Data Structures and Algorithms

Lecture 4: Arrays – Merging

Merge operation in an Array

Combining two arrays into a single array is known as merging two arrays.

For example, if the first array has 5 elements

and the second array has 4, the resultant

array will have 9 elements.

Input:

1st Array : 9 8 4 1 5

2nd Array 2: 2 0 3 6

Output : The merged sorted Array : 0 1 2 3 4

5 6 8 9

Merge operation in an Array

Approach 1: Merge two sorted arrays in ascending order

1. Start the program

2. Input the length of both the arrays.

3. Input the arrays elements from user.

4. Copy the elements of the first array to the merged array when initializing it.

5. Copy the elements of the second array to the merged array while initializing the second array.

6. Sort the merged array now.

7. Display the merged array.

8. The program ends here.

Merge operation in an Array

```
#include <stdio.h>
int main() {
  //Declaring the size of arrays
  int s1, s2, s3;
  printf("\n Enter the size of 1st array  ");
  scanf("%d", & s1);
  printf("\n Enter the size of 2nd array ");
  scanf("%d", & s2);
  s3 = s1 + s2;
  printf("\n Enter the elements of 1st
array\n");
int arr1[s1], arr2[s2], arr3[s3]; // Declaring the array
for (int i = 0; i < s1; i++) {//Initialising the array
    scanf("%d", & arr1[i]);
    arr3[i] = arr1[i];
  }
int k = s1;
  printf("\nEnter the elements of 2nd array \n");
  for (int i = 0; i < s2; i++) //Array Initialised
  {
    scanf("%d", & arr2[i]);
    arr3[k] = arr3[i];
    k++;
  }
```

Merge operation in an Array

```
printf("\nThe merged array before sorting :
\n\t");
  for (int i = 0; i < s3; i++)
    printf("%d ", arr3[i]); //Print the merged
array before sorting
  printf("\n The merged array after
sorting\n\t");
  for (int i = 0; i < s3; i++) //Sorting the array
  {
    int tem;
    for (int j = i + 1; j < s3; j++)
    {
 if (arr3[i] > arr3[j]) {
        tem = arr3[i];
        arr3[i] = arr3[j];
        arr3[j] = tem;
      }
  }
}
for (int i = 0; i < s3; i++) //Printing the
sorted Array
  {
    printf(" %d ", arr3[i]);
  }
}
```

Recall:

- Merging Operation in an array