

Problem No: 13

Problem Name: Create structure that stores a student's name, id, cgpa and sort the structure using bubble sort algorithm and output the final structure.

Input

Enter the number of students: 2

Enter details for student 1:

Name: rahat

ID: 1045

CGPA: 3.58

Enter details for student 2:

Name: ratul

ID: 1055

CGPA: 3.44

Output

Sorted student details based on CGPA:

Name	ID	CGPA
rahata	1045	3.58
ratul	1055	3.44

Source Code

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

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

```
struct Student {
```

```
    char name[50];
```

```
    int id;
```

```
    float cgpa;
```

```
};
```

```

void bubbleSort(struct Student arr[], int n) {
    int i, j;
    struct Student temp;

    for (i = 0; i < n - 1; i++) {
        for (j = 0; j < n - i - 1; j++) {

            if (arr[j].cgpa < arr[j + 1].cgpa) {
                temp = arr[j];
                arr[j] = arr[j + 1];
                arr[j + 1] = temp;
            }
        }
    }
}

int main() {
    int n;
    printf("Enter the number of students: ");
    scanf("%d", &n);
    struct Student students[n];
    for (int i = 0; i < n; i++) {
        printf("Enter details for student %d:\n", i + 1);
        printf("Name: ");
        scanf("%s", students[i].name);
        printf("ID: ");
        scanf("%d", &students[i].id);
        printf("CGPA: ");
    }
}

```

```

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

    bubbleSort(students, n);
    printf("\nSorted student details based on CGPA:\n");
    printf("%-10s %-10s %-10s\n", "Name", "ID", "CGPA");
    for (int i = 0; i < n; i++) {
        printf("%-10s %-10d %-10.2f\n", students[i].name, students[i].id, students[i].cgpa);
    }

    return 0;
}

```

Result and Analysis:

This program first constructs a structure of students. Then bubble sort the details in the end. Meanwhile in main function the structure is made sorted by calling the subfunction and finally shows output in sorted way with respect to CGPA .