Hacettepe University

Computer Science and Engineering Department

Programming Assignment1

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Course : BBM 203

Subject : Data Structures and Algorithms

Programming Language : C

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1.Problem Definition

We are given 2 matrices, mapmatrix and keymatrix, we multiply 2 matrices with the same size of keymap with defined rules. We get a result and the divide it to 5 with the remainder we choose our next matrice to multiply again with the keymap until we find 0 remainder.

2.Methods and Solution

I took the first argument and its size and allocated memory for that size and than splitted the argument with strtokand used delimeter “x” and stored them in arg1 array. I stored the size of the keymatrix size in a variable.After that I got the third argument which is mapmatrix and send it to the getMapMatrix(); method and filled the 2d array which I allocated required memory before I called the function with the arg1 array’s elements which contains row and column size of matrix.

Then I read 4th argument which is keymatrix with the getKeyMatrix(); I also allocated required memory before calling that function I know the size of the keymatrix with the 2nd argument. After all that my matrices are ready and now final method to solve the problem is “findTreasure();”. I sent needed variables to the function to access to arrays and file to write correct output. In that function I have start point for row and column which is the left top corner of the matrix and I know the size of the keymatrix so I took that size of from both matrices and multiplied them. With the remainder did the required arithmethics like: if remainder equals 1 I decremented row start point by the keysize, if remainder equals 2 incremented row start point by the keysize, if 3 incremented column start point by keysize and if 4 decremented column start point by keysize again and checked every time if new start point is out of bounds or not if so I reversed the arithmetic like If I incremented

startpoint by the keysize I decremented it again but this time with multiplying with two(2*keysize). With determining the start points of rows and colums I called the function again and again which is recursive until remainder equals 0 which means we found treasure and ended the program.

3.Functions Implemented

getArg1();

getKeyMatrix();

getMapMatrix();

findTreasure();