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Experiment - 4

W.A.P in C language to implement merge sort

```
#include <stdio.h>
#include <conio.h>
#include <time.h>
void merge (int a[], int start, int mid,
int end) {
int i = start;
int b[end - start + 1];
int j = mid + 1;
int k = 0;
while ( i <= mid && j <= end ) {
if ( a[i] < a[j] ) {
b[k] = a[i];
i++; }
else {
b[k] = a[j];
j++;
} k++; }
while ( i <= mid) {
b[k] = a[i];
i++;
k++; }
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```
while (j<=end){
b[k] = a[j];
j++;
k++; }
for (int i = end; i>= start ; i--)
{ a[i] = b[--k]; } }

Void mergesort (int a[], int start, int end)
{ int mid;
if (start < end) {
mid = (start + end )/2;
mergesort (a, start, mid);
mergesort ( a, mid+1, end);
merge (a, start, mid, end); }}

Void main (){
int n, a[1000];
double t1, t2;
Scanf("%d", &n);
Srand (time (0));
for (int i = 0; i<n; i++){
  a[i] = rand ()%100;
}
```

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```
t1 = clock();
mergesort (a, 0, n-1);
t2 = clock();
printf ("the sorted array is ");
for (int i=0 ; i<n ; i++)
{
    printf ("%d ", a[i]);
}

double t = t2 - t1
double time = ((double)t) / CLOCKS_PER_SEC;
printf ("\n time = %f", time);
}
```

Teacher's Signature

Output :- 5
the Sorted array is 13 29 30 46 49
time = 0.000000