DBMS LAB ASSIGNMENT 3

1. Store student records (fields: rollno, Name, branch, age) in a data file and build an index file by considering the rollno as the key.

- **Perform linear search in the index file by reading rollno as input and then display the student details by reading from the data file and display the time required to do this operation.**

A. Code:

```
    #include<stdio.h>
#include<string.h>
#include<time.h>
#define max 100
struct students{
int roll;
char name[max];
char course[max];
int age;
}s[max];
int main(){
clock_t start,end;
double time;
start=clock();
FILE *file;
file=fopen("binarysearchfile","w");
int i,j;
int n;
printf("enter no of students:");
scanf("%d",&n);
for(i=0;i<n;i++){
printf("\nenter roll no :");
scanf("%d",&s[i].roll);
 fflush(stdin);
```

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```
printf("enter name :");
 scanf("%s",&s[i].name);
printf("enter course :");
scanf("%s",&s[i].course);
printf("enter age :");
scanf("%d",&s[i].age);
}
struct students temp;
for(j=1;j<n;j++){
for(i=0;i<n-1;i++){
if(s[j].roll<s[i].roll){
temp=s[j];
s[j]=s[i];
s[i]=temp;
}
}
}
fprintf(file,"ROLL_NUMBER NAME COURSE age\n");
for( i=0;i<n;i++){
fprintf(file, "%d %s %s %d\n",s[i].roll,s[i].name,s[i].course,s[i].age);
}
fclose(file);
char ch[max];
FILE *file1,*index;
file1=fopen("binarysearchfile","r");
index=fopen("index","w");
 int array[n];
if(index==NULL)
{
printf("Can't open the file.\n");
}
else
{
for( i=0;i<n;i++)
{
array[i]=s[i].roll;
}
for( i=0;i<n;i++)
{
fprintf(index,"%d\n",array[i]);
```

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```
}
}
fclose(file1);
fclose(index);
char check[100];
char num[100];
index=fopen("index","r");
int count,flag=0;
int ns,low,high,mid;
//Binary Search
int number;
printf("Enter the Roll number to be searched: ");
 scanf("%d",&number);
low = 0;
 high = n - 1;
 mid = (low+high)/2;
 while (low <= high) {
 if(array[mid] < number)
 low = mid + 1;
 else if (array[mid] == number) {
 printf("Given roll number found\n");
printf("Roll no: %d\t\tName: %s\t\tCourse: %s\t\tAge:
%d\n",s[mid].roll,s[mid].name,s[mid].course,s[mid].age);
break;
 }
 else
 high = mid - 1;
 mid = (low + high)/2;
 }
 if(low > high)
 printf("Given roll number not found\n");
fclose(index);
end=clock();
time=(end - start)/CLOCKS_PER_SEC;
printf("Time taken for this whole execution %f seconds\n",time);
return 0;
}
```

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OUTPUT:

```
enter no of students:3

enter roll no :161
enter name :Lohith
enter course :CSE
enter age :19

enter roll no :123
enter name :Ram
enter course :CSE
enter age :19

enter roll no :897
enter name :Ravi
enter course :CSE
enter age :19
Enter the Roll number to be searched: 161
Given roll number found
Roll no: 161            Name: Lohith            Course: CSE             Age: 19
Time taken for this whole execution 35.000000 seconds

Process returned 0 (0x0)   execution time : 35.886 s
```

• Perform binary search in the index file (by sorting the index file based on the rollno) by reading rollno as input and then display the student details by reading from the data file and display the time required to do this operation.

Code:

```
#include<stdio.h>
#include<string.h>


struct student{
        char s[25];
        int roll;
        char b[3];
        int age;
};

int main()
```

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```
{
        char ch,word[50],stu[25],branch[3];
        int i,j,k,r,a,n,c,tmp,m,p,o,l=0;
        FILE *f;
        f=fopen("f3.txt","w+");


        printf("Enter the number of students data: ");
        scanf("%d",&n);

        struct student stude[n];
        int ar[n];

        for(i=0;i<n;i++){

                printf("\nEnter the student name: ");
                scanf("%s",stu);
                strcpy(stude[i].s,stu);
                fprintf(f,"Name : %s\n",stu);

                printf("Enter the Roll Number: ");
                scanf("%d",&r);
                stude[i].roll=r;
                fprintf(f,"Roll : %d\n",r);

                printf("Enter the Branch name: ");
                scanf("%s",branch);
                strcpy(stude[i].b,branch);
                fprintf(f,"Branch : %s\n",branch);

                printf("Enter the age: ");
                scanf("%d",&a);
                stude[i].age=a;
                fprintf(f,"Age : %d\n\n",a);
        }

        for(i=0;i<n;i++)
                ar[i]=stude[i].roll;

        f=fopen("f3.txt","r");
```

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```
        printf("\nEnter the key value: ");
        //scanf("%d",&k);
        scanf("%d",&k);

        for(i=0;i<n;i++){
                if(stude[i].roll==k){
                        printf("Found!!\n");
                        printf("Name: %s\n",stude[i].s);
                        printf("Roll No: %d\n",stude[i].roll);
                        printf("Branch: %s\n",stude[i].b);
                        printf("Age: %d\n",stude[i].age);
                        l=1;
                }
        }

        if(l==0){
                printf("Not Found!!\n");
        }

        fclose(f);
}
```

OUTPUT:

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```
Enter the number of students data: 3

Enter the student name: Lohith
Enter the Roll Number: 161
Enter the Branch name: CSE
Enter the age: 19

Enter the student name: singh
Enter the Roll Number: 456
Enter the Branch name: CSE
Enter the age: 19

Enter the student name: Suresh
Enter the Roll Number: 458
Enter the Branch name: CSE
Enter the age: 19

Enter the key value: 161
Found!!
Name: Lohith
Roll No: 161
Branch: CSE
Age: 19

Process returned 0 (0x0)   execution time : 67.666 s
```

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