CPP-A09: Pointers Part - 1

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1. Sum of Elements Using Pointers

Problem Statement:

Write a C++ program to find the sum of all elements in an array using pointers.

Input:

```
5
1 2 3 4 5
```

Output:

```
Sum of elements: 15
```

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2. Reverse an Array Using Pointers

Problem Statement:

Write a program to reverse an array using pointers.

Input:

```
4
10 20 30 40
```

Output:

```
Reversed array: 40 30 20 10
```

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3. Find Maximum Element Using Pointers

Problem Statement:

Find the largest element in an array using pointers.

Input:

```
6
12 3 45 6 78 2
```

Output:

```
Largest element: 78
```

4. Swapping Two Numbers Using Pointers

Problem Statement:

Write a C++ program to swap two numbers using pointers.

Input:

```
5 10
```

Output:

```
After swapping: 10 5
```

5. Count Vowels in a String Using Pointers

Problem Statement:

Write a program to count the number of vowels in a given string using pointers.

Input:

```
education
```

Output:

```
Number of vowels: 5
```

6. Check Palindrome String Using Pointers

Problem Statement:

Check if a given string is a palindrome using pointers.

Input:

madam

Output:

Palindrome

7. Dynamic Memory Allocation for Arrays

Problem Statement:

Create an integer array dynamically and display its elements.

Input:

3
11 22 33

Output:

Elements are: 11 22 33

8. Sum of Digits Using Pointers

Problem Statement:

Write a program to find the sum of digits of a number using pointers.

Input:

1234

Output:

Sum of digits: 10

9. Find Length of a String Using Pointers

Problem Statement:

Find the length of a string using pointers.

Input:

hello

Output:

Length of the string: 5

10. Compare Two Strings Using Pointers

Problem Statement:

Write a program to compare two strings using pointers.

Input:

hello
world

Output:

Strings are different

11. Copy String Using Pointers

Problem Statement:

Copy one string to another using pointers.

Input:

hello

Output:

Copied string: hello

12. Find Prime Numbers in Array Using Pointers

Problem Statement:

Find and display prime numbers in an array using pointers.

Input:

```
5
2 4 5 6 7
```

Output:

```
Prime numbers: 2 5 7
```

13. Sort an Array Using Pointers

Problem Statement:

Sort an integer array in ascending order using pointers.

Input:

```
5
30 10 50 20 40
```

Output:

```
Sorted array: 10 20 30 40 50
```

14. Multiply Two Matrices Using Pointers

Problem Statement:

Write a program to multiply two matrices using pointers.

Input:

```
Matrix 1:
2 3
1 2 3
4 5 6
```

```
Matrix 2:
3 2
1 2
3 4
5 6
```

Output:

```
Result matrix:
22 28
49 64
```

15. Count Occurrences of a Character in String Using Pointers

Problem Statement:

Count the occurrences of a given character in a string using pointers.

Input:

```
banana
n
```

Output:

```
Number of occurrences: 2
```

16. Merge Two Arrays Using Pointers

Problem Statement:

Merge two sorted arrays into one sorted array using pointers.

Input:

```
Array 1: 1 3 5
Array 2: 2 4 6
```

Output:

Merged array: 1 2 3 4 5 6

17. Find the Second Largest Element Using Pointers

Problem Statement:

Find the second largest element in an array using pointers.

Input:

```
6
10 20 50 40 30 60
```

Output:

```
Second largest element: 50
```

18. Reverse a String Using Pointers

Problem Statement:

Write a program to reverse a string using pointers.

Input:

```
hello
```

Output:

```
Reversed string: olleh
```

19. Find Sum and Average of Elements Using Pointers

Problem Statement:

Calculate the sum and average of elements in an array using pointers.

Input:

```
4
```

```
10 20 30 40
```

Output:

```
Sum: 100
Average: 25
```

20. Pointer to Pointer Example

Problem Statement:

Demonstrate pointer-to-pointer operations by printing the value of an integer.

Input:

```
Value of integer: 50
```

Output:

```
Value using pointer to pointer: 50
```

Happy Coding!