

SEM 3\Exp9\main.c

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1  #include <stdio.h>
2
3  // Function declarations (you can also include headers for better organization)
4  void mergeSort(int arr[], int left, int right);
5  void radixSort(int arr[], int size);
6  void countingSort(int arr[], int size);
7  void bucketSort(int arr[], int size);
8  void heapSort(int arr[], int size);
9
10 // Function to display the array (add this in main.c)
11 void display(int arr[], int size)
12 {
13     for (int i = 0; i < size; i++)
14         printf("%d ", arr[i]);
15     printf("\n");
16 }
17
18 int main()
19 {
20     // Array for testing sorting algorithms
21     int arr1[] = {74, 34, 25, 12, 22, 11, 90, 65, 32, 1};
22     int size1 = sizeof(arr1) / sizeof(arr1[0]);
23
24     // Merge Sort
25     printf("Original array for Merge Sort: ");
26     display(arr1, size1);
27     mergeSort(arr1, 0, size1 - 1);
28     printf("Sorted array using Merge Sort: ");
29     display(arr1, size1);
30
31     // Radix Sort
32     int arr2[] = {74, 34, 25, 12, 22, 11, 90, 65, 32, 1};
33     printf("\nOriginal array for Radix Sort: ");
34     display(arr2, size1);
35     radixSort(arr2, size1);
36     printf("Sorted array using Radix Sort: ");
37     display(arr2, size1);
38
39     // Counting Sort
40     int arr3[] = {74, 34, 25, 12, 22, 11, 90, 65, 32, 1};
41     printf("\nOriginal array for Counting Sort: ");
42     display(arr3, size1);
43     countingSort(arr3, size1);
44     printf("Sorted array using Counting Sort: ");
45     display(arr3, size1);
46
47     // Bucket Sort
48     int arr4[] = {74, 34, 25, 12, 22, 11, 90, 65, 32, 1};
49     int size4 = sizeof(arr4) / sizeof(arr4[0]);
50     printf("\nOriginal array for Bucket Sort: ");
51     display(arr4, size4);
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52     bucketSort(arr4, size4);
53     printf("Sorted array using Bucket Sort: ");
54     display(arr4, size4);
55
56     // Heap Sort
57     int arr5[] = {74, 34, 25, 12, 22, 11, 90, 65, 32, 1};
58     int size5 = sizeof(arr5) / sizeof(arr5[0]);
59     printf("\nOriginal array for Heap Sort: ");
60     display(arr5, size5);
61     heapSort(arr5, size5);
62     printf("Sorted array using Heap Sort: ");
63     display(arr5, size5);
64
65     return 0;
66 }
67
```