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Future Vision

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**8. Write a C++ program to read  $k$  Lists of names and merge them using kway merge algorithm with  $k = 8$ .**

### **Merge**

The process of forming a list containing all items in any of two or more lists.

### **K-way merge**

A merge of order  $k$ .

### **Order of a merge**

The number of input lists being merged.

- If the distribution phase creates  $k$  runs, a single  $k$ -way merge can be used to produce the final sorted file.
- A significant amount of seeking is used by a  $k$ -way merge, assuming the input runs are on the same disk.

**File\_structure8.cpp**

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
#include<fstream.h>
#include<iostream.h>
#include<stdlib.h>

class record
{
    public:
    char name[20];
    char usn[20];
}rec[20];

fstream file[8];
int no;
char fname[8][8]={"1.txt","2.txt","3.txt","4.txt","5.txt","6.txt","7.txt","8.txt"};

void merge_file(char* file1,char* file2,char* filename)
{
    record recd[20];
    int i,k;
    k=0;
    fstream f1,f2;
    f1.open(file1,ios::in);
    f2.open(file2,ios::in);
    while(!f1.eof())
    {
        f1.getline(recd[k].name,20,'|');
        f1.getline(recd[k++].usn,20,'\n');
    }
    while(!f2.eof())
    {
        f2.getline(recd[k].name,20,'|');
        f2.getline(recd[k++].usn,20,'\n');
    }
    int t,y;
    record temp;
    for(t=0;t<k-2;t++)
    for(y=0;y<k-t-2;y++)
    if(strcmp(recd[y].name,recd[y+1].name)>0)
    {
        temp=recd[y];
        recd[y]=recd[y+1];
        recd[y+1]=temp;
    }
    fstream temp1;
```

```
    templ.open(filename, ios::out);
    for(t=1;t<k-1;t++)
    templ<<recd[t].name<<"|"<<recd[t].usn<<"\n";
    fl.close();
    f2.close();
    templ.close();
    return;
}

void kwaymerge()
{
    int i,k;
    k=0;
    char filename[7][20]={"11.txt","22.txt","33.txt","44.txt","111.txt",
        "222.txt","1111.txt"};

    for(i=0;i<8;i+=2)
    {
        merge_file(fname[i],fname[i+1],filename[k++]);
    }
    k=4;
    for(i=0;i<4;i+=2)
    {
        merge_file(filename[i],filename[i+1],filename[k++]);
    }
    merge_file(filename[4],filename[5],filename[6])
    ; return;
}

int main()
{
    int i;
    clrscr();
    cout<<"enter no of records\n";
    cin>>no;
    cout<<"\nenter the details\n";
    for(i=0;i<8;i++)
    file[i].open(fname[i],ios::out);
    for(i=0;i<no;i++)
    {
        cout<<"Name:";
        cin>>rec[i].name;
        cout<<"Usn:";
        cin>>rec[i].usn;
        file[i%8]<<rec[i].name<<"|"<<rec[i].usn<<"\n";
    }
    for(i=0;i<8;i++)
    file[i].close();
    kwaymerge();
}
```

```
    fstream result;
    result.open("1111.txt",ios::in);
    cout<<"sorted records\n";
    char name[20],usn[20];
    for(i=0;i<no;i++)
    {
        result.getline(name,20,'|');
        result.getline(usn,20,'\n');
        cout<<"\nName:"<<name<<"\nUsn:"<<usn<<"\n";
    }
    getch();
    return 0;
}
```

**Output :**

Enter the no. of records :4  
Enter the details :

Name :rahul  
USN :25

Name :laxmi  
USN :16

Name :ajay  
USN :2

Name :deepak  
USN :8

Sorted Records :

Name :ajay  
USN :2

Name :deepak  
USN :8

Name :laxmi  
USN :16

Name :rahul  
USN :25