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➢ Laboratory *Assignment 3*

Solve the following problems using Array of Structures:

Q1: DISPLAY DETAILS OF A STUDENT WHO HAVE SCORED HIGHEST MARKS.

Ans:

```
#include <stdio.h>
struct student {
   char name[50];
   int roll;
   float marks;
} s[10];

int main() {
   int i,score,j=0;
   printf("Enter information of students:\n");
   for (i = 0; i < 3; ++i) {
      printf("\nFor roll number: ");
      scanf("%d",&s[i].roll);
      printf("Enter  name: ");
      scanf("%s", s[i].name);
      printf("Enter marks: ");
      scanf("%f", &s[i].marks);
   }
   score=s[0].marks;
   for(i=1;i<3;i++)
```

```
    {
      if(score<s[i].marks)
      {
         score=s[i].marks;
         j=i;
      }
    }
    printf("\nThe details of the students are: \n");
    printf("The name of the student is: %s\n",s[j].name);
    printf("The highest score is: %f\n",s[j].marks);
    printf("The roll of the student is: %d\n",s[j].roll);
    return 0;
}
```

OUTPUT =>

```
Enter information of students:

For roll number: 72
Enter  name: priyadarshan
Enter marks: 98

For roll number: 70
Enter  name: priyanshu
Enter marks: 95

For roll number: 34
Enter  name: rajarshi
Enter marks: 85
```

```
The details of the students are:
The name of the student is: priyadarshan
The highest score is: 98.000000
The roll of the student is: 72


...Program finished with exit code 0
Press ENTER to exit console.
```

Q2: DISPLAY DETAILS OF ALL STUDENTS WHO HAVE SCORED MARKS >= 90.

Ans:

```
#include <stdio.h>
struct student {
   char name[50];
   int roll;
   float marks;
} s[10];
int main() {
   int i,j=0;
   printf("Enter information of students:\n");
   for (i = 0; i < 3; ++i) {
      s[i].roll = i + 1;
      printf("\nFor roll number%d,\n", s[i].roll);
      printf("Enter  name: ");
```

```
        scanf("%s", s[i].name);
        printf("Enter marks: ");
        scanf("%f", &s[i].marks);
    }
    for(i=0;i<3;i++)
    {
      if(s[i].marks>=90)
      {
         printf("The details of the students are: \n");
         printf("The name of the student is: %s\n",s[i].name);
         printf("The  score is: %f\n",s[i].marks);
         printf("The roll of the student is: %d\n",s[i].roll);
      }
    }
    return 0;
}
```

OUTPUT =>

```
Enter information of students:

For roll number1,
Enter  name: priyadarshan
Enter marks: 96

For roll number2,
Enter  name: priyanshu
Enter marks: 65
```

```
For roll number3,
Enter  name: paramita
Enter marks: 91
The details of the students are:
The name of the student is: priyadarshan
The  score is: 96.000000
The roll of the student is: 1
The details of the students are:
The name of the student is: paramita
The  score is: 91.000000
The roll of the student is: 3

...Program finished with exit code 0
Press ENTER to exit console.
```

Q3. DISPLAY DETAILS OF ALL STUDENTS WHO HAVE SCORED MARKS < 40.

Ans:

```
#include <stdio.h>
struct student {
   char name[50];
   int roll;
   float marks;
} s[10];
```

```
int main() {
   int i,j=0;
   printf("Enter information of students:\n");
   for (i = 0; i < 3; ++i) {
      s[i].roll = i + 1;
      printf("\nFor roll number%d,\n", s[i].roll);
      printf("Enter  name: ");
      scanf("%s", s[i].name);
      printf("Enter marks: ");
      scanf("%f", &s[i].marks);
   }
   for(i=0;i<3;++i)
   {
     if(s[i].marks<40)
     {
        printf("The details of the students are: \n");
        printf("The name of the student is: %s\n",s[i].name);
        printf("The  score is: %f\n",s[i].marks);
        printf("The roll of the student is: %d\n",s[i].roll);
     }
   }
   return 0;
}
```

OUTPUT =>

```
Enter information of students:
```

For roll number1,

Enter name: pranoy

Enter marks: 45

For roll number2,

Enter name: priyanshu

Enter marks: 23

For roll number3,

Enter name: pramit

Enter marks: 31

The details of the students are:

The name of the student is: priyanshu

The score is: 23.000000

The roll of the student is: 2

The details of the students are:

The name of the student is: pramit

The score is: 31.000000

The roll of the student is: 3

...Program finished with exit code 0

Press ENTER to exit console.

Solve the following problems using Structure pointers:

Q4: DISPLAY DETAILS OF A STUDENT WHO HAVE SCORED HIGHEST MARKS.

Ans:

```
#include<stdio.h>
#include<stdlib.h>
struct student {
   char name[50];
   int roll;
   float marks;
}s[10];

int main()
{
   struct student *s;
   s = (struct student *)malloc(3*(sizeof(struct student)));
   int i,score,j=0;
   printf("Enter information of students:\n");
   for (i = 0; i < 3; ++i) {
      s[i].roll = i + 1;
      printf("\nFor roll number%d,\n", s[i].roll);
      printf("Enter  name: ");
      scanf("%s", s[i].name);
      printf("Enter marks: ");
```

```
        scanf("%f", &s[i].marks);
    }
    score=s[0].marks;
    for(i=1;i<3;i++)
    {
      if(score<s[i].marks)
      {
          score=s[i].marks;
          j=i;
      }
    }
    printf("The details of the students are: \n");
    printf("The name of the student is: %s\n",s[j].name);
    printf("The highest score is: %f\n",s[j].marks);
    printf("The roll of the student is: %d\n",s[j].roll);
    return 0;
}
```

OUTPUT =>

```
Enter information of students:

For roll number1,
Enter  name: pramit
Enter marks: 95

For roll number2,
Enter  name: priyadarshan
```

```
Enter marks: 100

For roll number3,
Enter  name: raju
Enter marks: 95
The details of the students are:
The name of the student is: priyadarshan
The highest score is: 100.000000
The roll of the student is: 2


...Program finished with exit code 0
Press ENTER to exit console.
```

Q5: DISPLAY DETAILS OF ALL STUDENTS WHO HAVE SCORED MARKS >= 90.

Ans:

```
#include <stdio.h>
#include<stdlib.h>
struct student {
   char name[50];
   int roll;
   float marks;
} s[10];

int main() {
   struct student *s;
```

```
    s=(struct student *)malloc(3*sizeof(struct student));
    int i,j=0;
    printf("Enter information of students:\n");
    for (i = 0; i < 3; ++i) {
        s[i].roll = i + 1;
        printf("\nFor roll number%d,\n", s[i].roll);
        printf("Enter  name: ");
        scanf("%s", s[i].name);
        printf("Enter marks: ");
        scanf("%f", &s[i].marks);
    }
    for(i=0;i<3;i++)
    {
      if(s[i].marks>=90)
      {
          printf("The details of the students are: \n");
          printf("The name of the student is: %s\n",s[i].name);
          printf("The  score is: %f\n",s[i].marks);
          printf("The roll of the student is: %d\n",s[i].roll);
      }
    }
    return 0;
}
```

OUTPUT =>

```
Enter information of students:
```

For roll number1,

Enter name: priyadarshan

Enter marks: 95

For roll number2,

Enter name: pramit

Enter marks: 75

For roll number3,

Enter name: simontini

Enter marks: 91

The details of the students are:

The name of the student is: priyadarshan

The score is: 95.000000

The roll of the student is: 1

The details of the students are:

The name of the student is: simontini

The score is: 91.000000

The roll of the student is: 3

...Program finished with exit code 0

Press ENTER to exit console.

Q6: DISPLAY DETAILS OF ALL STUDENTS WHO HAVE SCORED MARKS < 40.

Ans:

```
#include <stdio.h>
#include<stdlib.h>
struct student {
   char name[50];
   int roll;
   float marks;
} s[10];

int main() {
   struct student *s;
   s = (struct student *)malloc(3*(sizeof(struct student)));
   int i,j=0;
   printf("Enter information of students:\n");
   for (i = 0; i < 3; ++i) {
      s[i].roll = i + 1;
      printf("\nFor roll number%d,\n", s[i].roll);
      printf("Enter  name: ");
      scanf("%s", s[i].name);
      printf("Enter marks: ");
      scanf("%f", &s[i].marks);
   }
   for(i=0;i<3;i++)
   {
     if(s[i].marks<40)
     {
```

```
        printf("The details of the students are: \n");
        printf("The name of the student is: %s\n",s[i].name);
        printf("The  score is: %f\n",s[i].marks);
        printf("The roll of the student is: %d\n",s[i].roll);
     }
   }
   return 0;
}
```

OUTPUT =>

```
Enter information of students:

For roll number1,
Enter  name: priyadarshan
Enter marks: 99

For roll number2,
Enter  name: pramit
Enter marks: 36

For roll number3,
Enter  name: saptarshi
Enter marks: 23
The details of the students are:
The name of the student is: pramit
The  score is: 36.000000
The roll of the student is: 2
The details of the students are:
```

```
The name of the student is: saptarshi
The  score is: 23.000000
The roll of the student is: 3


...Program finished with exit code 0
Press ENTER to exit console.
```

Q7: DISPLAY THE DETAILS OF STUDENT WHO HAVE SCORED THE HIGHEST TOTAL

Ans:

```
#include <stdio.h>
#include <stdlib.h>
struct student{
int rollno;
char name[20];
float marks[5];
};
int main()
{
int i,j,sum=0,max=0,count=0,roll=0,name=0;
struct student s[10];
for (i=0;i<3;i++)
{
printf("\n Enter the roll no. : ");
scanf("%d",&s[i].rollno);
```

```
printf("\n Enter the name : ");
scanf("%s",s[i].name);
printf("\n enter the marks : ");
for(j=0;j<3;j++)
{
scanf("%f",&s[i].marks[j]);
}
}

for(i=0;i<3;i++)
{
sum=0;
for(j=0;j<5;j++)
{
sum += s[i].marks[j];
}
if (max<sum)
{
max=sum;
}
}
for(i=0;i<10;i++)
{
sum=0;
for(j=0;j<5;j++)
{
```

```
sum += s[i].marks[j];
}
if(max==sum)
{
printf("------STUDENT WITH HIGHEST TOTAL------");
printf("\nStudents name: %s \n",s[i].name);
printf("Roll no. : %d \n",s[i].rollno);
printf("\n the marks are \n :");
for(j=0;j<3;j++)
{
printf("%f ",s[i].marks[j]);
}
}
}
}
```

OUTPUT =>

```
Enter the roll no. : 72

Enter the name : priyadarshan

enter the marks : 89
85
99

Enter the roll no. : 70
```

```
 Enter the name : priyanshu

 enter the marks : 95
75
45

 Enter the roll no. : 19

 Enter the name : pranoy

 enter the marks : 45
65
20
------STUDENT WITH HIGHEST TOTAL------
Students name: priyadarshan
Roll no. : 72

 the marks are
 :89.000000 85.000000 99.000000

...Program finished with exit code 0
Press ENTER to exit console.
```