Assignment - 21 A Job Ready Bootcamp in C++, DSA and IOT MySirG

Structure

1. Define a structure Employee with member variables id, name, salary

Program -

```
struct Employee
{
  int id;
  char name[30];
  float salary;
};
```

---

2. Write a function to take input employee data from the user. [Refer structure from question 1]

Program -

```
#include<stdio.h>

void inputData();

struct Employee
{
  int id;
  char name[30];
  float salary;
};

int main()
{
  inputData();
  return 0;
}

void inputData()
{
  struct Employee emp;
  printf("Enter employee id : ");
  scanf("%d",&emp.id);
  fflush(stdin);
  printf("Enter name of the employee : ");
  fgets(emp.name,30,stdin);
  printf("Enter the salary of the employee : ");
  scanf("%f",&emp.salary);
}
```

Output -
Enter employee id : 12
Enter name of the employee : prajwal
Enter the salary of the employee : 250000

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3. Write a function to display employee data. [Refer structure from question 1]

Program -

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

void inputData();
void displayData();

struct Employee
{
  int id;
  char name[30];
  float salary;
};

int main()
{
  inputData();
  displayData();
  return 0;
}

void inputData()
{
  struct Employee emp;
  printf("Enter employee id : ");
  scanf("%d",&emp.id);
  fflush(stdin);
  printf("Enter name of the employee : ");
  fgets(emp.name,30,stdin);
  emp.name[strlen(emp.name)-1] = '\0';
  printf("Enter the salary of the employee : ");
```

```
  scanf("%f",&emp.salary);
}

void displayData()
{
  struct Employee emp;
  printf("\nName of the employee : %s",emp.name);
  printf("\nEmployee id : %d",emp.id);
  printf("\nSalary of the employee : %f",emp.salary);
}
```

Output -
Enter employee id : 12
Enter name of the employee : prajwal
Enter the salary of the employee : 250000

Name of the employee : prajwal
Employee id : 12
Salary of the employee : 250000.000000

---

4. Write a function to find the highest salary employee from a given array of 10 employees. [Refer structure from question 1]

Program -

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

struct Employee
{
  int id;
  char name[30];
  float salary;
};

void compareSalary(struct Employee[], int);

int main()
{
  struct Employee emp[10] = {
```

```
      {121, "Raj Sharma", 34000}, {122, "Bhupendra Mishra", 20000},
{123, "Tejasvi Shah", 45000},
      {124, "Viraj Yadav", 30000}, {125, "Abhilash Yadav", 18000},
{126, "Rohan Singh", 23000},
      {127, "Ashutosh Maurya", 60000}, {128, "Vicky Kumar", 80000},
{129, "Bhumeet Singh", 70000},
      {130, "Vishal Yadav", 39000}
  };

  printf("Employee with highest salary : ");
  compareSalary(emp, 10);
  return 0;
}

void compareSalary(struct Employee emp_array[] , int size)
{
   int sal = -1, i;
   char e_name[30];
   for(i = 0 ; i < 10 ; i++)
   {
      if(emp_array[i].salary > sal)
      {
        sal = emp_array[i].salary;
        strcpy(e_name,emp_array[i].name);
      }
   }
   printf("%s",e_name);
}
```

Output -
Employee with highest salary : Vicky Kumar

---

5. Write a function to sort employees according to their salaries [refer structure from question 1]

Program -

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

```c
struct Employee
{
  int id;
  char name[30];
  float salary;
};

void sortEmployees(struct Employee[], int);

int main()
{
  int i;
  struct Employee emp[10] = {
      {121, "Raj Sharma", 34000}, {122, "Bhupendra Mishra", 20000},
{123, "Tejasvi Shah", 45000},
      {124, "Viraj Yadav", 30000}, {125, "Abhilash Yadav", 18000},
{126, "Rohan Singh", 23000},
      {127, "Ashutosh Maurya", 60000}, {128, "Vicky Kumar", 80000},
{129, "Bhumeet Singh", 70000},
      {130, "Vishal Yadav", 39000}
  };

  printf("List of employees sorted according to their salaries:-\n");
  sortEmployees(emp, 10);

  for(i = 0 ; i < 10 ; i++)
  {
    printf("%d. Name : %s (Id - %d , salary - Rs
%f)\n",i+1,emp[i].name,emp[i].id,emp[i].salary);
  }
  return 0;
}

void sortEmployees(struct Employee emp_array[] , int size)
{
   int i , j;
```

```
    struct Employee var;
    for(i = 0 ; i < 10 ; i++)
    {
        for(j = i+1 ; j < 10 ; j++)
        {
            if(emp_array[i].salary > emp_array[j].salary)
            {
                var = emp_array[i];
                emp_array[i] = emp_array[j];
                emp_array[j] = var;
            }
        }
    }
}
```

Output -
List of employees sorted according to their salaries:-
1. Name : Abhilash Yadav (Id - 125 , salary - Rs 18000.000000)
2. Name : Bhupendra Mishra (Id - 122 , salary - Rs 20000.000000)
3. Name : Rohan Singh (Id - 126 , salary - Rs 23000.000000)
4. Name : Viraj Yadav (Id - 124 , salary - Rs 30000.000000)
5. Name : Raj Sharma (Id - 121 , salary - Rs 34000.000000)
6. Name : Vishal Yadav (Id - 130 , salary - Rs 39000.000000)
7. Name : Tejasvi Shah (Id - 123 , salary - Rs 45000.000000)
8. Name : Ashutosh Maurya (Id - 127 , salary - Rs 60000.000000)
9. Name : Bhumeet Singh (Id - 129 , salary - Rs 70000.000000)
10. Name : Vicky Kumar (Id - 128 , salary - Rs 80000.000000)

---

6. Write a function to sort employees according to their names [refer structure from question 1]

Program -

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

struct Employee
{
  int id;
  char name[30];
  float salary;
```

```c
};

void SortNameWise(struct Employee[], int);

int main()
{
  int i;
  struct Employee emp[10] = {
      {121, "Raj Sharma", 34000}, {122, "Bhupendra Mishra", 20000},
{123, "Tejasvi Shah", 45000},
      {124, "Viraj Yadav", 30000}, {125, "Abhilash Yadav", 18000},
{126, "Rohan Singh", 23000},
      {127, "Ashutosh Maurya", 60000}, {128, "Vicky Kumar", 80000},
{129, "Bhumeet Singh", 70000},
      {130, "Vishal Yadav", 39000}
  };

  printf("List of employees sorted according to their names:-\n");

  SortNameWise(emp, 10);

  for(i = 0 ; i < 10 ; i++)
  {
     printf("%d. %s (Id - %d , salary - Rs
%f)\n",i+1,emp[i].name,emp[i].id,emp[i].salary);
  }
  return 0;
}

void SortNameWise(struct Employee emp_array[] , int size)
{
   int i , j;
   struct Employee var;
   for(i = 0 ; i < 10 ; i++)
   {
      for(j = i+1 ; j < 10 ; j++)
      {
```

```
            if(strcmp(emp_array[i].name,emp_array[j].name) > 0)
            {
                var = emp_array[i];
                emp_array[i] = emp_array[j];
                emp_array[j] = var;
            }
        }
    }
}
```

Output -
List of employees sorted according to their names:-
1. Abhilash Yadav (Id - 125 , salary - Rs 18000.000000)
2. Ashutosh Maurya (Id - 127 , salary - Rs 60000.000000)
3. Bhumeet Singh (Id - 129 , salary - Rs 70000.000000)
4. Bhupendra Mishra (Id - 122 , salary - Rs 20000.000000)
5. Raj Sharma (Id - 121 , salary - Rs 34000.000000)
6. Rohan Singh (Id - 126 , salary - Rs 23000.000000)
7. Tejasvi Shah (Id - 123 , salary - Rs 45000.000000)
8. Vicky Kumar (Id - 128 , salary - Rs 80000.000000)
9. Viraj Yadav (Id - 124 , salary - Rs 30000.000000)
10. Vishal Yadav (Id - 130 , salary - Rs 39000.000000)

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7. Write a program to calculate the difference between two time periods.

Program -

```
#include<stdio.h>

struct Time
{
    int hour;
    int minutes;
    int seconds;
};

int main()
{
    struct Time start, stop, diff;

    printf("Enter starting time\n");
    printf("Enter hour, minutes and seconds: ");
    scanf("%d%d%d",&start.hour,&start.minutes,&start.seconds);

    printf("Enter stop time\n");
    printf("Enter hour, minutes and seconds: ");
    scanf("%d%d%d",&stop.hour,&stop.minutes,&stop.seconds);
```

```
    if(start.seconds > stop.seconds)
    {
        stop.seconds += 60;
        stop.minutes--;
    }

    if(start.minutes > stop.minutes)
    {
        stop.minutes += 60;
        stop.hour--;
    }

    diff.hour = stop.hour - start.hour;
    diff.minutes = stop.minutes - start.minutes;
    diff.seconds = stop.seconds - start.seconds;

    printf("Difference: %d : %d :
%d",diff.hour,diff.minutes,diff.hour);

    return 0;
}
```

Output -
Enter starting time
Enter hour, minutes and seconds: 12 45 30
Enter stop time
Enter hour, minutes and seconds: 15 24 20
Difference: 2 : 38 : 2

---

8. Write a program to store information of 10 students and display them using structure.

Program -

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

struct student
{
   int rollNum;
   char name[30];
};

int main()
{
```

```c
    struct student stud[10];
    int i;

    for(i = 0; i < 10; i++)
    {
        printf("Enter student number - %d info.\n",i+1);
        printf("Enter roll number and name : ");
        scanf("%d",&stud[i].rollNum);
        fflush(stdin);
        fgets(stud[i].name,30,stdin);
        stud[i].name[strlen(stud[i].name)-1] = '\0';
    }

    printf("\nDetails of 10 students:-\n");
    for(i = 0 ; i < 10 ; i++)
    {
        printf("Roll number %d - %s\n",stud[i].rollNum,stud[i].name);
    }
    return 0;
}
```

Output -

Enter student number - 1 info.
Enter roll number and name : 1 Akhilesh Singh
Enter student number - 2 info.
Enter roll number and name : 2 Bablu Singh
Enter student number - 3 info.
Enter roll number and name : 3 Chitransh Yadav
Enter student number - 4 info.
Enter roll number and name : 4 Dilip Jaiswal
Enter student number - 5 info.
Enter roll number and name : 5 Emran Khan
Enter student number - 6 info.
Enter roll number and name : 6 Faizul Shaikh
Enter student number - 7 info.
Enter roll number and name : 7 Gaurav Tripathi
Enter student number - 8 info.
Enter roll number and name : 8 Harikesh Gupta
Enter student number - 9 info.
Enter roll number and name : 9 Ishan Yadav
Enter student number - 10 info.
Enter roll number and name : 10 Jai Tripathi
Details of 10 students:-

Roll number 1 - Akhilesh Singh
Roll number 2 - Bablu Singh
Roll number 3 - Chitransh Yadav
Roll number 4 - Dilip Jaiswal
Roll number 5 - Emran Khan
Roll number 6 - Faizul Shaikh
Roll number 7 - Gaurav Tripathi
Roll number 8 - Harikesh Gupta
Roll number 9 - Ishan Yadav
Roll number 10 - Jai Tripathi

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9. Write a program to store information of n students and display them using structure

Program -

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

struct student
{
   int rollNum;
   char name[30];
};

int main()
{
    int i, n;

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

    struct student stud[n];

    for(i = 0; i < n; i++)
    {
        printf("Enter student number - %d info.\n",i+1);
        printf("Enter roll number and name : ");
        scanf("%d",&stud[i].rollNum);
        fflush(stdin);
        fgets(stud[i].name,30,stdin);
        stud[i].name[strlen(stud[i].name)-1] = '\0';
```

```
    }

    printf("\nDetails of %d students:-\n",n);
    for(i = 0 ; i < n ; i++)
    {
        printf("Roll number %d - %s\n",stud[i].rollNum,stud[i].name);
    }
    return 0;
}
```

Output -
Enter number of students : 3
Enter student number - 1 info.
Enter roll number and name : 8 Prateek Singh
Enter student number - 2 info.
Enter roll number and name : 5 Abhinav Srivastava
Enter student number - 3 info.
Enter roll number and name : 19 Shubham Rai

Details of 3 students:-
Roll number 8 - Prateek Singh
Roll number 5 - Abhinav Srivastava
Roll number 19 - Shubham Rai

---

10. Write a program to enter the marks of 5 students in Chemistry, Mathematics and Physics (each out of 100) using a structure named Marks having elements roll no., name, chem_marks, maths_marks and phy_marks and then display the percentage of each student.

Program -

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

struct Marks
{
  int rollNum;
  char name[30];
  float chem_marks, maths_marks , phy_marks;
};



int main()
```

```c
{
  struct Marks var[5];
  float total = 0.0 , percentage;
  int i;

  printf("Enter marks of 5 students (each out of 100):-\n");
  for(i = 0; i < 5; i++)
  {
     printf("\nEnter student - %d details\n",i+1);
     printf("Enter roll number: ");
     scanf("%d",&var[i].rollNum);
     fflush(stdin);
     printf("Enter name of the student: ");
     fgets(var[i].name,30,stdin);
     var[i].name[strlen(var[i].name)-1] = '\0';
     printf("Enter marks in chemistry: ");
     scanf("%f",&var[i].chem_marks);
     printf("Enter marks in maths: ");
     scanf("%f",&var[i].maths_marks);
     printf("Enter marks in physics: ");
     scanf("%f",&var[i].phy_marks);
  }

  printf("\nStudents' Percentage:-\n");
  for(i = 0; i < 5; i++)
  {
      total = (var[i].chem_marks + var[i].maths_marks +
var[i].phy_marks);
      percentage = ((total/300.0) * 100);
      printf("%s , (Roll num - %d ,Percentage :
%f)\n",var[i].name,var[i].rollNum,percentage);
  }
  return 0;
}
```