**Experiment 2.1**

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**UID: Section/Group:**

**Date of performance: 14/09/2022 Subject name: Data Structures**

**AIM:** Write a program to sort an array of integers in ascending/descending order using Merge Sort.

**OBJECTIVE:** To learn the concepts of Merge Sort.

**CODE:**

#include <iostream>

using namespace std;

void printArray(int \**A*, int *n*)

{

    for (int i = 0; i < *n*; i++)

    {

        cout<< *A*[i]<<" ";

    }

    cout<<"\n";

}

void merge(int *A*[], int *mid*, int *low*, int *high*)

{

    int i, j, k, B[100];

    i = *low*;

    j = *mid* + 1;

    k = *low*;

    while (i <= *mid* && j <= *high*)

    {

        if (*A*[i] < *A*[j])

        {

            B[k] = *A*[i];

            i++;

            k++;

        }

        else

        {

            B[k] = *A*[j];

            j++;

            k++;

        }

    }

    while (i <= *mid*)

    {

        B[k] = *A*[i];

        k++;

        i++;

    }

    while (j <= *high*)

    {

        B[k] = *A*[j];

        k++;

        j++;

    }

    for (int i = *low*; i <= *high*; i++)

    {

*A*[i] = B[i];

    }

}

void mergeSort(int *A*[], int *low*, int *high*){

    int mid;

    if(*low*<*high*){

        mid = (*low* + *high*) /2;

        mergeSort(*A*, *low*, mid);

        mergeSort(*A*, mid+1, *high*);

        merge(*A*, mid, *low*, *high*);

    }

}

int main()

{

*// int A[] = {9, 14, 4, 8, 7, 5, 6};*

    int A[] = {9, 1, 4, 14, 4, 15, 6};

    int n = 7;

    printArray(A, n);

    mergeSort(A, 0, 6);

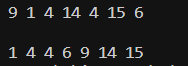
    cout<<"\n";

    printArray(A, n);

    return 0;

}

**OUTPUT:**

****

Learning outcomes:

1. Learned sorting using Merge sort.
2. Learned to sort an array.
3. Concepts of Merge Sort.