# C++ Fundamentals - Exercises

# 01. Problem

Write a program, use a function that finds the BIGGEST number in array.

For the program you'll need a function that has 2 params:  
  
- Array of integers

- array size

**CODE EXAMPLE:**

void FindMaxInArray( int array[], const int arraySize )

#### **EXAMPLE:**

Enter array size:   
3  
Enter number:   
1  
Enter number:   
2  
Enter number:   
3

The biggest number in array is: 3  
Program ended with exit code: 0

**EXAMPLE:**

Enter array size:   
2  
Enter number:   
-1  
Enter number:   
-2  
The biggest number in array is : -1  
Program ended with exit code: 0

**EXAMPLE:**Enter array size:   
3  
Enter number:   
0  
Enter number:   
0  
Enter number:   
0  
The biggest number in array is : 0  
Program ended with exit code: 0

# 02. Problem

Write a program that replace a given number with 0.

For the program you'll need a function that has 3 params:

- Array of integers

- Array Size

- Number to be replaced

The program should have instructions !

**CODE EXAMPLE:**

void ReplaceNumber( int array[], const int arraySize, int numToReplace )

**EXAMPLE:**Enter array size:   
3  
Enter number:   
1  
Enter number:   
2  
Enter number:   
3  
Enter number to replace:   
3  
Replaced number in array:   
1 2 0   
Program ended with exit code: 0

**EXAMPLE:**

Enter array size:   
4  
Enter number:   
5  
Enter number:   
5  
Enter number:   
5  
Enter number:   
5  
Enter number to replace:   
5  
Replaced number in array:   
0 0 0 0   
Program ended with exit code: 0

**EXAMPLE:**Enter array size:   
2  
Enter number:   
1  
Enter number:   
2  
Enter number to replace:   
3  
Replaced number in array:   
1 2   
Program ended with exit code: 0  
**EXAMPLE:**Enter array size:   
3  
Enter number:   
1  
Enter number:   
2  
Enter number:   
2  
Enter number to replace:   
2  
Replaced number in array:   
1 0 0   
Program ended with exit code: 0

# 03. Problem DETECT COLLISION

Write a program with boolean function, the function should have 4 parameters:

- x1

- y1

- x2

- y2

( x1, y2 ) - point1

( x2, y2 ) - point2

While point1 < point2 the program should NOT stop and the user should enter data.

EXAMPLE:  
Enter x1:

2  
Enter y1:   
2  
Enter x2:   
3  
Enter y2:   
3  
The point1 is NOT inside or after point2   
Enter x1:

**EXAMPLE:**Enter x1:  
2  
Enter y1:   
2  
Enter x2:   
1  
Enter y2:   
1  
The point1 is inside or after point2   
Program ended with exit code: 0

**04. Problem Numbers in Array**

Write a program, use a function that for given array, filters the numbers in ASCENDING

The function has 2 params:  
- Array of integers  
- arraySize  
**CODE EXAMPLE:**void SortArray( int array[], const int arraySize )  
**EXAMPLE:**  
Enter array size:   
3  
Enter number:   
3  
Enter number:   
2  
Enter number:   
1  
Array with ascending numbers  
1 2 3   
Program ended with exit code: 0  
**EXAMPLE**:  
Enter array size:   
4  
Enter number:   
-2  
Enter number:   
-1  
Enter number:   
-4  
Enter number:   
-5  
Array with ascending numbers  
-5 -4 -2 -1   
Program ended with exit code: 0  
**EXAMPLE:**Enter array size:   
4  
Enter number:   
2  
Enter number:   
5  
Enter number:   
7  
Enter number:   
4  
Array with ascending numbers  
2 4 5 7   
Program ended with exit code: 0  
  
**05. Problem**Write a INT calculator program using function. The function should have 3 params:  
- num1  
- sign  
- num2  
If you have an invalid sign, the user should know.

**Example:**Enter num1 :   
3  
Enter sign :   
-  
Enter num2 :   
2  
The difference is -> 1  
Program ended with exit code: 0  
**Example:**Enter num1 :   
5  
Enter sign :   
-  
Enter num2 :   
2  
The difference is -> 3  
Program ended with exit code: 0  
**Example:**Enter num1 :   
3  
Enter sign :   
\*  
Enter num2 :   
4  
The product is -> 12  
Program ended with exit code: 0  
**Example:**Enter num1 :   
5  
Enter sign :   
/  
Enter num2 :   
2  
The division is -> 2  
Program ended with exit code: 0  
**Example:**Enter num1 :   
2  
Enter sign :   
@  
Enter num2 :   
2  
INVALID SIGN !  
Program ended with exit code: 0

**06. Problem**

Write a program that filter numbers in vector.  
For the program you'll need a function that has 2 params:  
 - Vector of Integers  
 - Number to filter (int)  
The program should be complete of all instructions !  
**CODE EXAMPLE :**void FilterNumber( vector<int>myVec, int numberToFilter )  
**EXAMPLE :**Enter vector size :   
3  
Enter Number:   
1  
Enter Number:   
2  
Enter Number:   
3  
Enter number to filter :  
2  
Filtered Numbers in vector:   
1 3   
Program ended with exit code: 0  
**EXAMPLE :**Enter vector size :   
5  
Enter Number:   
1  
Enter Number:   
2  
Enter Number:   
3  
Enter Number:   
3  
Enter Number:   
3  
Enter number to filter :  
3  
Filtered Numbers in vector:   
1 2   
Program ended with exit code: 0  
**EXAMPLE :**   
Enter vector size :   
4  
Enter Number:   
1  
Enter Number:   
1  
Enter Number:   
1  
Enter Number:   
1  
Enter number to filter :  
1  
Filtered Numbers in vector:   
Program ended with exit code: 0

**EXAMPLE :**Enter vector size :   
3  
Enter Number:   
1  
Enter Number:   
2  
Enter Number:   
3  
Enter number to filter :  
5  
Filtered Numbers in vector:   
1 2 3   
Program ended with exit code: 0