# CS 102 Homework Assignment – Array Operations with Functions

In this homework assignment you will write **one main program** and **seven functions.** The main program will call each of the functions as described below.

Your program should take advantage of the **print\_array** function that was presented in class (and shown below) to print out the elements of each array as required.

int print\_array(int array[], int elements)

{

unsigned int i = 0;

for (i = 0; i < SIZE; i++)

{

cout << setw(3) << array\_two[i];

if ((i+1)%10 ==0 )

{

cout << endl;

}

}Return 0;

}

1. Write a main program that has the following variables;

unsigned int SIZE = 100; // or you can use the (#define SIZE 100 if you prefer)

int array\_one [SIZE];

int array\_two [SIZE];

int sum\_array [SIZE];

int diff\_array [SIZE];

int invert\_array[SIZE];

int upper\_limit, value, max, min, number\_occurances;

1. Function int\_array: Write a function that accepts as inputs:
   1. a single dimension array of int
   2. the number of elements in the array (SIZE) as unsigned int
   3. and an upper limit for the range of random numbers as int

The function will initialize the array with random integers bewteen 1 and the maximum value.

The array is returned by reference so the return value will be (return 0;)

1. Function add\_array: Write a function that accepts as inputs:
   1. Single dimension array one as int
   2. Single dimension array two as int
   3. Single dimension array sum as int
   4. The number of elements in the arrays as int (all three arrays are the same size)

The function will add (element by element) the values of array one and array two storing the results in array sum. The arrays are returned by reference so the return value will be (return 0;)

1. Function diff\_array: Write a function that accepts as inputs:
   1. Single dimension array one as int
   2. Single dimension array two as int
   3. Single dimension array diff as int
   4. The number of elements in the arrays as unsigned int (all three arrays are the same size)

The function will subtract (element by element) the values of array two from array one storing the results in array diff. The arrays are returned by reference so the return value will be (return 0;)

1. Function invert\_array: Write a function that accepts as inputs:
   1. Single dimension array one as int
   2. Single dimension array invert as int
   3. The number of elements in the arrays as unsigned int (all three arrays are the same size)

The function will generate an inverted copy of array\_one. The arrays are returned by reference so the return value will be (return 0;)

1. Function maximum: Write a function that accepts as input:
   1. A single dimension array as int
   2. The number of elements in the array

The function returns the maximum value in the array as int.

1. Function minimum: Write a function that accepts as input:
   1. A single dimension array as int
   2. The number of elements in the array

The function returns the minimum value in the array as int.

1. Function instances: Write a function that accepts as input:
   1. A single dimension array as int
   2. The number of elements in the array
   3. A value within the range of the numbers in the array as int

The function returns the number of occurances of the value within the array as int.

1. Main Program:

The main program should test all the functions in the order that you choose. Provide screen

captures of the output.