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A-28

LAB Assignment 14

1. Write a C Program to store n student's information (i.e., student's roll no, name, gender, marks in 5 subjects etc.) of an educational institute and display all the data with total marks of each student, using array of structure. If full mark of each subject is considered as 100 and pass mark as 40, then display the list of students who failed in a particular subject.

Program:-

```
#include<stdio.h>

struct student{
  int roll;
  char name[50];
  char gender[10];
  float marks[5];
  float total;
};

int main(){
    int i, j ,num , flag;
    printf("Enter the number of students details to be stored :");\
    scanf("%d",&num);
    struct student stu[num];

    for (i=0 ; i<num;i++){
        printf("Enter the details for student %d :\n",(i+1));
        printf("Name : ");
        gets(stu[i].name);
        gets(stu[i].name);
        printf("Roll number : ");
        scanf("%d",&(stu[i].roll));
        printf("Gender (male/female) : ");
        gets(stu[i].gender);
        gets(stu[i].gender);
```

```
        printf("Enter the marks of the student in 5 subject:( 0<=
marks <=100) \n");
        for (j=0 ; j<5 ; j++){
            printf("Enter marks in subject %d = ",j+1);
            scanf("%f",&(stu[i].marks[j]));
            if (((stu[i].marks[j])<0) || ((stu[i].marks[j])>100)){
                printf("Invalid marks for subject %d , reenter the
marks :\n",j+1);
                j--;
            }
        }
        stu[i].total =0;
    }
    printf("\n\n<----------------Details of the students
------------>\n\n");
    for (i=0 ; i<num;i++){
        printf("\n\nDetails of Students No:-%d\n",i+1);
        printf("Name : %s \n",stu[i].name);
        printf("Roll number : %d\n",stu[i].roll);
        printf("Gender (male/female) :%s\n ",(stu[i].gender));
        printf("Marks obtained by the student\n");
        for (j=0 ; j<5 ; j++){
        printf("Marks in subject %d = %0.1f\n",j+1,(stu[i].marks[j]));
        stu[i].total +=(stu[i].marks[j]);
        }
        printf("Total marks obtained by the student is
%.1f",stu[i].total);
        printf("\n\n");
    }


    for  (i=0 ; i<5;i++){
        flag=0;
        printf("\nDetails Students failed in subject %d:\n\n",i+1);
        for (j=0 ; j<num ; j++){
            if ((stu[j].marks[i]) <40){
                printf("\n\nstudent no :- %d\n", j);
                printf("Name : %s \n",stu[j].name);
```

```
                printf("Roll number : %d\n",stu[j].roll);
                printf("Marks in subject %d =
%0.1f\n",i+1,(stu[j].marks[i]));
                flag=1;
            }
        }
        if (flag ==0){
            printf("None failed in this subject\n");
        }
        }
    }
```

Output:-

```
PS C:\Users\Prasanna Dhungana\OneDrive\Desktop\2nd sem\21053439_A28> cd
pCodeRunnerFile.c -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFil
Enter the number of students details to be stored :2
Enter the details for student 1 :
Name : Ram
Roll number : 21
Gender (male/female) : Male
Enter the marks of the student in 5 subject:( 0<= marks <=100)
Enter marks in subject 1 = 50
Enter marks in subject 2 = 60
Enter marks in subject 3 = 70
Enter marks in subject 4 = 39
Enter marks in subject 5 = 90
Enter the details for student 2 :
Name : Sita
Roll number : 12
Gender (male/female) : Female
Enter the marks of the student in 5 subject:( 0<= marks <=100)
Enter marks in subject 1 = 67
Enter marks in subject 2 = 95
Enter marks in subject 3 = 45
Enter marks in subject 4 = 55
Enter marks in subject 5 = 30


<----------------Details of the students ------------>


Details of Students No:-1
Name : Ram
Roll number : 21
Gender (male/female) :Male
 Marks obtained by the student
Marks in subject 1 = 50.0
Marks in subject 2 = 60.0
Marks in subject 3 = 70.0
Marks in subject 4 = 39.0
Marks in subject 5 = 90.0
Total marks obtained by the student is 309.0


Details of Students No:-2
Name : Sita
Roll number : 12
Gender (male/female) :Female
 Marks obtained by the student
Marks in subject 1 = 67.0
Marks in subject 2 = 95.0
Marks in subject 3 = 45.0
Marks in subject 4 = 55.0
Marks in subject 5 = 30.0
Total marks obtained by the student is 292.0


Details Students failed in subject 1:

None failed in this subject

Details Students failed in subject 2:

None failed in this subject

Details Students failed in subject 3:

None failed in this subject

Details Students failed in subject 4:



student no :- 0
Name : Ram
Roll number : 21
Marks in subject 4 = 39.0

Details Students failed in subject 5:



student no :- 1
Name : Sita
Roll number : 12
Marks in subject 5 = 30.0
PS C:\Users\Prasanna Dhungana\OneDrive\Desktop\
```

2. Write is C Program to add two distances (in inch-feet) using structures.

Program:-

```
#include<stdio.h>

struct feet_inch{
    int feet;
    int inches;
};

int main(){
    struct feet_inch fi1 , fi2 ,fi;
    fi.feet =0;
    fi.inches =0;
    printf("\n\nProgram to add two distances in feet and inches :\n");
    printf("Enter the first distance in format( feet inch ) :");
    scanf("%d %d", &fi1.feet ,&fi1.inches);
    printf("Enter the second distance in format( feet inch ) :");
    scanf("%d %d", &fi2.feet ,&fi2.inches);
    fi.feet = fi1.feet + fi2.feet;
    if ((fi.inches =fi1.inches +fi2.inches) >=12){
        fi.feet += (fi.inches / 12);
        fi.inches = (fi.inches % 12);
    }
    printf("After addition of two distance Output :\nFeet = %d
\nInches = %d \n\n" ,fi.feet , fi.inches );
}
```

Output:-

```
Program to add two distances in feet and inches :
Enter the first distance in format( feet inch ) :5 9
Enter the second distance in format( feet inch ) :3 6
After addition of two distance Output :
Feet = 9
Inches = 3

PS C:\Users\Prasanna Dhungana\OneDrive\Desktop\2nd sem\2105
```

3. Write a C Program to add two times (in hr-min-sec) by passing structure to a function

Program:-

```
#include<stdio.h>

struct time{
    int hr;
    int min;
    int sec;
};

void add(struct time ,struct time , struct time *);
int main(){
    struct time T1 , T2 , T ;
    printf("\n\nProgram to add two times:\n");
    printf("Enter the first time in format ( hr min sec) ");
    scanf("%d %d %d",&T1.hr,&T1.min,&T1.sec);
    printf("Enter the second time in format ( hr min sec) ");
    scanf("%d %d %d",&T2.hr,&T2.min,&T2.sec);
    add(T1 ,T2 , &T);
    printf("The result after adding two times :\nHour = %d \nMinutes =
%d \nSeconds = %d\n\n",T.hr,T.min,T.sec);

}

void add(struct time t1 , struct time t2 , struct time *t){
    t->hr =t1.hr +t2.hr;
    t->min =t1.min + t2.min;
    if ((t->sec =t1.sec+t2.sec)>=60){
        t->min += (t->sec / 60) ;
        t->sec = (t->sec %60);
    }
    if(t->min >= 60){
        t->hr += (t->min / 60) ;
        t->min = (t->min %60);
    }
}
```

Output:-

```
Enter the first time in format ( hr min sec) 5 30 55
Enter the second time in format ( hr min sec) 8 46 20
The result after adding two times :
Hour = 14
Minutes = 17
Seconds = 15
```

4. Write a C Program to store N employee's data such as employee name, gender, designation, department, basic pay etc. using structures with dynamically memory allocation. Calculate the gross pay of each employee as follows:
Gross Pay = Basic Pay + HRA + DA + MA, where
HRA = 25% of Basic Pay, DA = 75% of Basic Pay, MA = INR 500/-
Program:-

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

struct employee{
  char name[100];
  char gender[10];
  char department[100];
  char designation[100];
  float basicpay , da , hra , grosspay;
};
int main(){
  int n, i;
  struct employee *ptr;
  printf("Enter no. of employees :");
  scanf("%d",&n);
  ptr = (struct employee *)calloc(n, sizeof (struct employee));
  if (ptr == NULL){
    printf("Memory allocation failed !!");
  }
  else{
    printf("Enter the employee details\n");
    for (i=0; i < n ; i++){
      printf("\nEnter the details for employee no :%d\n",i+1);
      printf("Name : ");
      gets((ptr+i)->name);
      gets((ptr+i)->name);
      printf("Gender (Male/Female) : ");
      gets((ptr+i)->gender);
      printf("Department :");
      gets((ptr+i)->department);
      printf("Designation :");
      gets((ptr+i)->designation);
```

```
      printf("Basic pay:");
      scanf("%f",&((ptr+i)->basicpay));
      ((ptr+i)->da)=0.75*((ptr+i)->basicpay);
      ((ptr+i)->hra) = 0.25*((ptr+i)->basicpay);
      ((ptr+i)->grosspay)
=((ptr+i)->basicpay)+((ptr+i)->da)+((ptr+i)->hra)+500;
    }
    for (i=0; i < n ; i++){
      printf("\nThe details for employee no :%d\n\n",i+1);
      printf("Name :%s\n",(ptr+i)->name);
      printf("Gender : %s\n",((ptr+i)->gender));
      printf("Department : %s\n",((ptr+i)->department));
      printf("Designation : %s\n",((ptr+i)->designation));
      printf("Basic pay= %.2f\n",((ptr+i)->basicpay));
      printf("HRA = %f \nDA = %.2f \nMA =
%f\n",((ptr+i)->hra),((ptr+i)->da),500.00);
      printf("Gross Pay = %.2f\n",((ptr+i)->grosspay));
    }
  }
}
```

Output:-

```
PS C:\Users\Prasanna Dhungana\OneDrive\Desktop\2nd sem\21053439_A28> cd "c:\Use
4_4_employeepay.c -o LA14_4_employeepay } ; if ($?) { .\LA14_4_employeepay }
Enter no. of employees :2
Enter the employee details

Enter the details for employee no :1
Name : Ram
Gender (Male/Female) : Male
Department :HR
Designation :head
Basic pay:100000

Enter the details for employee no :2
Name : sita
Gender (Male/Female) : Female
Department :relations
Designation :head
Basic pay:125000

The details for employee no :1

Name :Ram
Gender : Male
Department : HR
Designation : head
Basic pay= 100000.00
HRA = 25000.000000
DA = 75000.00
MA = 500.000000
Gross Pay = 200500.00

The details for employee no :2

Name :sita
Gender : Female
Department : relations
Designation : head
Basic pay= 125000.00
HRA = 31250.000000
DA = 93750.00
MA = 500.000000
Gross Pay = 250500.00
PS C:\Users\Prasanna Dhungana\OneDrive\Desktop\2nd sem\21053439_A28\LAB14>
```