**Name:**

**Advanced Programming in C++**

**Lab Exercise 5.23.2024**

1. Write a C++ function to create a new string of length 2, using first two characters of a given string. If the given string length is less than 2 use '#' as missing characters.   
    Sample Input:  
    "Hello"  
    "Python"  
    "a"  
    ""  
    Sample Output:  
    He  
    Py  
    a#  
    ##
2. Write a C++ function to check a given array of integers of length 1 or more and return true if 10 appears as either first or last element in the given array.    
    Sample Input:  
    { 10, 20, 40, 50 }  
    { 5, 20, 40, 10 }  
    { 10, 20, 40, 10 }  
    { 12, 24, 35, 55 }

{ 12, 24, 36, 74, 10 }  
 Sample Output:  
 true  
 true  
 true  
 false

True

Hint: In C++, there is no direct method to find the size of an array which you will need to find the index of the last element. Therefore when you pass an array to a function, you must also pass it’s size. We need to have some method of calculating the size programmatically. You might consider using the *sizeof* operator which returns the number of bytes an object such as an array takes. If you know the number of bytes an array takes and the number of bytes each element requires then you know the number of elements in the array. For example, if an array of integers takes 80 bytes then we know it contains 20 elements.

1. Write a C++ function to check a given array of integers, modify the array. If there is a 5 in the given array immediately followed by a 7 then set 7 to 1. You function should return a reference to the modified array in the form of an integer pointer that holds the address of the array. Your new array contents should be printed from main using the pointer returned from the function.  
    Sample Input:  
    { 1, 5, 7 }  
    { 1, 5, 3, 7 }

{1, 3, 5, 7, 8, 5, 7}  
 Sample Output:  
 Modified array:  
 1 5 1  
 Modified array:  
 1 5 3 7

Modified array:

{1, 3, 5, 1, 8, 5, 1}

Note: The C++ language does not allow the returning of an array from a function. Instead, you can return a pointer that holds the address of the array.

1. Write a C++ function to modify an array swapping the first and last elements of a given array of integers and length will be least 1.  The modified array should be printed from the main function.  
    Sample Input:  
    { 1, 5, 7, 9, 11, 13 }  
    Sample Output:  
    New array (after swapping the first and last elements of the):  
    13 5 7 9 11 1
2. Write a C++ function to compute the difference between the largest and smallest values in a given array of integers and length one or more.    
    Sample Input:  
    { 1, 5, 7, 9, 10, 12}  
    {0, 2, 4, 6, 8, 10}  
    Sample Output:  
    11  
    10