Experiment no 5

Aim:

To write a Program in Java to add two matrices.

The objective of this assignment is to learn Arrays in Java

Theory:

Arrays:

An array is a group/collection of variables of the same type that are referred to by a common name and an index

Examples:

• Collection of numbers

• Collection of names

• Collection of suffixes

Advantage and disadvantages

Advantage of Array

1. Code Optimization: It makes the code optimized, we can retrieve or sort the data easily.
2. Random access: We can get any data located at any index position. Disadvantage of Array
3. Size Limit: We can store only fixed size of elements in the array. It doesn't grow its size at runtime.

Syntax

•Accessing elements in the array:

•Specific element in the array is accessed by specifying name of the array followed the index of the element. All array indexes in Java start at zero**.**

variable-name[index] = value;

eg. *marks[0] = 10;*

This will assign the value 10 to the 1st element in the array.

marks[2] = 863;

Allocation and declaration

1) STEP 1 : (Declaration)

int marks[];

marks null

2) STEP 2: (Memory Allocation)

marks = new int[5];

•marks marks[0] marks[1] marks[2] marks[3] marks[4]

3) STEP 3: (Accessing Elements)

marks[0] = 10;

•marks marks[0] marks[1] marks[2] marks[3] marks[4]

Alternative Syntax

Combined declaration & memory allocation:

data-type variable-name[] = new data-type[size];

eg. *int marks[] = new int[5];*

This will declare an int array 'marks' and will also allocate memory
of 5 integers to it.

•Combined declaration, allocation & assignment:
data-type variable-name[] = {comma-separated values};
•eg. *int marks[] = {10, 35, 84, 23, 5};*

This will declare an int array 'marks', will allocate memory
of 5 integer to it and will also assign the values as

Multi-Dimensional Arrays (2D, 3D … arrays)
Multi dimensional arrays represent 2D, 3D ..arrays. A two dimensional array is
combination of two or more (1D) one dimensional arrays. A three dimensional array
is a combination of two or more (2D) two dimensional arrays.
Two Dimensional Arrays (2d array): A two dimensional array represents several rows
and columns data.To represent a two dimensional array, we should use two pair of
square braces [ ] [ ] after the array name.
For example:- The marks obtained by a group of students in five different subjects can
be represented by a 2D array.

2 D array declaration
We can declare a two dimensional array and directly store elements at the time of its
declaration,
as:
int marks[] [] = {{50, 60, 55, 67, 70},{62, 65, 70, 70, 81}, {72, 66, 77, 80, 69} };
We can create a two dimensional array by declaring the array first and then we can
allocate memory for it by using new operator as:

int marks[ ] [ ];   //declare marks array
marks = new int[3][5];   //allot memory for storing 15 elements.
These two statements also can be written as:
int marks [ ][ ] = new int[3][5];

Program :

Output:

Conclusion-

Questions-
   1) What is an array ?What are applications of Arrays?
   2) What is difference between array and vector?
   3) What is need of Wrapper class in Java?