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May 16 Lab questions

#1. WAP 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 failed in a particular subject.

Code:

```
#include <stdio.h>
typedef struct students{
    char name[50];
    int rollno;
    char gender[6];
    float english;
    float maths;
    float chemistry;
    float physics;
    float programming;
}students;
int main()
{
    int n,i_285;
    printf("Provide the number of students\n");
    scanf("%d",&n);
    int sum[n];
    students S[n];
    for(i_285=0;i_285<n;i_285++)
    {
        printf("Give the name of student %d\n",i_285+1);
        scanf("%s",S[i_285].name);
        printf("Give the roll number\n");
        scanf("%d",&S[i_285].rollno);
        printf("Give the gender\n");
        scanf("%s",S[i_285].gender);
        printf("English marks\n");
        scanf("%f",&S[i_285].english);


        printf("math marks\n");
        scanf("%f",&S[i_285].maths);
        printf("Chemistry marks\n");
        scanf("%f",&S[i_285].chemistry);
        printf("physics marks\n");
        scanf("%f",&S[i_285].physics);
        printf("programming marks\n");
        scanf("%f",&S[i_285].programming);
    }
    for(i_285=0;i_285<n;i_285++)
    {

        sum[i_285]=S[i_285].physics+S[i_285].chemistry+S[i_285].maths+S[i_285].english+S[i_285]
.programming;
    }
    for(i_285=0;i_285<n;i_285++)
    {
        printf("Student name= %s\n", S[i_285].name);
        printf("\n");
        printf("Student roll number= %d\n",S[i_285].rollno);
        printf("\n");
```

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```
        printf("Student Gender= %s\n",S[i_285].gender);
        printf("\n");
        printf("English Result= %2.2f\n",S[i_285].english);
        printf("\n");
        printf("Chemistry result= %2.2f\n",S[i_285].chemistry);
        printf("\n");
        printf("Physics Result= %2.2f\n",S[i_285].physics);
        printf("\n");
        printf("maths result=%2.2f\n",S[i_285].maths);
        printf("\n");
        printf("programming result= %2.2f\n",S[i_285].programming);
        printf("\n");
        printf("Total marks is= %2.2f \n",sum);
        printf("\n");
        printf("%s has failed in the following subjects\n",S[i_285].name);
        if(S[i_285].chemistry<=40)
        {
            printf("chemistry\n");
        }
        if(S[i_285].physics<=40)
        {
            printf("Physics\n");
        }
        if(S[i_285].english<=40)
        {
            printf("English\n");
        }
        if(S[i_285].maths<=40)
        {
            printf("maths\n");
        }
        if(S[i_285].programming<=40)
        {
            printf("programming\n");
        }
        printf("================================================================================
========================\n");
        printf("================================================================================
========================\n");
        printf("================================================================================
========================\n");
    }
    return 0;
}
```

Output:

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```
Chemistry result= 47.00
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> gcc Students_struct.c
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> ./a.exe
Provide the number of students
2
Give the name of student 1
Kidus
Give the roll number
2106285
Give the gender
male
English marks
67
math marks
23
Chemistry marks
97
physics marks
23
programming marks
99
Give the name of student 2
SUmoit
Give the roll number
2187379
Give the gender
male
English marks
79
math marks
08
Chemistry marks
13
physics marks
98
programming marks
98
Student name= Kidus

Student roll number= 2106285

Student Gender= male
```

```


English Result= 67.00

Chemistry result= 97.00

Physics Result= 23.00

maths result=23.00

programming result= 99.00

Total marks is= 0.00

Kidus has failed in the following subjects
Physics
maths
================================================================================================
================================================================================================
================================================================================================
Student name= SUmoit

Student roll number= 2187379

Student Gender= male

English Result= 79.00

Chemistry result= 13.00

Physics Result= 98.00

maths result=8.00

programming result= 98.00

Total marks is= 0.00

SUmoit has failed in the following subjects
chemistry
maths
================================================================================================
================================================================================================
================================================================================================
```

#2. WAP to add two distances (in km-meter) using structures.

Code:

```c
#include <stdio.h>
typedef struct distance{
    int kilometer_285;
```

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```
    int meter_285;
}distance;
int main()
{
    distance s1,s2,s3;
    int km1,km2,m1,m2,KM,M;
    printf("GIve the first diatnce in km and m form respectively\n");
    scanf("%d%d",&km1,&m1);
    printf("GIve the second diatnce in km and m form respectively\n");
    scanf("%d%d",&km2,&m2);
    s1.kilometer_285=km1;
    s1.meter_285=m1;
    s2.kilometer_285=km2;
    s2.meter_285=m2;
    s3.kilometer_285=s1.kilometer_285+s2.kilometer_285;
    s3.meter_285=s1.meter_285+s2.meter_285;
    if(s3.meter_285>=1000)
    {
        s3.meter_285=s3.meter_285-1000;
        s3.kilometer_285++;
    }
    printf("The sum of your two distances is %d kilometers and %d
meters\n",s3.kilometer_285,s3.meter_285);
    return 0;

}
```

Output:

```
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> gcc distance_struct.c
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> ./a.exe
GIve the first diatnce in km and m form respectively
23 899
GIve the second diatnce in km and m form respectively
23 900
The sum of your two distances is 47 kilometers and 799 meters
PS C:\Users\KIIT\Desktop\Programming\16_may Structs>
```

#3. WAP to add two times (in hr-min-sec) by passing structure to a function.

Code:

```
#include <stdio.h>
typedef struct time{
    int hour;
    int minute;
    int second;
}time;
int main()
{
    time t1_285,t2_285,t3_285;
    int h1,h2,h3,m1,m2,m3,s1,s2,s3;
```

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```
    printf("Please give the first timing in hour/minutes/second format\n");
    scanf("%d%d%d",&h1,&m1,&s1);
    printf("Please give the second timing in hour/minutes/second format\n");
    scanf("%d%d%d",&h2,&m2,&s2);
    t1_285.hour=h1;
    t1_285.minute=m1;
    t1_285.second=s1;
    t2_285.hour=h2;
    t2_285.minute=m2;
    t2_285.second=s2;
    t3_285.hour= t1_285.hour+t2_285.hour;
    t3_285.minute=t1_285.minute+t2_285.minute;
    t3_285.second=t1_285.second+t2_285.second;
    if(t3_285.second>=60)
    {
        t3_285.second=t3_285.second-60;
        t3_285.minute++;
    }
    if(t3_285.minute>=60)
    {
        t3_285.minute=t3_285.minute-60;
        t3_285.hour++;
    }
    printf("The sum of your two timing is %d hours %d minues and %d
seconds\n",t3_285.hour,t3_285.minute,t3_285.second);
    return 0;
}
```

Output:

```
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> gcc time_struct.c
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> ./a.exe
Please give the first timing in hour/minutes/second format
23 59 59
Please give the second timing in hour/minutes/second format
1 45 45
The sum of your two timing is 25 hours 45 minues and 44 seconds
PS C:\Users\KIIT\Desktop\Programming\16_may Structs>
```

#4. WAP to store n employees data such as employee name, gender, designation, department, basic pay etc using structures with dynamically memory allocation. Calculate the gross pay of each employees as follows: Gross

pay=basic pay + HR + DA HR=25
Code:

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
typedef struct employee{
    char name[30];
    char gender[6];
    char designation[30];
```

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```
    char department[30];
    float basicpay;
}employee;

int main()
{
    employee *ptr_285;
    int n,i;
    float HR_285,DA_285,gross_pay;
    printf("Give the number of employees you have\n");
    scanf("%d",&n);
    ptr_285= (employee*) malloc(n*sizeof(employee));
    for(i=0;i<n;i++)
    {
        printf("PLease give the details of employee %d\t",i+1);
        printf("==============\t==============\t============\n");
        printf("name=>\n");
        scanf("%s",&(ptr_285+i)->name);
        printf("Gender=>\n");
        scanf("%s",&(ptr_285+i)->gender);
        printf("Designation=>\n");
        scanf("%s",&(ptr_285+i)->designation);
        printf("Department=>\n");
        scanf("%s",&(ptr_285+i)->department);
        printf("basic pay=>\n");
        scanf("%f",&(ptr_285+i)->basicpay);
        printf("==============\t==============\t============\n");
    }
    //assuming the dearness allowance is 20%
    for(i=0;i<n;i++)
    {
        gross_pay= (ptr_285+i)->basicpay + 0.25*(ptr_285+i)->basicpay + 0.2*(ptr_285+i)-
>basicpay;
        printf("The gross pay of employee %d is=>%f\n",i+1,gross_pay);
    }
    return 0;
}
```

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```
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> gcc employee.c
PS C:\Users\KIIT\Desktop\Programming\16_may Structs> ./a.exe
Give the number of employees you have
2
PLease give the details of employee 1
==============  ==============  ============
name=>
Kidus
Gender=>
Male
Designation=>
SoftwareEngineer
Department=>
IT
basic pay=>
10000000
==============  ==============  ============
PLease give the details of employee 2
==============  ==============  ============
name=>
Jack
Gender=>
male
Designation=>
janitor
Department=>
Cleaning
basic pay=>
20000000
==============  ==============  ============
The gross pay of employee 1 is=>14500000.000000
The gross pay of employee 2 is=>29000000.000000
PS C:\Users\KIIT\Desktop\Programming\16_may Structs>
```