ASSIGNMENT 3 (DBMS)

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1)

CODE:

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
// student info
struct student
{
    int recno;
    int idd;
    char fnn[20];
    char lnn[20];
    char gn[5];
    char brn[4];
    char city[15];
    int age;
    int jmarks;
} stu[40];
//operator
int dsc(const void *a, const void *b)
{
    struct student *x = (struct student *)a;
    struct student *y = (struct student *)b;
    return -(x->jmarks - y->jmarks);
}
// creating file
void create(int n)
{
    FILE *fptr;
    fptr = fopen("student.txt", "w");
    if (fptr != NULL)
    {
        printf("File created succesfully.\n");
        int j;
        for (j = 0; j < n; j++)
        {
            printf("Enter id: ");
            scanf("%d", &stu[j].idd);
            printf("Enter first name: ");
            scanf("%s", stu[j].fnn);
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            printf("Enter last name: ");
            scanf("%s", stu[j].lnn);
            printf("Enter gender: ");
            scanf("%s", stu[j].gn);
            printf("Enter branch: ");
            scanf("%s", stu[j].brn);
            printf("Enter city: ");
            scanf("%s", stu[j].city);
            printf("Enter age: ");
            scanf("%d", &stu[j].age);
            printf("Enter jee marks: ");
            scanf("%d", &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[0]), dsc);
        for (j = 0; j < n; j++)
        {
            fprintf(fptr, "%02d %d %20s %20s %5s %4s %15s %d %d\n", j + 1,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        memset(stu[j].gn, 0, 5);
        memset(stu[j].brn, 0, 4);
        memset(stu[j].fnn, 0, 20);
        memset(stu[j].lnn, 0, 20);
        memset(stu[j].city, 0, 15);
        fclose(fptr);
    }
    else
        printf("File not found.\n");
}
// counting no of records
int no_of_rec()
{
    FILE *fptr;
    int cl = 0;
    char chr;
    fptr = fopen("student.txt", "r");
    chr = getc(fptr);
    while (chr != EOF)
    {
        if (chr == '\n')
        {
            cl++;
        }
        chr = getc(fptr);
    }
    fclose(fptr);
    return cl;
```

```
}
// display the records
void display()
{
    int n, j, i;
    n = no_of_rec();
    FILE *fptr;
    fptr = fopen("Student.txt", "r");
    if (fptr != NULL)
    {
        printf("Student Details:-- \n");
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", stu[j].recno,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
            memset(stu[j].gn, 0, 5);
            memset(stu[j].brn, 0, 4);
            memset(stu[j].fnn, 0, 20);
            memset(stu[j].lnn, 0, 20);
            memset(stu[j].city, 0, 15);
        }
        fclose(fptr);
    }
    else
    {
        printf("File not found.\n");
    }
}
// add a new record
void add()
{
    int n, j, i;
    n = no_of_rec();
    FILE *fptr;
    fptr = fopen("student.txt", "r");
    if (fptr != NULL)
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        fclose(fptr);
```

```
        printf("File found succesfully.\n");
        printf("Enter id: ");
        scanf("%d", &stu[n].idd);
        printf("Enter first name: ");
        scanf("%s", stu[n].fnn);
        printf("Enter last name: ");
        scanf("%s", stu[n].lnn);
        printf("Enter gender: ");
        scanf("%s", stu[n].gn);
        printf("Enter branch: ");
        scanf("%s", stu[n].brn);
        printf("Enter city: ");
        scanf("%s", stu[n].city);
        printf("Enter age: ");
        scanf("%d", &stu[n].age);
        printf("Enter jee marks: ");
        scanf("%d", &stu[n].jmarks);
        qsort(stu, n + 1, sizeof(stu[n]), dsc);
        fptr = fopen("student.txt", "w");
        for (j = 0; j < n + 1; j++)
        {
            fprintf(fptr, "%02d %d %20s %20s %5s %4s %15s %d %d\n", j + 1,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
        printf("The record has been added.\n");
    }
    else
    {
        printf("File not found.\n");
    }
}
// comparator to sort by first name
int asc(const void *a, const void *b)
{
    struct student *x = (struct student *)a;
    struct student *y = (struct student *)b;
    return strcmp(x->fnn, y->fnn);
}
// display first name
void display_fname()
{
    int n, j;
    n = no_of_rec();
    FILE *fptr;
    fptr = fopen("student.txt", "r");
    if (fptr != NULL)
```

```
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[n]), asc);
        for (j = 0; j < n; j++)
        {
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", stu[j].recno,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
    }
    else
        printf("File not found.\n");
}
// to create index first_name file
void create_indexfname()
{
    int n, j;
    n = no_of_rec();
    FILE *fptr, *fptr1;
    fptr = fopen("student.txt", "r");
    fptr1 = fopen("Index_Fname.txt", "w");
    if (fptr != NULL)
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[0]), asc);
        for (j = 0; j < n; j++)
        {
            fprintf(fptr1, "%02d %s\n", stu[j].recno, stu[j].fnn);
        }
        fclose(fptr);
        fclose(fptr1);
        printf("File Index_Fname.txt has been created and data has been
stored.\n");
    }
    else
        printf("File not found.\n");
}
```

```c
// searching student details
void search()
{
    FILE *fptr, *fptr1;
    fptr = fopen("Index_Fname.txt", "r");
    if (fptr != NULL)
    {
        char str[20];
        printf("Enter the name you want to search: ");
        scanf("%s", str);
        int j = 0, i, found = 0;
        char temp;
        temp = fgetc(fptr);
        int n = no_of_rec();
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %s\n", &stu[j].recno, stu[j].fnn);
            if (strcmp(str, stu[j].fnn) == 0)
            {
                i = stu[j].recno;
                found = 1;
                printf("Record found\n");
                break;
            }
        }
        if (found == 1)
        {
            fptr1 = fopen("student.txt", "r");
            fseek(fptr1, (i - 1) * (sizeof(struct student) + 4), SEEK_CUR);
            fscanf(fptr1, "%d %d %s %s %s %s %s %d %d", &stu[0].recno,
&stu[0].idd, stu[0].fnn, stu[0].lnn, stu[0].gn, stu[0].brn, stu[0].city,
&stu[0].age, &stu[0].jmarks);
            printf("%02d %d %s %s %s %s %s %d %d\n", stu[0].recno, stu[0].idd,
stu[0].fnn, stu[0].lnn, stu[0].gn, stu[0].brn, stu[0].city, stu[0].age,
stu[0].jmarks);
            fclose(fptr);
            fclose(fptr1);
        }
        else
            printf("Record not found\n");
    }
    else
        printf("File not found\n");
}
// comparator to sort based on city
int asc1(const void *a, const void *b)
{
    struct student *x = (struct student *)a;
```

```
    struct student *y = (struct student *)b;
    return strcmp(x->city, y->city);
}
void city()
{
    int n, j;
    n = no_of_rec();
    FILE *fptr;
    fptr = fopen("student.txt", "r");
    if (fptr != NULL)
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[n]), asc1);
        printf("----Using Student file --- \n");
        for (j = 0; j < n; j++)
        {
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", stu[j].recno,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
    }
    else
        printf("File not found.\n");
}
// file to create index_city
void create_indexcity()
{
    int n, j;
    n = no_of_rec();
    FILE *fptr, *fptr1;
    fptr = fopen("student.txt", "r");
    fptr1 = fopen("Index_City.txt", "w");
    if (fptr != NULL)
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[0]), asc1);
        printf("----Using Index file --- \n");
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```
        for (j = 0; j < n; j++)
        {
            fprintf(fptr1, "%02d %d %15s %15s %5s %4s %8s %d %d\n", j + 1,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", j + 1, stu[j].idd,
stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city, stu[j].age,
stu[j].jmarks);
        }
        fclose(fptr);
        fclose(fptr1);
        printf("File Index_City.txt has been created and data has been
stored.\n");
    }
    else
        printf("File not found.\n");
}
int asc2(const void *a, const void *b)
{
    struct student *x = (struct student *)a;
    struct student *y = (struct student *)b;
    return (x->age - y->age);
}
void city_age()
{
    int n, j;
    n = no_of_rec();
    FILE *fptr;
    fptr = fopen("student.txt", "r");
    if (fptr != NULL)
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[n]), asc1);
        printf("----Without using Index File --- \n");
        printf("\nAccording to City: \n");
        for (j = 0; j < n; j++)
        {
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", stu[j].recno,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
        printf("\nAccording to Age: \n");
```

```
        fptr = fopen("student.txt", "r");
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[0]), asc2);
        for (j = 0; j < n; j++)
        {
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", stu[j].recno,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
    }
    else
        printf("File not found.\n");
}
// create a file for index_age
void create_indexage()
{
    int n, j;
    n = no_of_rec();
    FILE *fptr, *fptr1;
    fptr = fopen("student.txt", "r");
    fptr1 = fopen("Index_Age.txt", "w");
    if (fptr != NULL)
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        qsort(stu, n, sizeof(stu[0]), asc2);
        printf("----Using Index file --- \n");
        for (j = 0; j < n; j++)
        {
            fprintf(fptr1, "%02d %d %15s %15s %5s %4s %8s %d %d\n", j + 1,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", j + 1, stu[j].idd,
stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city, stu[j].age,
stu[j].jmarks);
        }
        fclose(fptr);
        fclose(fptr1);
```

```
    }
    else
        printf("File not found.\n");
}
// using index file displaying data
void index_cityage()
{
    FILE *fptr, *fptr1;
    fptr = fopen("Index_City.txt", "r");
    if (fptr != NULL)
    {
        char temp;
        temp = fgetc(fptr);
        int j = 0;
        printf("----Using Index File --- \n");
        printf("\nAccording to City: \n");
        int n = no_of_rec();
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d%d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", stu[j].recno,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
        create_indexage();
        fptr = fopen("Index_Age.txt", "r");
        printf("\nAccording to Age: \n");
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d%d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
            printf("%02d %d %15s %15s %5s %4s %8s %d %d\n", stu[j].recno,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
    }
    else
        printf("File not found.\n");
}
// add new record
void add_update()
{
    int n, n1, j, i;
```

```
    n = no_of_rec();
    FILE *fptr;
    fptr = fopen("student.txt", "r");
    if (fptr != NULL)
    {
        for (j = 0; j < n; j++)
        {
            fscanf(fptr, "%d %d %s %s %s %s %s %d %d", &stu[j].recno,
&stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
&stu[j].age, &stu[j].jmarks);
        }
        fclose(fptr);
        printf("File found succesfully.\n");
        printf("Enter the no. of records to be added: ");
        scanf("%d", &n1);
        for (i = 0; i < n1; i++)
        {
            printf("Enter id: ");
            scanf("%d", &stu[n + i].idd);
            printf("Enter first name: ");
            scanf("%s", stu[n + i].fnn);
            printf("Enter last name: ");
            scanf("%s", stu[n + i].lnn);
            printf("Enter gender: ");
            scanf("%s", stu[n + i].gn);
            printf("Enter branch: ");
            scanf("%s", stu[n + i].brn);
            printf("Enter city: ");
            scanf("%s", stu[n + i].city);
            printf("Enter age: ");
            scanf("%d", &stu[n + i].age);
            printf("Enter jee marks: ");
            scanf("%d", &stu[n + i].jmarks);
        }
        qsort(stu, n + n1, sizeof(stu[0]), dsc);
        fptr = fopen("student.txt", "w");
        for (j = 0; j < n + n1; j++)
        {
            fprintf(fptr, "%02d %d %20s %20s %5s %4s %15s %d %d\n", j + 1,
stu[j].idd, stu[j].fnn, stu[j].lnn, stu[j].gn, stu[j].brn, stu[j].city,
stu[j].age, stu[j].jmarks);
        }
        fclose(fptr);
        printf("The records have been added.\n");
        create_indexfname();
    }
    else
    {
```

```
        printf("File not found.\n");
    }
}

int main()
{
    clock_t t;
    double time_taken;
    int ch;
    char choice;
    do
    {
        // lists
        printf("\n");
        printf("1.Create.\n");
        printf("2.Display records.\n");
        printf("3.Add a record in the sequential file of students.\n");
        printf("4.Display list of students as per their ascending order of
FNAME.\n");
        printf("5.Create fname index file and store data\n");
        printf("6.Search for the student's FNAME and diaplay.\n");
        printf("7.Execution time to display records city wise.\n");
        printf("8.Display all the student records ascending order of city and
age.\n");
        printf("9.Add and Update Index File.\n");
        printf("0.Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &ch);
        int n, k;
        switch (ch)
        {
        case 1:
            printf("Enter the number of records: ");
            scanf("%d", &n);
            create(n);
            break;
        case 2:
            display();
            break;
        case 3:
            add();
            break;
        case 4:
            display_fname();
            break;
        case 5:
            create_indexfname();
            break;
```

```
        case 6:
            create_indexfname();
            search();
            break;
        case 7:
            do
            {
                //comparision
                printf("\na.Execution time involving Student file.\n");
                printf("b.Execution time involving Index City file.\n");
                printf("c.Exit\n");
                printf("Enter your choice: ");
                fflush(stdin);
                scanf("%c", &choice);
                switch (choice)
                {
                case 'a':
                    t = clock();
                    city();
                    t = clock() - t;
                    time_taken = ((double)t) / CLOCKS_PER_SEC;
                    printf("Execution Time:%f secs \n", time_taken);
                    break;
                case 'b':
                    t = clock();
                    create_indexcity();
                    t = clock() - t;
                    time_taken = ((double)t) / CLOCKS_PER_SEC;
                    printf("Execution Time:%f secs \n", time_taken);
                    break;
                default:
                    break;
                }
            } while (choice != 'c');
            break;
        case 8:
            do
            {
                printf("\na.Display without involving index file.\n");
                printf("b.Display involving Index City file.\n");
                printf("c.Exit\n");
                printf("Enter your choice: ");
                fflush(stdin);
                scanf("%c", &choice);
                switch (choice)
                {
                case 'a':
                    city_age();
```

```
                    break;
                case 'b':
                    create_indexcity();
                    index_cityage();
                    break;
                default:
                    break;
                }
            } while (choice != 'c');
            break;
        case 9:
            add_update();
            break;
        default:
            break;
        }
    } while (ch != 0);
    return 0;

}
```

```
1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
6.Search for the student's FNAME and diaplay.
7.Execution time to display records city wise.
8.Display all the student records ascending order of city and age.
9.Add and Update Index File.
0.Exit
Enter your choice: 2
Student Details:--
01 107          SUYOUG           POKAL   BOY  CSE    MUMBI 19 300
02 115        CHANDANA             SRI  GIRL  CSE     HYDE 20 299
03 105         SHIVART            KAND   BOY  CSE    MARTA 19 299
04 103          AMULYA               G  GIRL  CSE   GUNTUR 19 291
05 122        NARAYANA        PARAYANA   BOY  CSE PRICHAITU 50 291
06 104         HARSHIL           NAKKA   BOY  CSE    AHMED 19 281
07 108         DHAIRYA             OZA   BOY  CSE    ANDHK 20 277
08 125           NANDA         KISHORE   BOY  CSE    WARAN 20 234
09 110         KRISHNA          PANDEY   BOY  CSE  CHITRAM 20 226
10 124          ANJALI           TELID  GIRL  CSE   KANADA 19 226
11 123         SHISHIR           TELID   BOY  CSE    TELID 19 225
12 114           VIKAS            PANS   BOY  CSE    HONDI 33 222
13 101           Manoj            Suru   Boy  CSE   CHIPUR 18 222
14 106           PARIL           SANGI   BOY  CSE    AHEMD 19 222
15 121            AJAY           PICHI   BOY  CSE    TELID 19 211
16 126           VIVEK         TANGUDU   BOY  CSE      PKD 18 196
17 116           ANKIT            RAJU   BOY  CSE    VENKI 19 145
18 128           ROHAN           VERMA   BOY  CSE    TELID 19 111
19 102          AAYUSH           DUNBA   BOY  CSE      GOA 18 109
20 109          ADITYA            RAJU   BOY   EC    VONYR 19 109

1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
```

Student.txt

1.cpp | student.txt

student.txt

```
01 107          SUYOUG          POKAL   BOY  CSE        MUMBI 19 300
02 115        CHANDANA            SRI  GIRL  CSE         HYDE 20 299
03 105         SHIVART           KAND   BOY  CSE        MARTA 19 299
04 103           AMULYA              G  GIRL  CSE       GUNTUR 19 291
05 122         NARAYANA       PARAYANA   BOY  CSE    PRICHAITU 50 291
06 104          HARSHIL          NAKKA   BOY  CSE        AHMED 19 281
07 108          DHAIRYA            OZA   BOY  CSE        ANDHK 20 277
08 125            NANDA        KISHORE   BOY  CSE        WARAN 20 234
09 110          KRISHNA         PANDEY   BOY  CSE      CHITRAM 20 226
10 124           ANJALI          TELID  GIRL  CSE      KANADA 19 226
11 123          SHISHIR          TELID   BOY  CSE       TELID 19 225
12 114            VIKAS           PANS   BOY  CSE       HONDI 33 222
13 101            Manoj           Suru   Boy  CSE      CHIPUR 18 222
14 106            PARIL          SANGI   BOY  CSE       AHEMD 19 222
15 121             AJAY          PICHI   BOY  CSE       TELID 19 211
16 126            VIVEK        TANGUDU   BOY  CSE         PKD 18 196
17 116            ANKIT           RAJU   BOY  CSE       VENKI 19 145
18 128            ROHAN          VERMA   BOY  CSE       TELID 19 111
19 102           AAYUSH          DUNBA   BOY  CSE         GOA 18 109
20 109           ADITYA           RAJU   BOY   EC       VONYR 19 109
21
```

1. Add a record in the sequential file of students.

```
1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
6.Search for the student's FNAME and diaplay.
7.Execution time to display records city wise.
8.Display all the student records ascending order of city and age.
9.Add and Update Index File.
0.Exit
Enter your choice: 3
File found succesfully.
Enter id: 135
Enter first name: shivam
Enter last name: mishra
Enter gender: BOY
Enter branch: CSE
Enter city: DAMAN
Enter age: 22
Enter jee marks: 233
The record has been added.
```

STUDENT.TXT

student.txt

```
01 107          SUYOUG          POKAL   BOY  CSE        MUMBI 19 300
02 105         SHIVART           KAND   BOY  CSE        MARTA 19 299
03 115       CHANDANA             SRI  GIRL  CSE         HYDE 20 299
04 122       NARAYANA       PARAYANA   BOY  CSE    PRICHAITU 50 291
05 103         AMULYA               G  GIRL  CSE       GUNTUR 19 291
06 104        HARSHIL           NAKKA   BOY  CSE        AHMED 19 281
07 108        DHAIRYA             OZA   BOY  CSE        ANDHK 20 277
08 125          NANDA         KISHORE   BOY  CSE        WARAN 20 234
09 135          shivam          mishra   BOY  CSE        DAMAN 22 233
10 110        KRISHNA          PANDEY   BOY  CSE      CHITRAM 20 226
11 124         ANJALI           TELID  GIRL  CSE      KANADA 19 226
12 123        SHISHIR           TELID   BOY  CSE       TELID 19 225
13 106          PARIL           SANGI   BOY  CSE        AHEMD 19 222
14 114          VIKAS            PANS   BOY  CSE        HONDI 33 222
15 101          Manoj            Suru   Boy  CSE      CHIPUR 18 222
16 121           AJAY           PICHI   BOY  CSE       TELID 19 211
17 126          VIVEK         TANGUDU   BOY  CSE         PKD 18 196
18 116          ANKIT            RAJU   BOY  CSE        VENKI 19 145
19 128          ROHAN           VERMA   BOY  CSE       TELID 19 111
20 109         ADITYA            RAJU   BOY   EC       VONYR 19 109
21 102         AAYUSH          DUNBA    BOY  CSE          GOA 18 109
```

2. Display list of students as per their ascending order of FNAME.

```
1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
6.Search for the student's FNAME and diaplay.
7.Execution time to display records city wise.
8.Display all the student records ascending order of city and age.
9.Add and Update Index File.
0.Exit
Enter your choice: 4
21 102          AAYUSH          DUNBA    BOY  CSE          GOA 18 109
20 109         ADITYA            RAJU   BOY   EC       VONYR 19 109
16 121           AJAY           PICHI   BOY  CSE       TELID 19 211
05 103         AMULYA               G  GIRL  CSE      GUNTUR 19 291
11 124         ANJALI          TELID   GIRL  CSE      KANADA 19 226
18 116          ANKIT            RAJU   BOY  CSE       VENKI 19 145
03 115       CHANDANA             SRI  GIRL  CSE        HYDE 20 299
07 108        DHAIRYA             OZA   BOY  CSE        ANDHK 20 277
06 104        HARSHIL           NAKKA   BOY  CSE        AHMED 19 281
10 110        KRISHNA          PANDEY   BOY  CSE      CHITRAM 20 226
15 101          Manoj            Suru   Boy  CSE      CHIPUR 18 222
08 125          NANDA         KISHORE   BOY  CSE        WARAN 20 234
04 122       NARAYANA       PARAYANA    BOY  CSE    PRICHAITU 50 291
13 106          PARIL           SANGI   BOY  CSE        AHEMD 19 222
19 128          ROHAN           VERMA   BOY  CSE       TELID 19 111
12 123        SHISHIR           TELID   BOY  CSE       TELID 19 225
02 105         SHIVART           KAND   BOY  CSE        MARTA 19 299
01 107          SUYOUG          POKAL    BOY  CSE        MUMBI 19 300
14 114          VIKAS            PANS   BOY  CSE        HONDI 33 222
17 126          VIVEK         TANGUDU   BOY  CSE         PKD 18 196
09 135          shivam          mishra   BOY  CSE        DAMAN 22 233

1.Create.
2.Display records.
```

Displaying list of students as per their ascending order of FNAME.

3. Create an index file on FNAME with file name: “Index_Fname.txt” consists of sorted Fname and the Record number in the student file.

```
1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
6.Search for the student's FNAME and diaplay.
7.Execution time to display records city wise.
8.Display all the student records ascending order of city and age.
9.Add and Update Index File.
0.Exit
Enter your choice: 5
File Index_Fname.txt has been created and data has been stored.
```

Index_Fname.txt

```
1.cpp | Index_Fname.txt | student.txt
Index_Fname.txt
 1   21 AAYUSH
 2   20 ADITYA
 3   16 AJAY
 4   05 AMULYA
 5   11 ANJALI
 6   18 ANKIT
 7   03 CHANDANA
 8   07 DHAIRYA
 9   06 HARSHIL
10   10 KRISHNA
11   15 Manoj
12   08 NANDA
13   04 NARAYANA
14   13 PARIL
15   19 ROHAN
16   12 SHISHIR
17   02 SHIVART
18   01 SUYOUG
19   14 VIKAS
20   17 VIVEK
21   09 shivam
22
```

4. Search for the student’s FNAME using INDEX FILE (“Index_Fname.txt”) and display the record from the student file directly by setting the file pointer to the position= record number * size of student structure.

```
0.Exit
Enter your choice: 6
File Index_Fname.txt has been created and data has been stored.
Enter the name you want to search: Manoj
Record found
15 101 Manoj Suru Boy CSE CHIPUR 18 222

1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
6.Search for the student's FNAME and diaplay.
7.Execution time to display records city wise.
8.Display all the student records ascending order of city and age.
9.Add and Update Index File.
0.Exit
Enter your choice:
```

5. a. Show the execution time to display city wise the records of students from the sequential file of student.

```
1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
6.Search for the student's FNAME and diaplay.
7.Execution time to display records city wise.
8.Display all the student records ascending order of city and age.
9.Add and Update Index File.
0.Exit
Enter your choice: 7

a.Execution time involving Student file.
b.Execution time involving Index City file.
c.Exit
Enter your choice: a
----Using Student file----
13 106          PARIL          SANGI   BOY  CSE    AHEMD 19 222
06 104        HARSHIL          NAKKA   BOY  CSE    AHMED 19 281
07 108        DHAIRYA            OZA   BOY  CSE    ANDHK 20 277
15 101          Manoj           Suru   Boy  CSE   CHIPUR 18 222
10 110        KRISHNA         PANDEY   BOY  CSE  CHITRAM 20 226
09 135         shivam         mishra   BOY  CSE    DAMAN 22 233
21 102         AAYUSH          DUNBA   BOY  CSE      GOA 18 109
05 103         AMULYA              G  GIRL  CSE   GUNTUR 19 291
14 114          VIKAS           PANS   BOY  CSE    HONDI 33 222
03 115       CHANDANA            SRI  GIRL  CSE     HYDE 20 299
11 124          ANJALI          TELID  GIRL  CSE   KANADA 19 226
02 105        SHIVART           KAND   BOY  CSE    MARTA 19 299
01 107         SUYOUG          POKAL   BOY  CSE    MUMBI 19 300
17 126          VIVEK        TANGUDU   BOY  CSE      PKD 18 196
04 122       NARAYANA       PARAYANA   BOY  CSE PRICHAITU 50 291
12 123        SHISHIR          TELID   BOY  CSE    TELID 19 225
19 128          ROHAN          VERMA   BOY  CSE    TELID 19 111
16 121           AJAY          PICHI   BOY  CSE    TELID 19 211
18 116          ANKIT           RAJU   BOY  CSE    VENKI 19 145
20 109         ADITYA           RAJU   BOY   EC    VONYR 19 109
08 125          NANDA        KISHORE   BOY  CSE    WARAN 20 234
Execution Time:0.001000 secs

a.Execution time involving Student file.
b.Execution time involving Index City file.
c.Exit
Enter your choice:
```

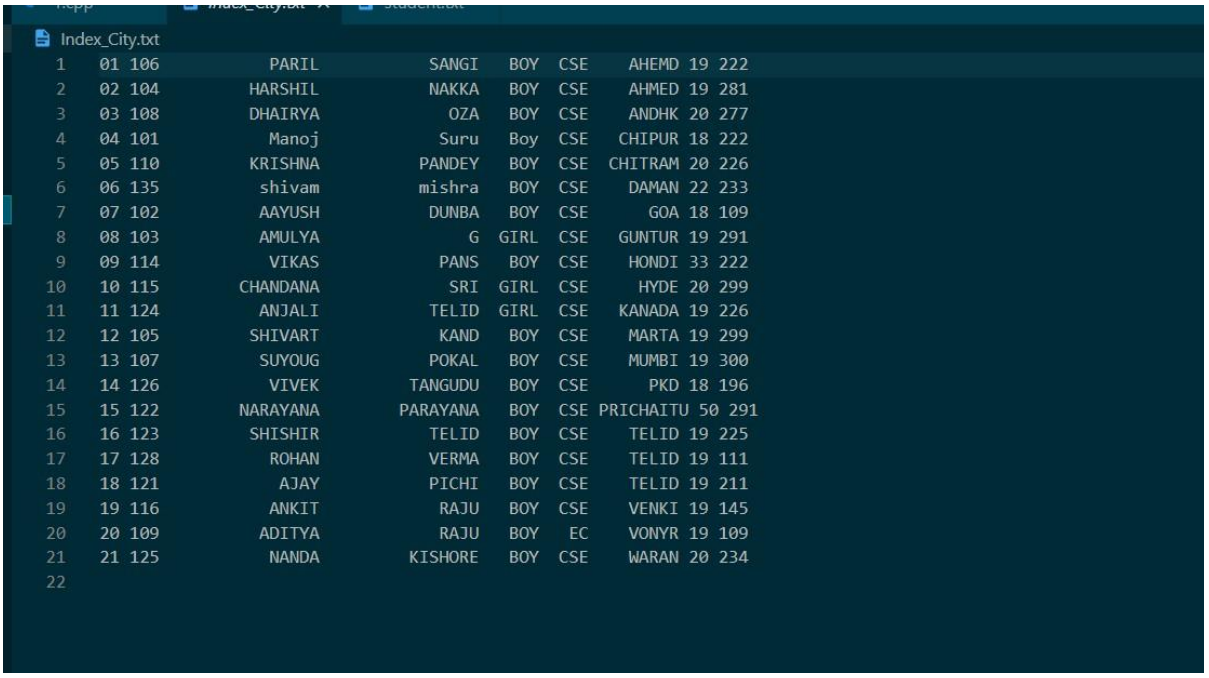
b. Show the execution time to display city wise the records of students by creating the student's City using INDEX FILE ("Index_City.txt").

```
1.Create.
2.Display records.
3.Add a record in the sequential file of students.
4.Display list of students as per their ascending order of FNAME.
5.Create fname index file and store data
6.Search for the student's FNAME and diaplay.
7.Execution time to display records city wise.
8.Display all the student records ascending order of city and age.
9.Add and Update Index File.
0.Exit
Enter your choice: 7

a.Execution time involving Student file.
b.Execution time involving Index City file.
c.Exit
Enter your choice: b
----Using Index file----
01 106          PARIL          SANGI   BOY  CSE    AHEMD 19 222
02 104        HARSHIL          NAKKA   BOY  CSE    AHMED 19 281
03 108        DHAIRYA            OZA   BOY  CSE    ANDHK 20 277
04 101          Manoj           Suru   Boy  CSE   CHIPUR 18 222
05 110        KRISHNA         PANDEY   BOY  CSE  CHITRAM 20 226
06 135         shivam         mishra   BOY  CSE    DAMAN 22 233
07 102         AAYUSH          DUNBA   BOY  CSE      GOA 18 109
08 103         AMULYA              G  GIRL  CSE   GUNTUR 19 291
09 114          VIKAS           PANS   BOY  CSE    HONDI 33 222
10 115       CHANDANA            SRI  GIRL  CSE     HYDE 20 299
11 124         ANJALI          TELID  GIRL  CSE   KANADA 19 226
12 105        SHIVART           KAND   BOY  CSE    MARTA 19 299
13 107         SUYOUG          POKAL   BOY  CSE    MUMBI 19 300
14 126          VIVEK        TANGUDU   BOY  CSE      PKD 18 196
15 122       NARAYANA       PARAYANA   BOY  CSE PRICHAITU 50 291
16 123        SHISHIR          TELID   BOY  CSE    TELID 19 225
17 128          ROHAN          VERMA   BOY  CSE    TELID 19 111
18 121           AJAY          PICHI   BOY  CSE    TELID 19 211
19 116          ANKIT           RAJU   BOY  CSE    VENKI 19 145
20 109         ADITYA           RAJU   BOY   EC    VONYR 19 109
21 125          NANDA        KISHORE   BOY  CSE    WARAN 20 234
File Index_City.txt has been created and data has been stored.
Execution Time:0.005000 secs

a.Execution time involving Student file.
b.Execution time involving Index City file.
c.Exit
Enter your choice:
```

Index_City.txt



Index_City.txt

```
01 106          PARIL          SANGI   BOY  CSE    AHEMD 19 222
02 104        HARSHIL          NAKKA   BOY  CSE    AHMED 19 281
03 108        DHAIRYA            OZA   BOY  CSE    ANDHK 20 277
04 101          Manoj           Suru   Boy  CSE   CHIPUR 18 222
05 110        KRISHNA         PANDEY   BOY  CSE  CHITRAM 20 226
06 135          shivam         mishra   BOY  CSE    DAMAN 22 233
07 102          AAYUSH          DUNBA   BOY  CSE      GOA 18 109
08 103          AMULYA              G  GIRL  CSE   GUNTUR 19 291
09 114           VIKAS           PANS   BOY  CSE    HONDI 33 222
10 115        CHANDANA            SRI  GIRL  CSE     HYDE 20 299
11 124          ANJALI          TELID  GIRL  CSE   KANADA 19 226
12 105         SHIVART           KAND   BOY  CSE    MARTA 19 299
13 107          SUYOUG          POKAL   BOY  CSE    MUMBI 19 300
14 126           VIVEK        TANGUDU   BOY  CSE      PKD 18 196
15 122        NARAYANA       PARAYANA   BOY  CSE PRICHAITU 50 291
16 123         SHISHIR          TELID   BOY  CSE    TELID 19 225
17 128           ROHAN          VERMA   BOY  CSE    TELID 19 111
18 121            AJAY          PICHI   BOY  CSE    TELID 19 211
19 116           ANKIT           RAJU   BOY  CSE    VENKI 19 145
20 109          ADITYA           RAJU   BOY   EC    VONYR 19 109
21 125           NANDA        KISHORE   BOY  CSE    WARAN 20 234
22
```

6. List all the student records of the file in ascending order of city and age using index and without index file of CITY and AGE.

   Without using index file

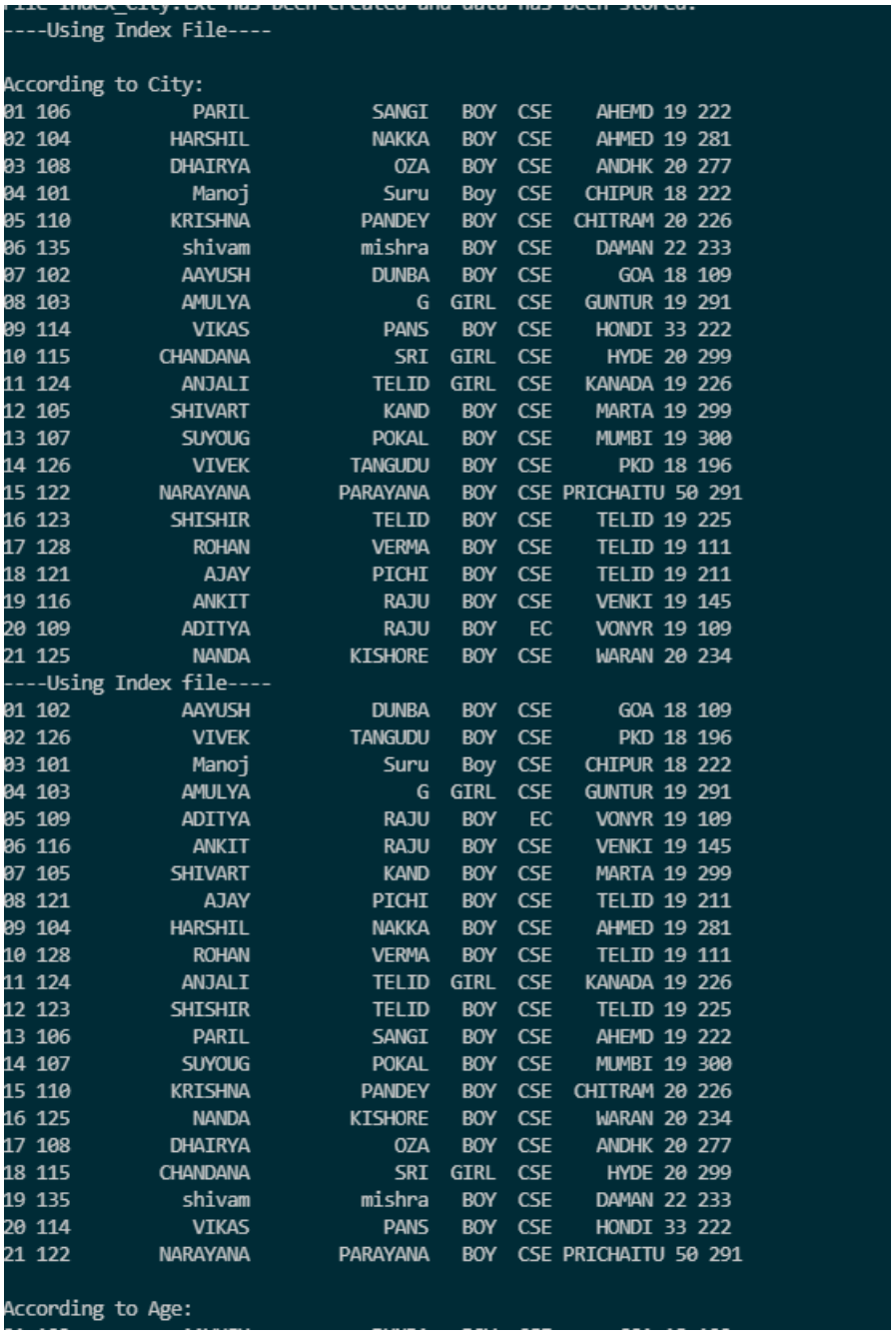
```
9.Add and Update Index File.
0.Exit
Enter your choice: 8

a.Display without involving index file.
15 101          Manoj           Suru   Boy  CSE   CHIPUR 18 222
10 110        KRISHNA         PANDEY   BOY  CSE  CHITRAM 20 226
09 135         shivam         mishra   BOY  CSE    DAMAN 22 233
21 102          AAYUSH          DUNBA   BOY  CSE      GOA 18 109
05 103          AMULYA              G  GIRL  CSE   GUNTUR 19 291
14 114           VIKAS           PANS   BOY  CSE    HONDI 33 222
03 115        CHANDANA            SRI  GIRL  CSE     HYDE 20 299
11 124          ANJALI          TELID  GIRL  CSE   KANADA 19 226
02 105         SHIVART           KAND   BOY  CSE    MARTA 19 299
01 107          SUYOUG          POKAL   BOY  CSE    MUMBI 19 300
17 126           VIVEK        TANGUDU   BOY  CSE      PKD 18 196
04 122       NARAYANA       PARAYANA   BOY  CSE PRICHAITU 50 291
12 123         SHISHIR           TELID   BOY  CSE    TELID 19 225
19 128           ROHAN           VERMA   BOY  CSE    TELID 19 111
16 121            AJAY          PICHI   BOY  CSE    TELID 19 211
18 116           ANKIT           RAJU   BOY  CSE    VENKI 19 145
20 109          ADITYA           RAJU   BOY   EC    VONYR 19 109
08 125           NANDA        KISHORE   BOY  CSE    WARAN 20 234

According to Age:
21 102          AAYUSH          DUNBA   BOY  CSE      GOA 18 109
17 126           VIVEK        TANGUDU   BOY  CSE      PKD 18 196
15 101          Manoj           Suru   Boy  CSE   CHIPUR 18 222
05 103          AMULYA              G  GIRL  CSE   GUNTUR 19 291
20 109          ADITYA           RAJU   BOY   EC    VONYR 19 109
18 116           ANKIT           RAJU   BOY  CSE    VENKI 19 145
02 105         SHIVART           KAND   BOY  CSE    MARTA 19 299
16 121            AJAY          PICHI   BOY  CSE    TELID 19 211
06 104         HARSHIL          NAKKA   BOY  CSE    AHMED 19 281
19 128           ROHAN           VERMA   BOY  CSE    TELID 19 111
11 124          ANJALI          TELID  GIRL  CSE   KANADA 19 226
12 123         SHISHIR           TELID   BOY  CSE    TELID 19 225
13 106           PARIL           SANGI   BOY  CSE    AHEMD 19 222
01 107          SUYOUG          POKAL   BOY  CSE    MUMBI 19 300
10 110        KRISHNA         PANDEY   BOY  CSE  CHITRAM 20 226
08 125           NANDA        KISHORE   BOY  CSE    WARAN 20 234
07 108         DHAIRYA             OZA   BOY  CSE    ANDHK 20 277
03 115        CHANDANA            SRI  GIRL  CSE     HYDE 20 299
09 135         shivam         mishra   BOY  CSE    DAMAN 22 233
14 114           VIKAS           PANS   BOY  CSE    HONDI 33 222
04 122       NARAYANA       PARAYANA   BOY  CSE PRICHAITU 50 291

a.Display without involving index file.
b.Display involving Index City file.
c.Exit
Enter your choice:
```

Using Index File:

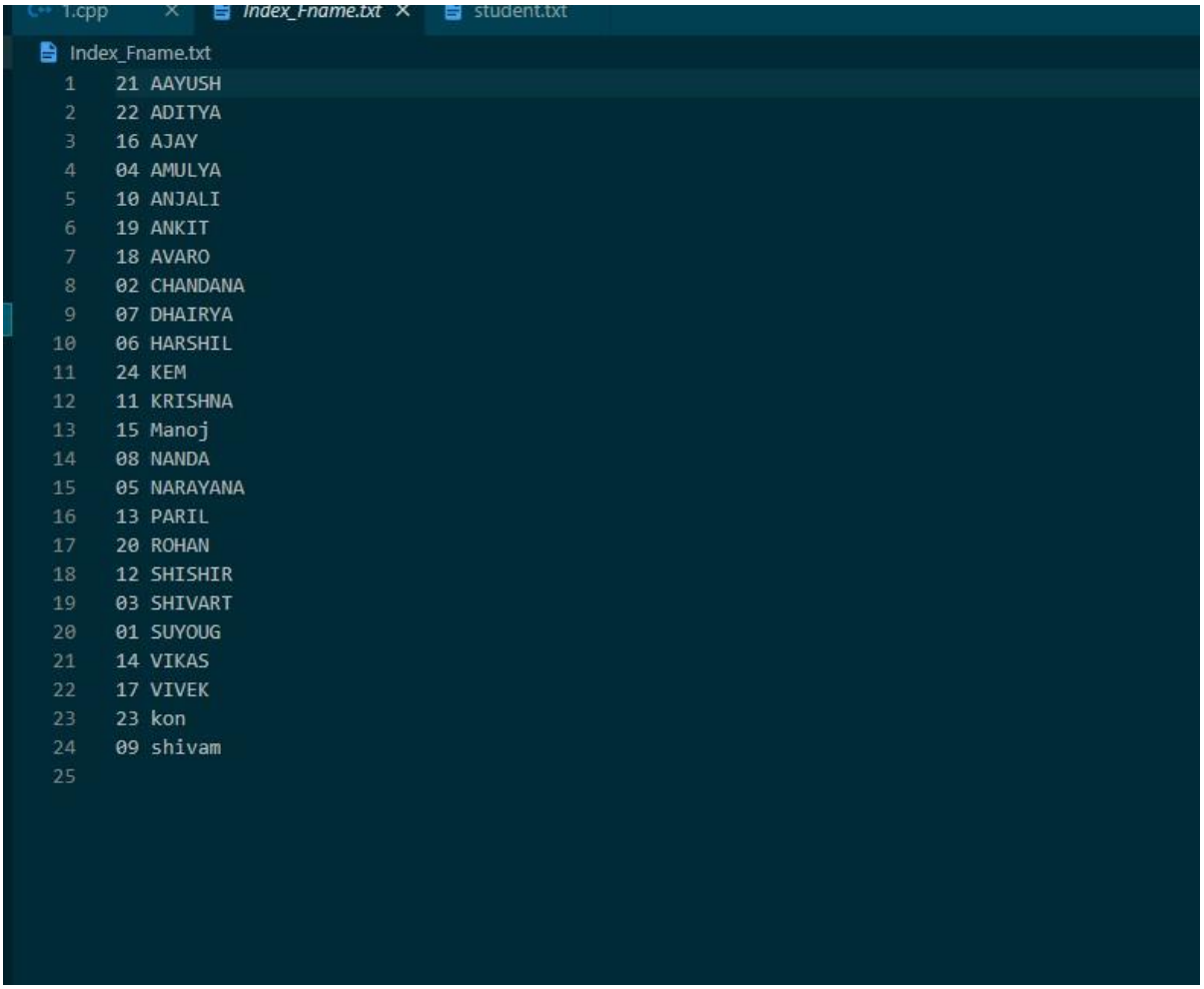


7. Insert some more records in student file and update the index file of fname to manage the ordered information.
   AFTER ADDING 3 RECORDS

```
0.Exit
Enter your choice: 2
Student Details:--
01 107          SUYOUG           POKAL   BOY  CSE    MUMBI 19 300
02 115        CHANDANA             SRI  GIRL  CSE     HYDE 20 299
03 105         SHIVART            KAND   BOY  CSE    MARTA 19 299
04 103           AMULYA               G  GIRL  CSE   GUNTUR 19 291
05 122         NARAYANA        PARAYANA   BOY  CSE PRICHAITU 50 291
06 104         HARSHIL            NAKKA   BOY  CSE    AHMED 19 281
07 108         DHAIRYA              OZA   BOY  CSE    ANDHK 20 277
08 125           NANDA          KISHORE   BOY  CSE    WARAN 20 234
09 135          shivam           mishra   BOY  CSE    DAMAN 22 233
10 124          ANJALI             TELID  GIRL  CSE   KANADA 19 226
11 110         KRISHNA           PANDEY   BOY  CSE  CHITRAM 20 226
12 123         SHISHIR             TELID  BOY  CSE    TELID 19 225
13 106           PARIL            SANGI   BOY  CSE    AHEMD 19 222
14 114           VIKAS             PANS   BOY  CSE    HONDI 33 222
15 101           Manoj             Suru   Boy  CSE   CHIPUR 18 222
16 121            AJAY            PICHI   BOY  CSE    TELID 19 211
17 126           VIVEK          TANGUDU   BOY  CSE      PKD 18 196
18 131           AVARO             NKEM  GIRL  CSE      EMO 22 167
19 116           ANKIT             RAJU   BOY  CSE    VENKI 19 145
20 128           ROHAN            VERMA   BOY  CSE    TELID 19 111
21 102          AAYUSH            DUNBA   BOY  CSE      GOA 18 109
22 109          ADITYA             RAJU   BOY   EC    VONYR 19 109
23 130             kon           idonno  GIRL  CSE    TUBOL 19 56
24 132             KEM              CHO   BOY  CSE      THU 13 1

1.Create.
```

INDEX_FNAME.TXT


1.cpp
Index_Fname.txt
student.txt
Index_Fname.txt
21 AAYUSH
22 ADITYA
16 AJAY
04 AMULYA
10 ANJALI
19 ANKIT
18 AVARO
02 CHANDANA
07 DHAIRYA
06 HARSHIL
24 KEM
11 KRISHNA
15 Manoj
08 NANDA
05 NARAYANA
13 PARIL
20 ROHAN
12 SHISHIR
03 SHIVART
01 SUYOUG
14 VIKAS
17 VIVEK
23 kon
09 shivam