**Table of Contents**

[Problem 1: Search In an array 3](#_Toc89798099)

[Problem 2: Copy Array 1 to Array 2 3](#_Toc89798100)

[Problem 3: Bubble Sort 3](#_Toc89798102)

[Problem 4: Calculator 3](#_Toc89798103)

[Problem 5: Output 4](#_Toc89798104)

[Problem 6: Output 4](#_Toc89798105)

[Problem 7: Output 4](#_Toc89798106)

[Problem 8: Missing Number](#_Toc89798106) 5

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| Problem 1: Search In an array |  |

Write a C++ program in which will take an array and its size and a key from user and will show the index of first and last occurrence of that key element from the array.

**Sample Output:**

**Input:** arr[] = {1, 3, 5, 5, 5, 5, 67, 123, 125}

Key = 5

**Output**: First Occurrence = 2

Last Occurrence = 5

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| Problem 2: Copy Array 1 to Array 2 |  |

Write a C++ program which will copy data from the first array into the second one. Sizes of both arrays can be different or the same.

**Sample Output:**

Input the size of array = 5

Input the elements of the first array =

1

2

3

4

5

6

7

The final array is =

1 2 3 4 5 6 7

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| Problem 3: Sort |  |

Write a program which sort an array.

**Sample Output:**

**Array= {-2, 0, 11, -9, 0}**

Sorted Array in Ascending Order:

-9 -2 0 0 11

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| Problem 4: Calculator |  |

Write a C++ program to implement a set calculator, which will include the following operations on sets:

1. **Input:** This function will take input from user **(5 Points)**
2. Input elements of the set (No duplicates are allowed)
3. **Output:** **(5 Points)** This function will take the set and its size as input and output all the data contained in the set.
4. **Intersection:** **(5 Points)**
5. This function will take three sets and their corresponding size as parameters, compute the intersection on the first two sets and store the data in the third set.
6. **Union:** **(5 Points)**
7. This function will take three sets and their corresponding size as parameters, compute the union on the first two sets and store the data in the third set.
8. **Difference:** **(5 Points)**
9. This function will take three sets and their corresponding size as parameters, compute the difference on the first two sets and store the data in the third set.

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| Problem 5: Output |  |

What is the output when the following code fragment is executed?

char ch;

char title[] = "Titanic";

ch = title[1];

title[3] = ch;

cout << title << endl;

cout << ch << endl;

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| Problem 6: Output |  |

Suppose that the following code fragment is executed.

const int LENGTH = 21;

char message[LENGTH];

cout << "Enter a sentence on the line below." << endl;

cin >> message;

cout << message << endl;

What will the output of the code fragment look like?

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| Problem 7: Output |  |

Suppose that the following code fragment is executed.

const int LENGTH = 21;

char message[LENGTH];

cout << "Enter a sentence on the line below." << endl;

cin.getline(message, LENGTH, '\n');

cout << message << endl;

What will the output of the code fragment look like?

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| Problem 8: Missing Number |  |

**Find the Missing Number**: Given an array containing n distinct numbers taken from 0, 1, 2, ..., n, find the one number that is missing from the array. For example, if the input is [3, 0, 1], the output should be 2.