by randomly generating a number between minZ and maxZ. If (minZ == maxZ), then simply set each value in the 2D array to minZ.

Then print the overall sum of all the values in the whole 2D array, the sum of each row, and the sum of each column.

**Here is a sample output:**

When the input is

                5       3       2.0       2.0

for X Y minZ maxZ

Your output should be as follows:

```
        Overall sum = 30.0
        Sum of each row
        Row0 = 6.0
        Row1 = 6.0
        Row2 = 6.0
        Row3 = 6.0
        Row4 = 6.0
        Sum of each column
        10.0 10.0 10.0
```

**At the end we provide the template and a function to generate random numbers. Copy that program and modify it...**
_____

**What to return:**   !!!!  NO LATE RECITATION ASSIGNMNET  WILL BE ACCEPTED !!!

DO ALL YOUR WORK UNDER **abc123-rec03** folder using your own abc123

1. First implement your program which can be named as rec03.c
2. Then compile and run it. Copy/paste the result in an output file, say out03.txt.
3.  Remove executables from **abc123-rec03** folder and then Zip that folder
4.  Then go to BB Learn, and submit your **abc123-rec03.zip** as an attachment before the deadline. Make sure your zip file contains all your files!

/*  Don't forget to include comments about the problem, yourself and each major step in your program!  */

_____

You must submit your work using Blackboard Learn and respect the following rules:

1) All assignments must be submitted as a zip file unless it is a single pdf file.
2) Assignments must include all source code.
3) Assignments must include an output.txt file which demonstrates the final test output run by the student.
4) If your assignment does not run/compile, the output.txt file should include an explanation of what was accomplished, what the error message was that prevented the student from finishing the assignment and what the student BELIEVES to be the underlying cause of the error.

_____

```c
/*
 * You can copy and modify the below code
 */
#include <stdio.h>
#include <stdlib.h>

/* this function returns a random number between [low, high] *
double RandomReal(double low, double high){
    double d;
    d = (double) rand() / ((double) RAND_MAX + 1);
    return (low + d * (high - low));
}
int main(int argc, char* argv[]) {
    int X, Y;
    double minZ, maxZ;
    double **Arr2D;

    printf("Enter X Y minZ maxZ:");
    scanf("%d %d %lf %lf", &X, &Y, &minZ, &maxZ);

    /* dynamically create 2D array of doubles (X row, Y col),
     * For each i, j
     *    if (minZ == maxZ) Arr2D[i][j] = minZ;
     *    else Arr2D[i][j] =  RandomReal(minZ, maxZ);
     * Then find the sums we want using the given Arr2D !
     */

     /* YOUR CODE */

    return 0;
}
```