ADA LAB TEST-1

Name- Ritika Singh Rathore Sec - A Sem - 4
USN - 1BM19CS131

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

void merge (int arr[], int l, int m, int r){
  int i, j, k;
  int
int n1 = m-l+1;
int n2 = r-m;
  int L[n1], R[n2];
  for(i=0; i<n1; i++)
      L[i] = arr[l+i];
  for (j=0; j<n2; j++)
      R[j] = arr[m+1+j];
  i=0;
  j=0;
  k=0;
  while (i<n1 && i<n2) {
```

```
if (L[i] <= R[j]) {
    arr[k] = L[i];
    i++;
}
else {
    arr[k] = R[j];
    j++;
}
    k++;
}
while (i < n1){
    arr[k] = L[i];
    i++;
    k++; }

while (j < n2) {
    arr[k] = R[j];
    j++;
    k++; }

void mergesort (int arr[] int l, int r) {
    if (l < r) {
        int m = l + (r - l)/2;
```

```
mergesort(arr, l, m);
mergesort(arr, m+1, r);
    merge(arr, l, m, r);
}}

void printArray(int A[], int size){
    int i;
    for(i=0; i< size; i++)
        printf("%d", A[i]);
        printf("\n");
    }

int main(){
    clock_t start, end;
    double time_taken;
    start = clock();
    int arr_size;
    printf("Enter array size");
    scanf("%d", &arr_size);
    int arr[arr_size];
    printf("Enter the elements to be sorted.");
    for(int i=0; i< arr_size; i++){
    scanf("%d", &arr[i]); }
```

```
printf("Given array is \n");
printArray(arr, arr_size);

start = clock();
mergesort(arr, 0, arr_size-1);
printf("Sorted array is");
printArray(arr, arr_size);
end clock();
timetaken = ((double)(end-start))/CLOCKS_PER_SEC;
printf("Time taken is = %f", timetaken);
return 0;
}
```

Modified program

```
int a main(){
  int a[5], b[5], c[10], i, j, temp;
        // input the 2 array elements i.e a, b.
for af
    for(i=0, i<5; i++)
    { c[i] = a[i];
    }
```

```
for (j=0; j<5; j++)
  { c[i]= b[j];
    i++;
  }
for (j=0; j<10; j++)
  { for (i=0; i<10; i++)
    { if (c[i]>[i+1])
      { temp = c[i];
        c[i] = c[i+1];
        c[i+1] = temp; } } }

// print resultant sorted array C.
```