**PROJECT ONE ( Using Arrays in Java )**

**Objective** To create basic arrays in Java.

***PROJECT DESCRIPTION***

This project has you constructing an array algorithm in Java which declares and initializes an integer array and prints each value to standard output. Create your Java program using the file name ArrayDemo.

***Information About this Project***

Arrays are useful to study in computer science since they can be manipulated to show processing times and process efficiency.

***Steps to Complete this Project***

**STEP 1 Run a Project in a Java IDE**

class ArrayDemo {

public static void main(String[] args) {

int[] anArray; // declares an array of integers

anArray = new int[10]; // allocates memory for 10 integers

anArray[0] = 100; // initialize first element

anArray[1] = 200; // initialize second element

anArray[2] = 300; // etc.

anArray[3] = 400;

anArray[4] = 500;

anArray[5] = 600;

anArray[6] = 700;

anArray[7] = 800;

anArray[8] = 900;

anArray[9] = 1000;

System.out.println("Element at index 0: " + anArray[0]);

System.out.println("Element at index 1: " + anArray[1]);

System.out.println("Element at index 2: " + anArray[2]);

System.out.println("Element at index 3: " + anArray[3]);

System.out.println("Element at index 4: " + anArray[4]);

System.out.println("Element at index 5: " + anArray[5]);

System.out.println("Element at index 6: " + anArray[6]);

System.out.println("Element at index 7: " + anArray[7]);

System.out.println("Element at index 8: " + anArray[8]);

System.out.println("Element at index 9: " + anArray[9]);

}

}

Run the given code above and take a screen snapshot of the correct output display of the code.

**PROJECT TWO ( Array Cloning in Java )**

**Objective** To utilize the arraycopy method of java

***PROJECT DESCRIPTION***

Modify your code in Project 1 to demonstrate how to clone or copy a Java array. Starter code follows.

***Information About this Project***

Arrays are useful to study in computer science since they can be manipulated to show processing times and process efficiency.

***Steps to Complete this Project***

**STEP 1 Run a Project in a Java IDE**

The Java System class has an arraycopy method that you can use to efficiently copy data from one array into another:

public static void arraycopy(Object src,

int srcPos,

Object dest,

int destPos,

int length)

The two Object arguments specify the array to copy *from* and the array to copy *to*. The three int arguments specify the starting position in the source array, the starting position in the destination array, and the number of array elements to copy.

Use the following code snippet declaring an array of char elements, spelling the word "decaffeinated". Note the code uses arraycopy to copy a subsequence of array components into a second array:

public static void main(String[] args) {

char[] copyFrom = { 'd', 'e', 'c', 'a', 'f', 'f', 'e',

'i', 'n', 'a', 't', 'e', 'd' };

char[] copyTo = new char[7];

System.arraycopy(copyFrom, 2, copyTo, 0, 7);

System.out.println(new String(copyTo));

}

Run your program and test your output to spell out the word **caffeine**. Submit your results.

Next modify your code once again to display the array before the copy and again after the copy. Submit your results once again.

**PROJECT THREE ( Working Arrays in Assembler )**

**Objective** To create arrays in Assembler

***PROJECT DESCRIPTION***

For this project - you will create an array similar to project 1 and turn it into assembler, namely declare a table to be of size 5 for example and populate each index with a value of 100.

***Information About this Project***

Arrays are useful to study in computer science since they can be manipulated to show processing times and process efficiency.

***Steps to Complete this Project***

**STEP 1 Run a Project in MIPs**

Submit your ASM file and a snapshot of your program in action.