DS Assignment 4

Create an array to store the student information (ex. Student code, Name, Address, Mobile, Total mark, CGPA)
Perform following operations:
(1) insert
(2) delete
(3) search
(4) traverse
(5) update the element at particular position given by the user.

Source Code:

```c
#include<stdio.h>

#include<string.h>

#include<stdlib.h>

struct student{

    char name[100];

    char address[500];

    int studentCode;

    char mobile[40];

    float marks;
```

```c
    float cgpa;

};


struct student student_array[100];

int count=0;

int main(){

    printf("Enter operation you want to conduct:\n");

    printf("1. Insertion\n2. Deletion\n3. Search\n4.
Traverse\n5. Update\n6. Exit\n");

    while(1){

        int ch;

        printf("\nEnter your choice: ");

        scanf("%d",&ch);


        //For Insertion/Append

        if(ch==1)

        {
```

```c
            int position,p;
    printf("1. Append\n2. Insert at a specific position\n");
    printf("\nSelect your above preference: ");
    scanf("%d", &p);
    switch(p)
    {
        case 1:

            printf("Enter the details to be inserted. \n");
            printf("Enter the name: ");
        scanf("%s", &student_array[count].name);


        printf("Enter the Student code: ");
        scanf("%d", &student_array[count].studentCode);

        if(student_array[count].studentCode<1 || student_array[count].studentCode>100)
```

```c
        {
            printf("Please enter a valid Student
Code\n");
            break;
        }


    printf("Enter the Marks: ");
    scanf("%f", &student_array[count].marks);
    if(student_array[count].marks<0 ||
student_array[count].marks>100)
    {
        printf("Enter the correct marks\n");
        break;
    }

    printf("Enter Address: ");
    scanf("%s", &student_array[count].address);
```

```c
        printf("Enter Mobile Number: ");

        scanf("%s", &student_array[count].mobile);

        if(strlen(student_array[count].mobile)!=10)

        {

            printf("Enter the correct Mobile
Number\n");

            break;

        }

        printf("Enter CGPA: ");

        scanf("%f", &student_array[count].cgpa);

        if(student_array[count].cgpa<0 ||
student_array[count].cgpa>10)

        {

            printf("Enter the correct CGPA\n");

            break;

        }


        printf("Your information is appended\n");
```

```c
        count++;
            break;
    case 2:
            printf("Enter the index number where data is
to be inserted: ");
            scanf("%d", &position);
            if(position<0 || position>count)
            {
                printf("Enter the correct Position\n");
                break;
            }else{
                int i;
                for(i=count+1;i>position;i--){
                        student_array[i]=student_array[i-1];
                }
                printf("Enter the details to be inserted:
\n");
            printf("Enter the name: ");
```

```c
scanf("%s", &student_array[position].name);


printf("Enter the Student code: ");

scanf("%d",
&student_array[position].studentCode);

if(student_array[position].studentCode<1 ||
student_array[position].studentCode>100)

    {

        printf("Please enter a valid Student
Code\n");

        break;

        }


printf("Enter the Marks: ");

scanf("%f", &student_array[position].marks);

if(student_array[position].marks<0 ||
student_array[position].marks>100)

    {
```

```c
        printf("Enter the correct marks\n");

        break;

        }


    printf("Enter Address: ");

    scanf("%s", &student_array[position].address);


    printf("Enter Mobile Number: ");

    scanf("%s", &student_array[position].mobile);

    if(strlen(student_array[position].mobile)!=10)

    {

        printf("Enter the correct Mobile
Number\n");

        break;

        }


    printf("Enter CGPA: ");
```

```c
        scanf("%f", &student_array[position].cgpa);

        if(student_array[position].cgpa<0 ||
student_array[position].cgpa>10)

        {

            printf("Enter the correct CGPA\n");

            break;

            }



        printf("Your information is inserted.\n");

        count++;

            }

            break;

    }

}

        //For Deletion

        else if(ch==2)

        {
```

```c
    int i,rollcall;

    printf("Enter the student code which is to be deleted: ");

    scanf("%d",&rollcall);


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

        if(rollcall==student_array[i].studentCode){

        break;

        }

        else

        {

            printf("Enter a valid roll number.\n");

            exit(0);

        }

    }

    for(;i<count;i++){

            student_array[i]=student_array[i+1];
```

```c
        }
        printf("The information has been deleted.\n");

        count--;

    }



        //For Search

        else if(ch==3)

        {

        int rollcall,i;

    printf("Enter the student code which is to be searched: ");

    scanf("%d",&rollcall);


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

        if(rollcall==student_array[i].studentCode){
```

```c
            break;

        }

        else

        {

        printf("Enter a valid student code.\n");

        exit(0);

        }

    printf("The name is: %s\n",student_array[i].name);

        printf("The student code is: %d\n",student_array[i].studentCode);

        printf("The marks are: %.2f\n",student_array[i].marks);

        printf("The address is: %s\n",student_array[i].address);

        printf("The cgpa is: %.2f\n",student_array[i].cgpa);

        printf("The mobile no. is: %s\n",student_array[i].mobile);
```

```c
		}

			}


		//For Traverse

		else if(ch==4)

		{

			int index,i;

		printf("Enter the index till where you want to traverse: ");

			scanf("%d",&index);

	if(index<0||index>count){

		printf("Enter a valid index.\n");

	}else{

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

	printf("The Name is: %s\n",student_array[i].name);
```

```c
        printf("The Student code is: %d\n\n",student_array[i].studentCode);

        printf("The Marks are: %.2f\n",student_array[i].marks);

        printf("The Address is: %s\n",student_array[i].address);

        printf("The CGPA is: %.2f\n",student_array[i].cgpa);

        printf("The Mobile number is: %s\n",student_array[i].mobile);

    }

    }

        }


    // For Updation

        else if(ch==5)

        {

        int rollcall,i;
```

```c
    printf("Enter the Student Code which is to be updated: ");

    scanf("%d", &rollcall);

    for(i=0;i<count; i++)

    {

        if(rollcall==student_array[i].studentCode)

        {

            break;

        }

        else

        {

        printf("Please enter a valid Student Code\n");

            exit(0);   //Exit if the entry is wrong

        }

    }

        printf("\nEnter the information you want to update-\n");
```

```c
        printf("1.Address\n2.Student Code\n3.Name\n4.Marks\n5.CGPA\n6.Mobile No.\n7.Done!\n");
        while(1){
            int c;
            printf("\nEnter the choice for updation: ");
            scanf("%d",&c);



            if(c==1){
                printf("Enter new address: ");
        scanf("%s",&student_array[i].address);
            }
            else if(c==2){
                printf("Enter new student code: ");
        scanf("%d",&student_array[i].studentCode);
```

```c
                if(student_array[i].studentCode<1 ||
student_array[i].studentCode>100) {

                    printf("Please enter a valid Student
Code\n");

                    break;

            }

            }

            else if(c==3){

                printf("Enter name: ");

    scanf("%s",&student_array[i].name);

            }

            else if(c==4){

                printf("Enter new marks: ");

    scanf("%f",&student_array[i].marks);

                if(student_array[i].marks<0 ||
student_array[i].marks>100)

    {
```

```c
                printf("Enter the correct marks\n");

                break;

                }

                    }

                else if(c==5)

                {

                        printf("Enter new CGPA: ");

                        scanf("%f",&student_array[i].cgpa);

                        if(student_array[i].cgpa<0 ||
student_array[i].cgpa>10)

        {

        printf("Enter the correct CGPA\n");

        break;

        }

        }

                else if(c==6)

                {
```

```c
                    printf("Enter new mobile number: ");

        scanf("%s",&student_array[i].mobile);

                    if(strlen(student_array[i].mobile)!=10)

                    {

                    printf("Enter the correct Mobile Number\n");

                        break;

                        }

            }

                else if(c==7){

                        break;

                }

                else{

                        printf("Enter a valid choice.\n");

                }

            }
```

```c
        printf("The student detail has been updated successfully.\n");

    }



        //Exit

        else if(ch==6)

        {

        exit(0);

        }



        //Wrong entry

        else

        {

        printf("Please enter a choice whithin the range\n");
```

```
            }

        }

    return 0;

    }
```

Output:

```
Enter the number of operation you want to conduct:
1. Insert
2. Delete
3. Search
4. Traverse
5. Update
6. Exit


Enter your choice: 1
1) Append
2) Insert at a specific position

Select your above preference: 1
Enter the details to be inserted.
Enter the name: Himani
Enter the Student code: 56
Enter the Marks: 89
Enter Address: 31-Block,Railroad,Indore
Enter Mobile Number: 1234567890
Enter CGPA: 8.9
Your information is appended

Enter your choice: 1
1) Append
2) Insert at a specific position

Select your above preference: 1
Enter the details to be inserted.
Enter the name: Riya
Enter the Student code: 34
Enter the Marks: 67
Enter Address: 32-Block,Railroad,Indore
Enter Mobile Number: 1234567892
Enter CGPA: 7.9
Your information is appended

Enter your choice: 1
1) Append
2) Insert at a specific position

Select your above preference: 1
Enter the details to be inserted.
Enter the name: Priya
```

```
Enter the name: Priya
Enter the Student code: 78
Enter the Marks: 56
Enter Address: 40-Block,Raninagar,Indore
Enter Mobile Number: 1234567894
Enter CGPA: 7.9
Your information is appended

Enter your choice: 1
1) Append
2) Insert at a specific position

Select your above preference: 2
Enter the index number where data is to be inserted: 1
Enter the details to be inserted:
Enter the name: Kruti
Enter the Student code: 59
Enter the Marks: 20
Enter Address: 55-Block,Raninagar,Indore
Enter Mobile Number: 1234567895
Enter CGPA: 6.9
Your information is inserted.

Enter your choice: 2
Enter the student code which is to be deleted: 59
The information has been deleted.

Enter your choice: 3
Enter the student code which is to be searched: 56
The marks are: 89.00
The address is: 31-Block,Railroad,Indore
The cgpa is: 8.90
The mobile no. is: 1234567890
The name is: Himani
The student code is: 56

Enter your choice: 4
Enter the index till where you want to traverse: 1
The marks are: 89.00
The address is: 31-Block,Railroad,Indore
The cgpa is: 8.90
The mobile number is: 1234567890
The name is: Himani
The student code is: 56
```

```
The marks are: 67.00
The address is: 32-Block,Railroad,Indore
The cgpa is: 7.90
The mobile number is: 1234567892
The name is: Riya
The student code is: 34


Enter your choice: 5
Enter the Student Code which is to be updated: 56

Enter the information you want to update-
1.Address
2.Student code
3.Name
4.Marks
5.CGPA
6.Mobile No.
7.All updated!

Enter the choice for updation: 1
Enter new address: 67-Raninagar,Delhi

Enter the choice for updation: 2
Enter new student code: 78

Enter the choice for updation: 3
Enter name: Prachi

Enter the choice for updation: 4
Enter new marks: 89

Enter the choice for updation: 5
Enter new CGPA: 7.8

Enter the choice for updation: 6
Enter new mobile number: 1234567897

Enter the choice for updation: 7
The student detail has been updated successfully.

Enter your choice: 6

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

At 6. the program exits