STRUCTURE
Assignment:-21

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

Ans:-

```
struct Employee
{
   int id;
   char name[20];
   float salary;
};
```

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

Ans:-

```
struct Employee
{
   int id;
   char name[20];
   float salary;
};
struct Employee input()
{
   struct Employee a;
   printf("Enter employee id,name and salary:-\n");
   scanf("%d",&a.id);
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   scanf("%f",&a.salary);
   return a;
}
```

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

Ans:-

```
#include<stdio.h>
#include<string.h>
struct Employee
{
   int id;
   char name[20];
   float salary;
};
struct Employee input()
{
   struct Employee a;
   printf("Enter employee id,name and salary:-\n");
   scanf("%d",&a.id);
```

```
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   scanf("%f",&a.salary);
   return a;
}
void display(struct Employee e)
{
   printf("%d %s %f",e.id,e.name,e.salary);
}
int main()
{
   struct Employee b;
   b=input();
   display(b);
   return 0;
}
```

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

Ans:-

```
#include<stdio.h>
#include<string.h>
struct Employee
{
   int id;
   char name[20];
   float salary;
};
struct Employee input()
{
   struct Employee a;
   printf("Enter employee id,name and salary:-\n");
   scanf("%d",&a.id);
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   scanf("%f",&a.salary);
   return a;
}
void display(struct Employee e)
{
   printf("%d %s %f",e.id,e.name,e.salary);
}
int main()
{
   struct Employee b[10];
   int i;
```

```
   for(i=0;i<10;i++)
      b[i]=input();
   findhighestsalary(b,10);
   return 0;
}
void findhighestsalary(struct Employee a[],int size)
{
   float c;
   int i;
   c=a[0].salary;
   for(i=0;i<size;i++)
   {
      if(c<a[i].salary)
         c=a[i].salary;
   }
   for(i=0;i<10;i++)
      if(c==a[i].salary)
        printf("Highest salary Employee is:- id=%d name=%s
Salary=%f",a[i].id,a[i].name,a[i].salary);
}
```

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

Ans:-

```
#include<stdio.h>
#include<string.h>
struct Employee
{
   int id;
   char name[20];
   float salary;
};
struct Employee input()
{
   struct Employee a;
   printf("Enter employee id,name and salary:-\n");
   scanf("%d",&a.id);
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   scanf("%f",&a.salary);
   return a;
}
void display(struct Employee e)
{
   printf("%d %s %f",e.id,e.name,e.salary);
}
int main()
```

```
{
   struct Employee b[10];
   int i;
   for(i=0;i<10;i++)
      b[i]=input();
   sortBysalaries(b,10);
   for(i=0;i<10;i++)
   {
      display(b[i]);
      printf("\n");
   }
   return 0;
}
void sortBysalaries(struct Employee a[],int size)
{
   int i,r;
   struct Employee temp;
   for(r=1;r<size;r++)
      for(i=0;i<size-r;i++)
         if(a[i].salary>a[i+1].salary)
         {
            temp=a[i];
            a[i]=a[i+1];
            a[i+1]=temp;
         }
}
```

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

Ans:-

```
#include<stdio.h>
#include<string.h>
struct Employee
{
   int id;
   char name[20];
   float salary;
};
struct Employee input()
{
   struct Employee a;
   printf("Enter employee id,name and salary:-\n");
   scanf("%d",&a.id);
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   scanf("%f",&a.salary);
   return a;
```

```
}
void display(struct Employee e)
{
   printf("%d %s %f",e.id,e.name,e.salary);
}
int main()
{
   struct Employee b[10];
   int i;
   for(i=0;i<10;i++)
      b[i]=input();
   sortByname(b,10);
   for(i=0;i<10;i++)
   {
      display(b[i]);
      printf("\n");
   }
   return 0;
}
void sortByname(struct Employee a[],int size)
{
   int i,r,x;
   struct Employee temp;
   for(r=1;r<size;r++)
      for(i=0;i<size-r;i++)
      {
         x=strcmp(a[i].name,a[i+1].name);
         if(x==1)
         {
            temp=a[i];
            a[i]=a[i+1];
            a[i+1]=temp;
         }
      }
}
```

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

Ans:-

```
#include<stdio.h>
int main()
{
   struct time
   {
      int hour;
      int minute;
      float second;
   }t1,t2,t3;
   printf("Enter hour,minute and second:-\n");
```

```
   scanf("%d%d%f",&t1.hour,&t1.minute,&t1.second);
   scanf("%d%d%f",&t2.hour,&t2.minute,&t2.second);
   if(t1.hour>t2.hour || t1.minute>t2.minute || t1.second>t2.second)
   {
      t3.hour=t1.hour-t2.hour;
      t3.minute=t1.minute-t2.minute;
      t3.second=t1.second-t2.second;
   }
   else
   {
      t3.hour=t2.hour-t1.hour;
      t3.minute=t2.minute-t1.minute;
      t3.second=t2.second-t1.second;
   }
   printf("Difference between two time period %dHour %dMinute
%fSecond",t3.hour,t3.minute,t3.second);
   return 0;
}
```

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

Ans:-

```
#include<stdio.h>
#include<string.h>
struct student
{
   int rollno;
   char name[20];
   char section;
};
struct student input()
{
   struct student a;
   printf("Enter Student Rollno,name and section:-\n");
   scanf("%d",&a.rollno);
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   fflush(stdin);
   scanf("%c",&a.section);
   return a;
}
void display(struct student s)
{
   printf("%d %s %c",s.rollno,s.name,s.section);
}
int main()
{
   struct student b[10];
```

```
   int i;
   for(i=0;i<10;i++)
      b[i]=input();
   for(i=0;i<10;i++)
   {
      display(b[i]);
      printf("\n");
   }
   return 0;
}
```

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

Ans:-

```
#include<stdio.h>
#include<string.h>
struct student
{
   int rollno;
   char name[20];
   char section;
};
struct student input()
{
   struct student a;
   printf("Enter Student Rollno,name and section:-\n");
   scanf("%d",&a.rollno);
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   fflush(stdin);
   scanf("%c",&a.section);
   return a;
}
void display(struct student s)
{
   printf("%d %s %c",s.rollno,s.name,s.section);
}
int main()
{
   int n,i;
   printf("Enter the number of student:--");
   scanf("%d",&n);
   struct student b[n];
   for(i=0;i<n;i++)
      b[i]=input();
   for(i=0;i<n;i++)
   {
      display(b[i]);
```

```
      printf("\n");
   }
   return 0;
}
```

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.

Ans:-

```
#include<stdio.h>
#include<string.h>
struct student
{
   int rollno;
   char name[20];
   int marks[3];
   float percentage;
};
struct student input()
{
   struct student a;
   int i;
   printf("Enter Student Rollno,name and  Marks of Chemistry, Mathematics and Physics
(each out of 100):-\n");
   scanf("%d",&a.rollno);
   fflush(stdin);
   fgets(a.name,20,stdin);
   a.name[strlen(a.name)-1]='\0';
   for(i=0;i<3;i++)
      scanf("%d",&a.marks[i]);
   return a;
}
void display(struct student s)
{
   printf("%d %s %.2f%%",s.rollno,s.name,s.percentage);
}
int main()
{
   int i,j;
   float x;
   struct student b[5];
   for(i=0;i<5;i++)
      b[i]=input();
   for(i=0;i<5;i++)
   {
      x=0;
      for(j=0;j<3;j++)
```

```
        {
            x=x+b[i].marks[j];
        }
        b[i].percentage=x/3.0;
    }
    for(i=0;i<5;i++)
    {
        display(b[i]);
        printf("\n");
    }
    return 0;
}
```