FAIZAN CHOUDHARY

20BCS021

PROGRAMMING LAB

29th November 2021

CODE: (code pasted in this format for readability)

```c
#include <stdio.h>
#include <stdlib.h>

struct Student
{
    char name[50];
    int roll;
    float sub[3];
    float per;
};

int check_roll (char *f_name, int r)
{
    struct Student t;
    int f=1;
    FILE *fp;
    fp = fopen (f_name, "r");
    if (fp == NULL)
    {
        printf("\nCannot open file!\n");
        return -1;
    }
    while (fread (&t, sizeof(struct Student), 1, fp))
    {
        if (t.roll == r)
        {
            printf("\nRoll Number already exists! Try again...\n");
            f=0;
        }
    }
    return f;
}

void insert_data (char *f_name)
{
    struct Student s;
    printf("\nEnter the name of the student: ");
    getchar();
    scanf("%[^\n]", s.name);
    B:
```

```
    printf("\nEnter the roll number of the student: ");
    scanf("%d", &s.roll);
    int k = check_roll(f_name,s.roll);
    if (!k)
        goto B;
    printf("\nEnter the marks of the student in three subjects: ");
    for (int i=0; i<3; i++)
        scanf("%f", &s.sub[i]);
    s.per = (s.sub[0] + s.sub[1] + s.sub[2]) / 3.0;

    FILE *fp;
    fp = fopen (f_name, "a");
    if (fp == NULL)
    {
        printf("\nCannot open file!\n");
        return;
    }
    fseek (fp, 0, SEEK_END);
    fwrite (&s, sizeof(struct Student), 1, fp);
    if(fwrite != 0)
        printf("\nInserted row successfully!\n");
    else
        printf("Error writing file!\n");
    fclose(fp);
}

void delete_data (char *f_name, int roll)
{
    FILE *fp, *fp_tmp;
    struct Student record;
    // flag for checking if record present or not
    int f=0;
    fp = fopen (f_name, "r");
    if (fp == NULL)
    {
        printf("\nCannot open file!\n");
        return;
    }
    // temp file to copy the rest of the records
    fp_tmp = fopen ("temp.txt", "w");
    if (fp_tmp == NULL)
    {
        printf("\nCannot open temporary file!\n");
        return;
    }
    while (fread (&record, sizeof(struct Student), 1, fp))
    {
        if (record.roll == roll)
        {
            printf("\nRecord with the given roll number found, and deleted
successfully!\n");
            f=1;
        }
        else
```

```
            fwrite (&record, sizeof(struct Student), 1, fp_tmp);
    }
    if (!f)
    {
        printf("\nNo record found with the given roll number!\n");
        return;
    }

    fclose(fp);
    fclose(fp_tmp);

    remove(f_name);
    rename("temp.txt", f_name);
}

void update_data (char *f_name, int roll)
{
    FILE *fp, *fp_tmp;
    struct Student temp, record;

    printf("\nEnter new data:\n");
    printf("Name: ");
    getchar();
    scanf("%[^\n]", temp.name);
    printf("\nRoll number: ");
    scanf("%d", &temp.roll);
    printf("\nMarks in three subjects: ");
    for (int i=0; i<3; i++)
        scanf("%f", &temp.sub[i]);
    temp.per = (temp.sub[0] + temp.sub[1] + temp.sub[2]) / 3.0;

    // flag for checking if record present or not
    int f=0;
    fp = fopen (f_name, "r");
    if (fp == NULL)
    {
        printf("\nCannot open file!\n");
        return;
    }
    // temp file to copy the rest of the records
    fp_tmp = fopen ("temp.txt", "w");
    if (fp_tmp == NULL)
    {
        printf("\nCannot open temporary file!\n");
        return;
    }
    while (fread (&record, sizeof(struct Student), 1, fp))
    {
        if (record.roll == roll)
        {
            fwrite (&temp, sizeof(struct Student), 1, fp_tmp);
            printf("\nSuccessfully updated record!\n");
            f=1;
        }
```

```
        else
            fwrite (&record, sizeof(struct Student), 1, fp_tmp);
    }

    if(!f)
    {
        printf("\nNo record found with the given roll number!\n");
        return;
    }

    fclose(fp);
    fclose(fp_tmp);

    remove(f_name);
    rename("temp.txt", f_name);
}

void display (char *f_name)
{
    FILE *fp = fopen (f_name, "r");
    if (fp == NULL)
    {
        printf("\nCannot open file!\n");
        return;
    }
    struct Student disp;
    printf("\n----------Student Details----------\n");
    printf("\nName\t\t\tRoll no\t\tSub 1\t\tSub 2\t\tSub 3\t\tPercentage");
    while (fread (&disp, sizeof(struct Student), 1, fp))
    {
        printf("\n%s\t%d\t\t%.2f\t\t%.2f\t\t%.2f\t\t%.2f %%", disp.name, disp.roll,
disp.sub[0], disp.sub[1], disp.sub[2], disp.per);
    }
    printf("\n\n---------------------------------\n");
    fclose(fp);
}

int main()
{
    printf("\nFAIZAN CHOUDHARY\n20BCS021\n\n");

    int n,ch,r;
    char *f = "student.txt";
    while (1)
    {
        A:
        printf("\nMENU\n1. Insert row.\n2. Delete row.\n3. Update row.\n4. Display.\n5.
Exit.\n");
        scanf("%d", &ch);
        switch (ch)
        {
            case 1: insert_data(f);
                    break;
```

```c
            case 2: printf("\nEnter the roll number whose record is to be deleted: ");
                    scanf("%d", &r);
                    delete_data(f,r);
                    break;

            case 3: printf("\nEnter the roll number whose record is to be updated: ");
                    scanf("%d", &r);
                    update_data(f,r);
                    break;

            case 4: display(f);
                    break;
            case 5: exit(0);
            default: printf("\nWrong choice! Enter again...\n");
                     goto A;
                     break;
        }
    }
    return 0;
}
```

OUTPUT:

```
FAIZAN CHOUDHARY
20BCS021


MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
1

Enter the name of the student: Faizan Choudhary

Enter the roll number of the student: 12

Enter the marks of the student in three subjects: 95
69
98

Inserted row successfully!
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
1

Enter the name of the student: Tirth B. Dalwadi

Enter the roll number of the student: 13

Enter the marks of the student in three subjects: 97
96
96

Inserted row successfully!
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
1

Enter the name of the student: M. Abbas Ansari

Enter the roll number of the student: 14

Enter the marks of the student in three subjects: 99
96
98

Inserted row successfully!
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
4

----------Student Details----------

Name                Roll no     Sub 1       Sub 2       Sub 3       Percentage
Faizan Choudhary    12          95.00       69.00       98.00       87.33 %
Tirth B. Dalwadi    13          97.00       96.00       96.00       96.33 %
M. Abbas Ansari     14          99.00       96.00       98.00       97.67 %

--------------------------------
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
3

Enter the roll number whose record is to be updated: 12

Enter new data:
Name: Faizan Choudhary

Roll number: 12

Marks in three subjects: 95
96
95

Successfully updated record!
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
4

----------Student Details----------

Name                Roll no     Sub 1       Sub 2       Sub 3       Percentage
Faizan Choudhary    12          95.00       96.00       95.00       95.33 %
Tirth B. Dalwadi    13          97.00       96.00       96.00       96.33 %
M. Abbas Ansari     14          99.00       96.00       98.00       97.67 %

---------------------------------
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
2

Enter the roll number whose record is to be deleted: 13

Record with the given roll number found, and deleted successfully!
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
4

----------Student Details----------

Name                Roll no     Sub 1       Sub 2       Sub 3       Percentage
Faizan Choudhary    12          95.00       96.00       95.00       95.33 %
M. Abbas Ansari     14          99.00       96.00       98.00       97.67 %

---------------------------------
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
1

Enter the name of the student: Abbas Haider

Enter the roll number of the student: 14

Roll Number already exists! Try again...

Enter the roll number of the student: 15

Enter the marks of the student in three subjects: 93
95
95

Inserted row successfully!
```

```
MENU
1. Insert row.
2. Delete row.
3. Update row.
4. Display.
5. Exit.
4

----------Student Details----------

Name                Roll no     Sub 1       Sub 2       Sub 3       Percentage
Faizan Choudhary    12          95.00       96.00       95.00       95.33 %
M. Abbas Ansari     14          99.00       96.00       98.00       97.67 %
Abbas Haider        15          93.00       95.00       95.00       94.33 %

---------------------------------
```