CSE-2202 : Algorithm

Lab Assignment– 02

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Problem 1: Merge sort descending order

Start here | binary_searchUntitled1.c | selection_sortUntitled2.c | mergesort_descendingUntitled3.c | Untitled4.cpp

```cpp
#include<iostream>
using namespace std;

void Merge(int Enamul[], int B[], int C[], int N, int M, int &K);

int main()
{
    int Enamul[100], B[100], C[200],i,n,m,k;

    cout<<"\nEnter number of elements you want to insert in first array ";
    cin>>n;

    cout<<"Enter element in descending order\n";

    for(i=0;i<n;i++)
    {
        cout<<"Enter element "<<i+1<<":";
        cin>>Enamul[i];
    }

    cout<<"\nEnter number of elements you want to insert in second array ";
    cin>>m;

    cout<<"Enter element in descending order\n";

    for(i=0;i<m;i++)
    {
        cout<<"Enter element "<<i+1<<":";
        cin>>B[i];
    }

    Merge(Enamul,B,C,n,m,k);

    cout<<"\nThe Merged Array in Descending Order"<<endl;

```

```
34      cout<<"\nThe Merged Array in Descending Order"<<endl;
35
36      for(i=0;i<k;i++)
37      {
38          cout<<C[i]<<" ";
39      }
40
41      return 0;
42  }
43
44  void Merge(int Enamul[], int B[], int C[], int N, int M, int &K)
45  {
46      int I=0, J=0;
47      K=0;
48
49      while (I<N && J<M)
50      {
51          if (Enamul[I]>B[J])
52              C[K++]=Enamul[I++];
53          else if (Enamul[I]<B[J])
54              C[K++]=B[J++];
55          else
56          {
57              C[K++]=Enamul[I++];
58              J++;
59          }
60      }
61
62      for (int T=I;T<N;T++)
63          C[K++]=Enamul[T];
64
65      for (int T=J;T<M;T++)
66          C[K++]=B[T];
67  }
68
```

```
C:\Users\Enamul\Documents\Untitled4.exe

Enter number of elements you want to insert in first array 3
Enter element in descending order
Enter element 1:30
Enter element 2:20
Enter element 3:10

Enter number of elements you want to insert in second array 4
Enter element in descending order
Enter element 1:80
Enter element 2:70
Enter element 3:60
Enter element 4:50

The Merged Array in Descending Order
80 70 60 50 30 20 10
Process returned 0 (0x0)   execution time : 13.797 s
Press any key to continue.
```

Problem 2: Merge sort ascending

```c
#include <stdio.h>

#define max 10

int enamul[11] = { 10, 14, 19, 26, 27, 31, 33, 35, 42, 44, 0 };
int b[10];

void merging(int low, int mid, int high) {
   int l1, l2, i;

   for(l1 = low, l2 = mid + 1, i = low; l1 <= mid && l2 <= high; i++) {
      if(enamul[l1] <= enamul[l2])
         b[i] = enamul[l1++];
      else
         b[i] = enamul[l2++];
   }

   while(l1 <= mid)
      b[i++] = enamul[l1++];

   while(l2 <= high)
      b[i++] = enamul[l2++];

   for(i = low; i <= high; i++)
      enamul[i] = b[i];
}

void sort(int low, int high) {
   int mid;

   if(low < high) {
      mid = (low + high) / 2;
      sort(low, mid);
      sort(mid+1, high);
      merging(low, mid, high);
```

Start here | binary_searchUntitled1.c | selection_sortUntitled2.c | mergesort_descendingUntitled3.c

```
22          b[i++] = enamul[l2++];
23
24       for(i = low; i <= high; i++)
25          enamul[i] = b[i];
26    }
27
28    void sort(int low, int high) {
29       int mid;
30
31       if(low < high) {
32          mid = (low + high) / 2;
33          sort(low, mid);
34          sort(mid+1, high);
35          merging(low, mid, high);
36       } else {
37          return;
38       }
39    }
40
41    int main() {
42       int i;
43
44       printf("List before sorting\n");
45
46       for(i = 0; i <= max; i++)
47          printf("%d ", enamul[i]);
48
49       sort(0, max);
50
51       printf("\nList after sorting\n");
52
53       for(i = 0; i <= max; i++)
54          printf("%d ", enamul[i]);
55    }
56
```

C:\Users\Enamul\Documents\mergesort_descendingUntitled3.exe

```
List before sorting
10 14 19 26 27 31 33 35 42 44 0
List after sorting
0 10 14 19 26 27 31 33 35 42 44
Process returned 0 (0x0)   execution time : 0.048 s
Press any key to continue.
```