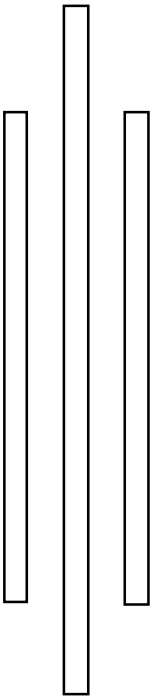
# TRIBHUVAN UNIVERSITY

## INSTITUTE OF ENGINEERING

## Lab Sheet #9



**PURWANCHAL CAMPUS**

DHARAN-8


**Submitted by:**

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Date: .....


**Submitted to:**

Department of

Electronics & Computer

Engineering

Checked by: .....

## Title:

Write a program to read RollNo, Name, Address, Age & marks in physics, C, math in 1st semester of three students in BCT and display the student details with average marks achieved.

## Code:

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

struct student
{
   char nam[30],rem[10];
   int rol,ran,mar;
   float per;

}s[100];

void read(struct student s[],int sn)
{
   int i,j;

   for(i=0;i<sn;i++)
   {
   printf("Enter the name of student(Max.30 char.):\n");
   scanf(" %[^\n]s",s[i].nam);
   printf("Enter the roll number of %s:\n",s[i].nam);
   scanf("%d",&s[i].rol);
   printf("Enter the marks of %s:\n",s[i].nam);
   scanf("%d",&s[i].mar);
   }
```

```
        printf("Record has been created sucessfully!!!\n\n");

}

void display(struct student s[],int sn)
{
   int i,j,temp=0;


    //for rank
    for(i=0;i<sn;i++)
    {
       s[i].ran=(i+1);
    }
      for(i=0;i<sn-1;i++)
      {
        for(j=i+1;j<sn;j++)
        {
           if(s[i].mar<=s[j].mar)
            {
               temp=s[i].ran;
               s[i].ran=s[j].ran;
               s[j].ran=temp;

            }
        }

      }
```

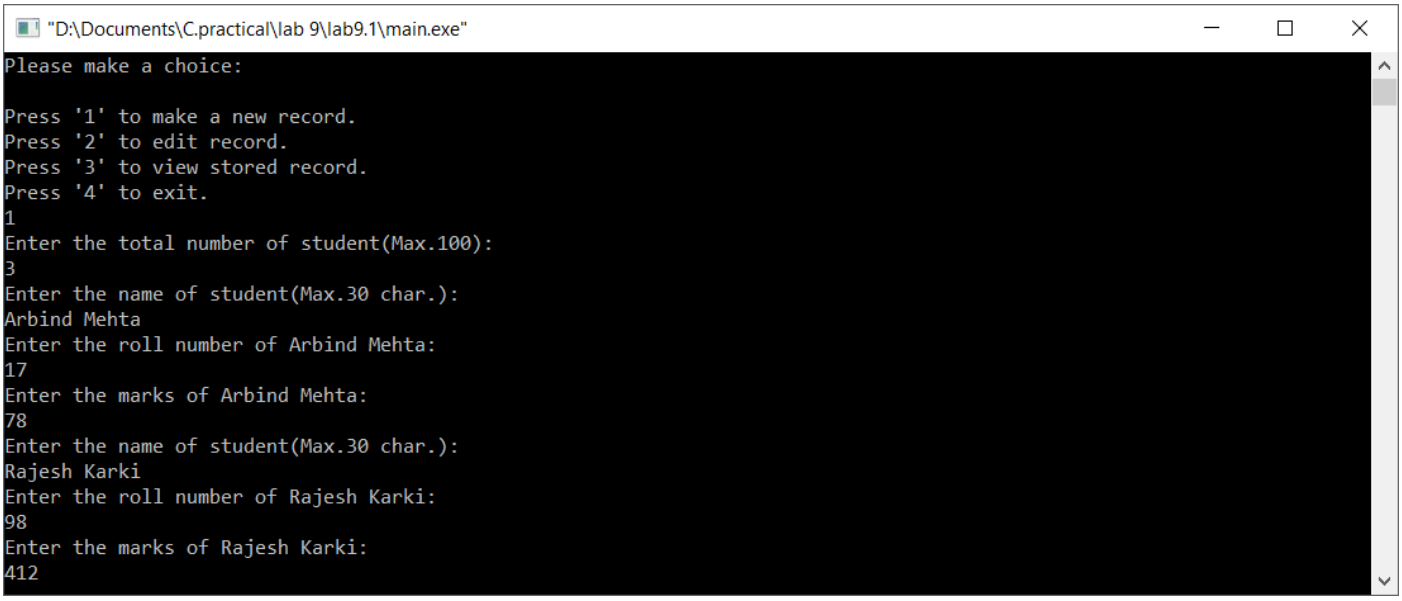
```
   printf("The information of student according to roll number is:\n");
   printf("S.No.\tRoll Number\tName\t\t\tMarks\t\tPercent(%%)\t\tRank\t\tRemark\n");

printf("*************************************************************************
****************************************\n");
   for(i=0;i<sn;i++)
   {
   s[i].per=((float)s[i].mar/500)*100.0;

   if(s[i].per<40.00)
      strcpy(s[i].rem,"Fail");
   else
      strcpy(s[i].rem,"Pass");

   printf("%d\t%d\t\t%s\t\t%d\t\t%.3f\t\t\t%d\t\t%s\n",(i+1),s[i].rol, s[i].nam, s[i].mar,
s[i].per, s[i].ran, s[i].rem);
   }
}

int main()
{

   int ch1,ch2,ch3,sn,temp1=0,i;



   while(1)
```

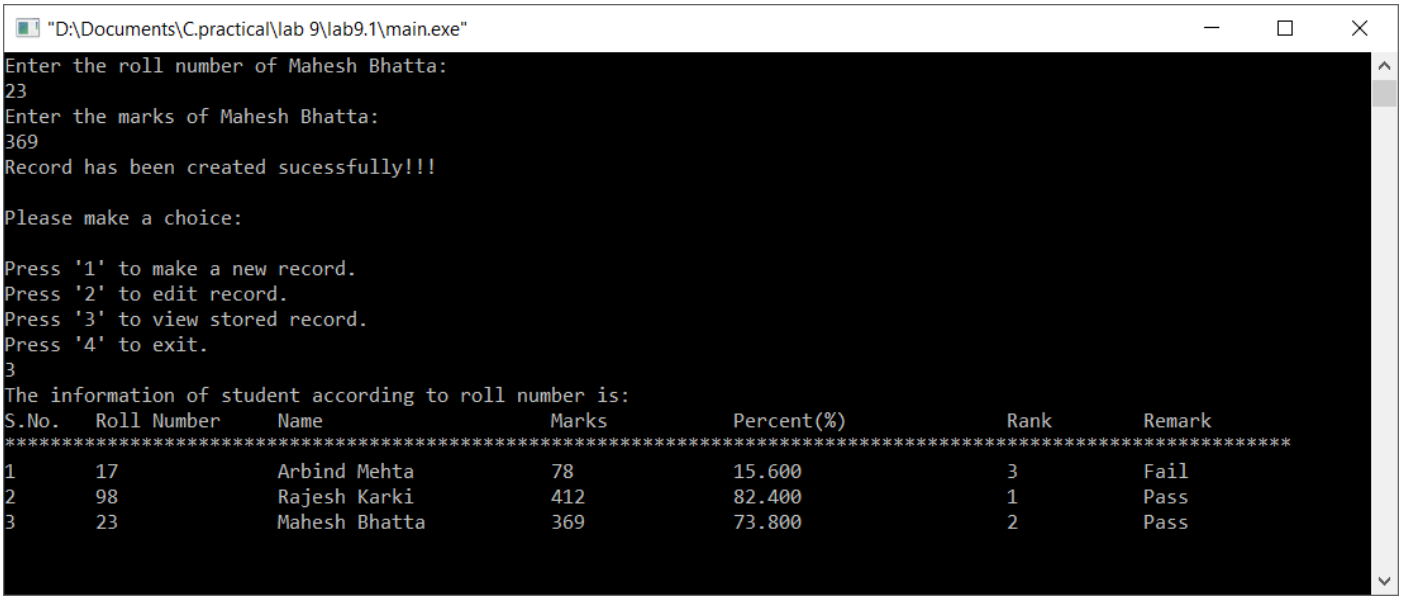
```
{


printf("Please make a choice:\n\nPress '1' to make a new record.\nPress '2' to edit record.\nPress '3' to view stored record.\nPress '4' to exit.\n");
scanf("%d",&ch1);
switch(ch1)
{
case 1 :
  {
    printf("Enter the total number of student(Max.100):\n");
    scanf("%d",&sn);
    read(s,sn);
    break;
  }


case 2 :
  {
    printf("Press '1' to edit name of student.\nPress '2' to edit roll number of student.\nPress '3' to edit marks of student\nPress '4' to go to main menu.\n");
    scanf("%d",&ch2);
    printf("Enter the roll number of student to be edited.");
    scanf("%d",&ch3);
      for(i=0;i<sn;i++)
      {
        if(s[i].rol==ch3)
          temp1=i;
      }
    switch(ch2)
    {
```

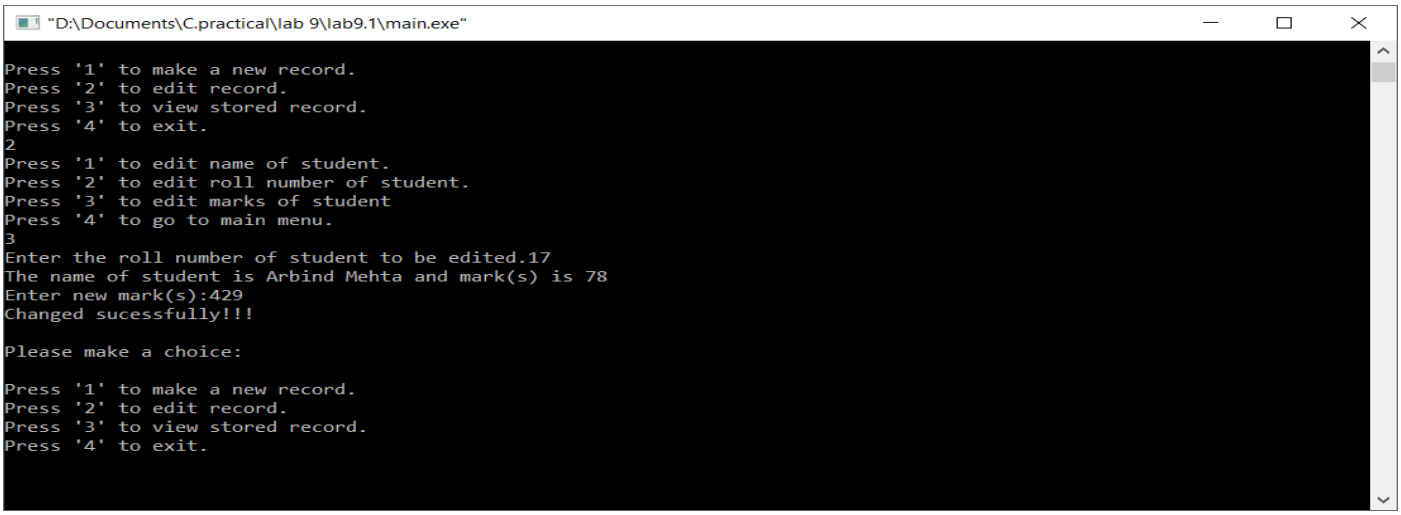
```
        case 1 :
        {

           printf("The name of student is %s\nEnter new name:",s[temp1].nam);
           scanf(" %[^\n]s",&s[temp1].nam);
           printf("Changed sucessfully!!!\n\n");
           break;

        }
        case 2 :
           {

           printf("The roll number of student is %d and name is %s\nEnter new roll
number:",s[temp1].rol, s[temp1].nam);
           scanf("%d",&s[temp1].rol);
           printf("Changed sucessfully!!!\n\n");
          break;
           }
        case 3 :
           {

           printf("The name of student is %s and mark(s) is %d\nEnter new
mark(s):",s[temp1].nam, s[temp1].mar);
           scanf("%d",&s[temp1].mar);
           printf("Changed sucessfully!!!\n\n");
           break;
           }
        case 4 :
           {
              break;
```

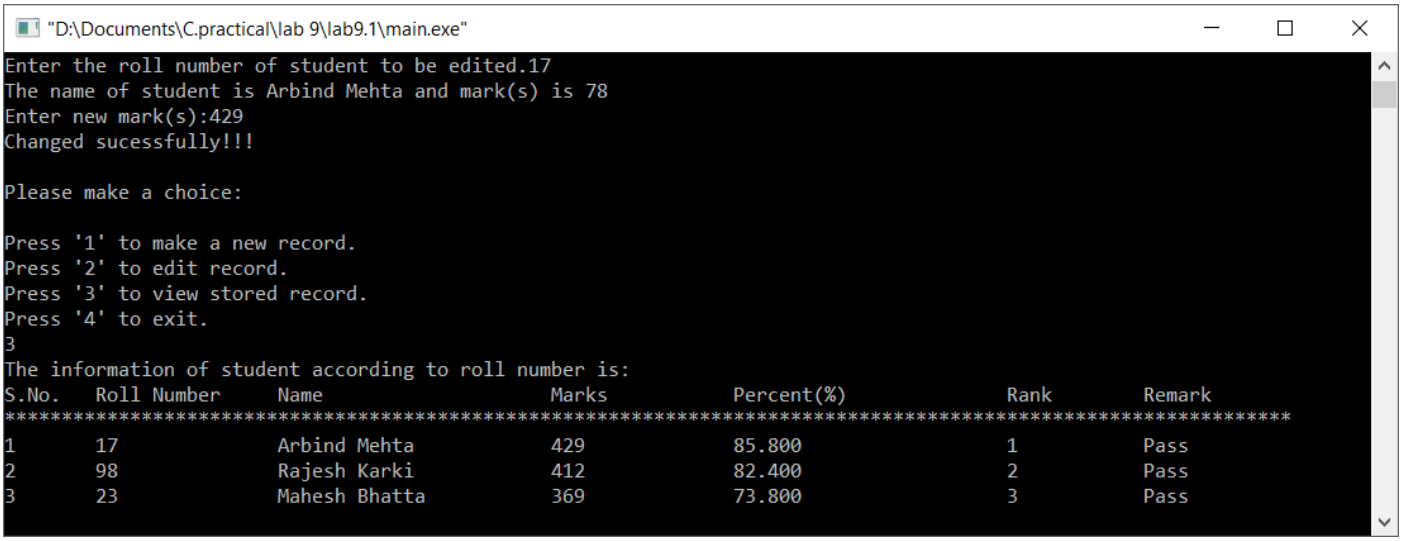
```
            }
        default:
            {
                printf("Invalid choice!!!\n");
                break;
      }
        } break;
        case 3 :
            {
                display(s,sn);
                getch();
                break;
            }
        case 4 :
            {
              exit(0);
            }
        default:
            {
                printf("Invalid choice!!!\n");
                getch();
                break;
            }
   }
   }
   }
  return 0;
}
```

## Output (Compilation, Debugging and Testing):






## Title:

Create a structure named company which has name, address, phone and noOfEmployee as member variables. Read name of company, its address, phone and noOfEmployee. Finally display these members' value.

## Code:

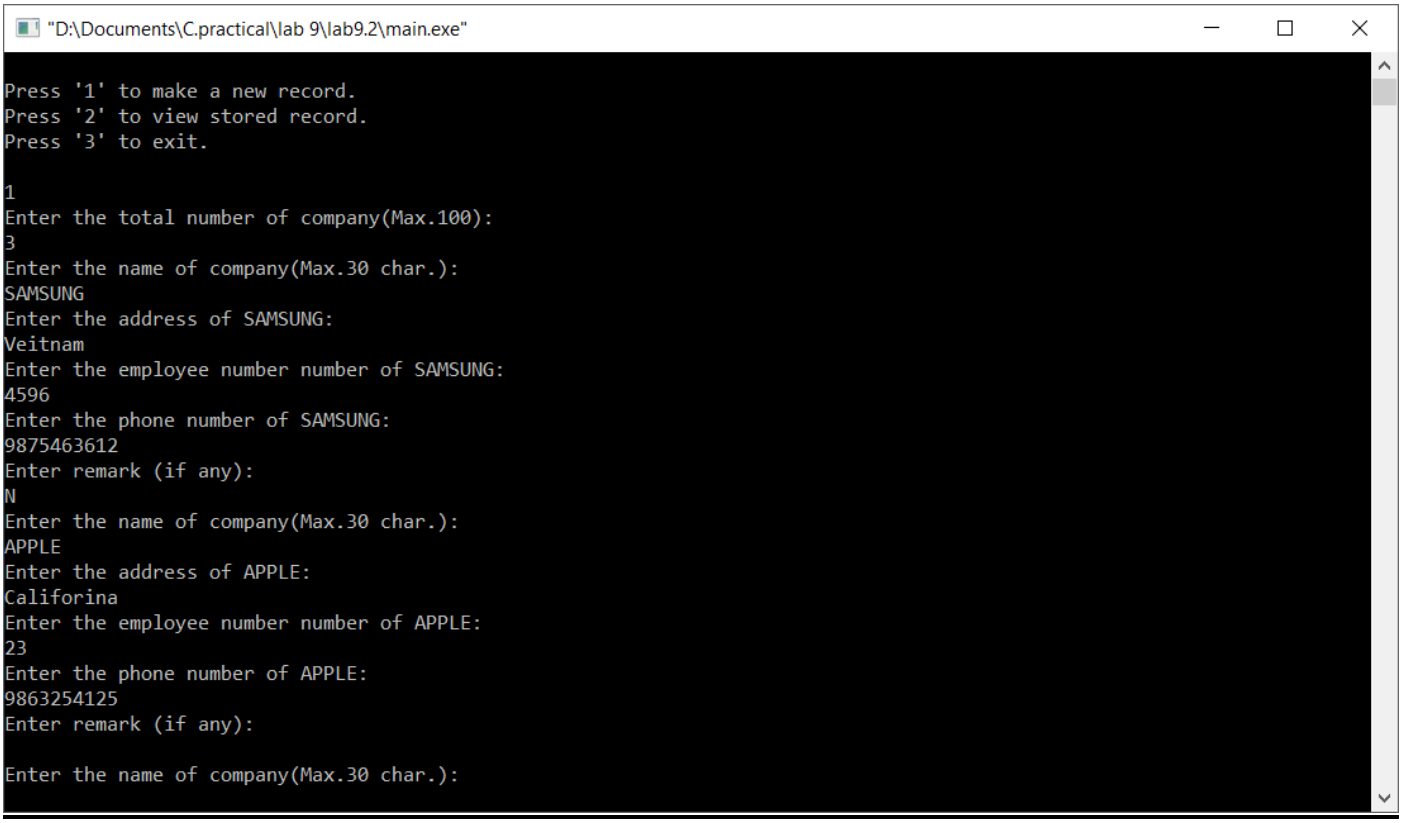
```
#include <stdio.h>

#include <stdlib.h>

#include <string.h>


struct company

{

   char nam[30],rem[20],add[50],ph[10];

   int empno;


}s[100];


void read(struct company s[],int sn)

{

   int i;
```

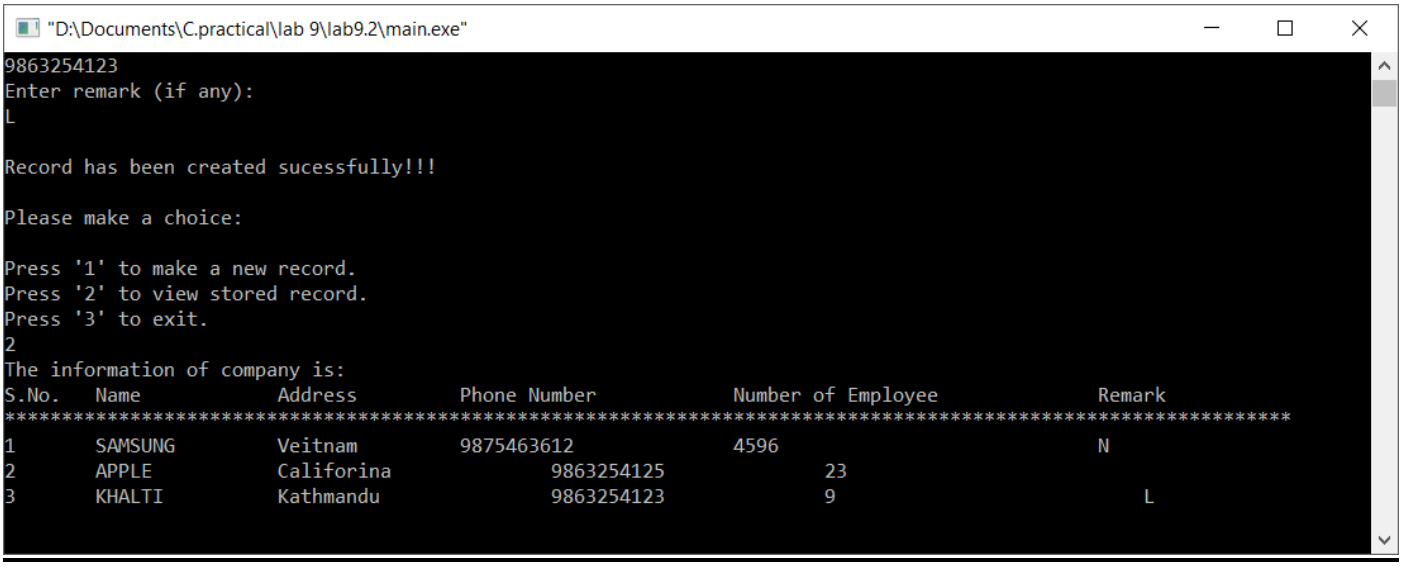
```
   char c[20];

   for(i=0;i<sn;i++)
   {
   printf("Enter the name of company(Max.30 char.):\n");
   scanf(" %[^\n]s",s[i].nam);
   printf("Enter the address of %s:\n",s[i].nam);
   scanf("%s",s[i].add);
   printf("Enter the employee number number of %s:\n",s[i].nam);
   scanf("%d",&s[i].empno);
   printf("Enter the phone number of %s:\n",s[i].nam);
   scanf("%s",&s[i].ph);
   fflush(stdin);
   printf("Enter remark (if any):\n");
   gets(c);

   if(c!="\n")
   {
      strcpy(s[i].rem,c);;
   }

   }
      printf("\nRecord has been created sucessfully!!!\n\n");
      getch();
}

void display(struct company s[],int sn)
{
   int i;
```

```
   printf("The information of company is:\n");
   printf("S.No.\tName\t\tAddress\t\tPhone Number\t\tNumber of
Employee\t\tRemark\n");

printf("**********************************************************************
*****************************************\n");

   for(i=0;i<sn;i++)
   {
   printf("%d\t%s\t\t%s\t\t%s\t\t%d\t\t\t\t%s\n",(i+1),s[i].nam, s[i].add, s[i].ph, s[i].empno,
s[i].rem);
   }
}

int main()
{

   int ch1,sn;



   while(1)
   {


   printf("Please make a choice:\n\nPress '1' to make a new record.\nPress '2' to view
stored record.\nPress '3' to exit.\n");
   scanf("%d",&ch1);
   switch(ch1)
   {
         case 1 :
      {
```

```
        printf("Enter the total number of company(Max.100):\n");
        scanf("%d",&sn);
        read(s,sn);
        break;
      }

        case 2 :
          {
             display(s,sn);
             getch();
             break;
          }

        case 3 :
          {
            exit(0);
          }
        default:
          {
             printf("Invalid choice!!!\n");
             getch();
             break;
          }
   }
   }

   return 0;
}
```

## Output (Compilation, Debugging and Testing)




## Title:

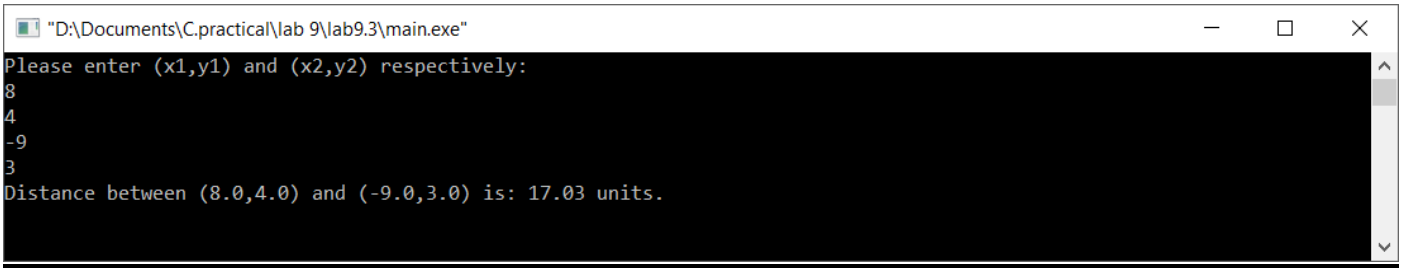
Write a program to enter to Cartesian coordinate points and display the distance between them.

## Code:

```
#include <stdio.h>

#include <stdlib.h>
```

```
#include<math.h>
int main()
{
   float x1,x2,y1,y2,d;

   printf("Please enter (x1,y1) and (x2,y2) respectively:\n");
   scanf("%f%f%f%f",&x1,&y1,&x2,&y2);
   d=sqrt(pow(x2-x1,2)+pow(y2-y1,2));
   printf("Distance between (%.1f,%.1f) and (%.1f,%.1f) is: %.2f units.",x1,y1,x2,y2,d);
   getch();
   return 0;
}
```

## Output (Compilation, Debugging and Testing):




# Title:

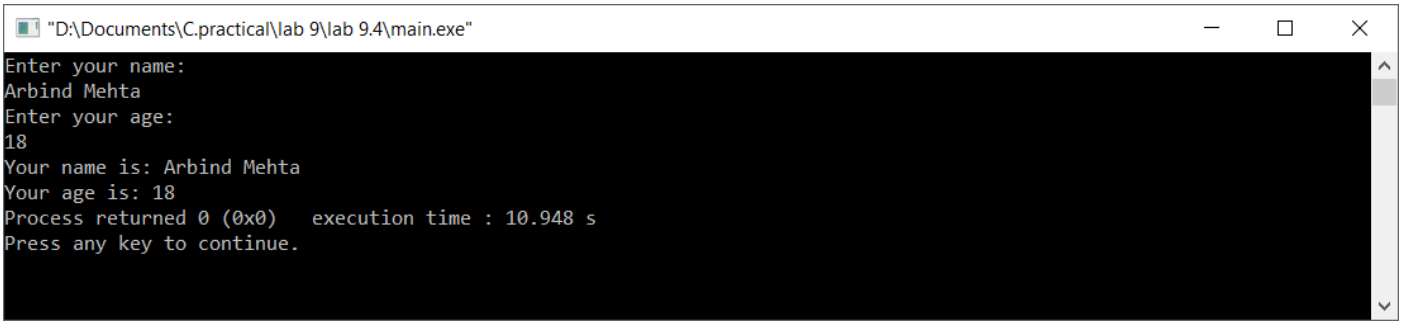
Write a function which accepts structure as argument and returns structure to the calling program.

## Code:

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


typedef struct info
```

```
{
   char nam[20];
   int ag;
}info;

info read(info i)
{
   info d;
   printf("Enter your name:\n");
   gets(i.nam);
   printf("Enter your age:\n");
   scanf("%d",&i.ag);

   return i;
};



void display(info j)
{
   printf("Your name is: %s\nYour age is: %d",j.nam,j.ag);
}
int main()
{
   info s1;

   display(read(s1));

   return 0;
}
```

## Output (Compilation, Debugging and Testing):




## Title:

Pass the structures defined in Question 1 into a function and read the structure member and display the values from the function (use structure pointer).

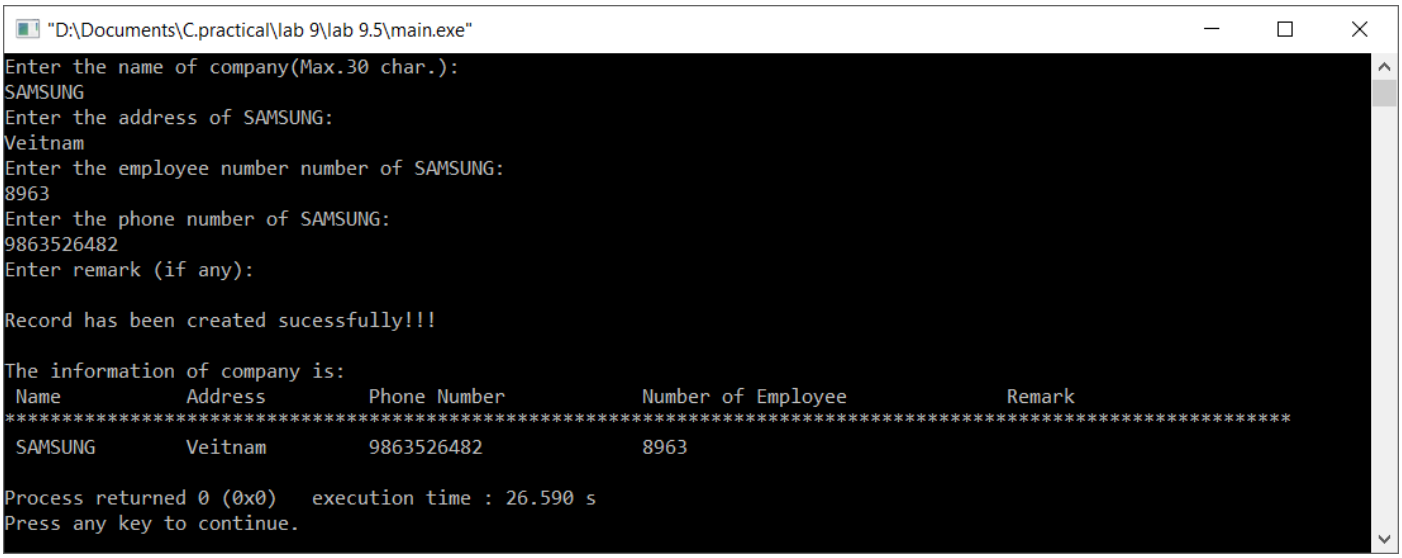
## Code:

```
#include <stdio.h>

#include <stdlib.h>

#include <string.h>


struct company

{

   char nam[30],rem[20],add[50],ph[10];

   int empno;


}*e;


void read(struct company *s)

{

   char c;
```

```
   printf("Enter the name of company(Max.30 char.):\n");
   scanf(" %[^\n]s",s->nam);
   printf("Enter the address of %s:\n",s->nam);
   scanf("%s",s->add);
   printf("Enter the employee number number of %s:\n",s->nam);
   scanf("%d",&s->empno);
   printf("Enter the phone number of %s:\n",s->nam);
   scanf("%s",&s->ph);
   printf("Enter remark (if any):\n");
   c=getch();

   while(c!="\n")
   {
      gets(s->rem);
      break;
   }
      printf("\nRecord has been created sucessfully!!!\n\n");
      getch();
}

void display(struct company *s)
{

   printf("The information of company is:\n");
   printf(" Name\t\tAddress\t\tPhone Number\t\tNumber of Employee\t\tRemark\n");

printf("**********************************************************************
****************************************\n");
```

```
    printf(" %s\t%s\t\t%s\t\t%d\t\t\t\t%s\n",s->nam, s->add, s->ph, s->empno, s->rem);

}

int main()
{

read(&e);
display(&e);

}
```

## Output (Compilation, Debugging and Testing):




## Title:

Define a structure “complex” (typedef) to read two complex numbers and perform addition, subtraction of these two complex numbers and display the result.

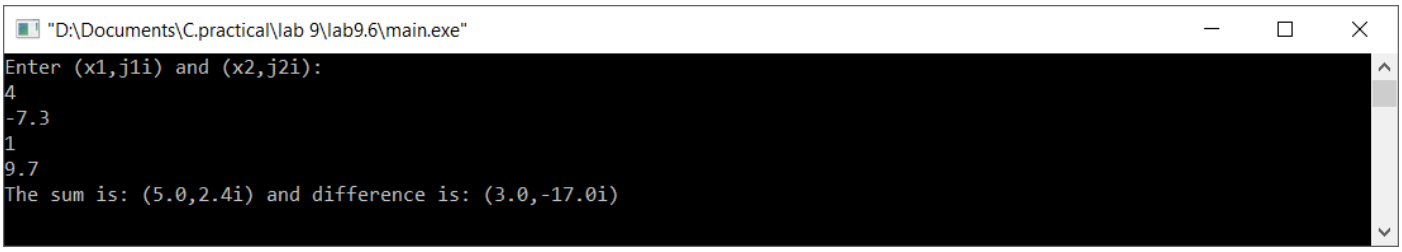
## Code:

```
#include <stdio.h>

#include <stdlib.h>
```

```
typedef struct com
{
   float rel[2];
   float img[2];

}com;

void read(com n)
{
   int i;
   float sumr=0;
   float sumi=0;
   float diffr=0;
   float diffi=0;
   printf("Enter (x1,j1i) and (x2,j2i):\n");
   for(i=0;i<2;i++)
   {
      scanf("%f%f",&n.rel[i],&n.img[i]);
      sumr+=n.rel[i];
      sumi+=n.img[i];
   }
   i=0;
   diffr=n.rel[i]-n.rel[i+1];
   diffi=n.img[i]-n.img[i+1];

   printf("The sum is: (%.1f,%.1fi) and difference is: (%.1f,%.1fi)",sumr,sumi,diffr,diffi);
   getch();
}
```

```
int main()
{
   com s;
   read(s);
   return 0;
}
```

## Output (Compilation, Debugging and Testing):




## Title:

Write a program to show programming examples with union and enumerations.

## Code:

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

typedef union student       //using union
{
   char nam[50];
   int rol,mar;
}st;

int main()
{
   st s1;
```

```
    enum students{Arbind=1, Anil, Zagir, Manish=10, Rahul, Prasant};     //declaring enum

    strcpy(s1.nam,"Arbind Kumar Mehta");    //assigment operation only one at a time
    printf("Student name is: %s\n",s1.nam);

    s1.rol=017;
    printf("Roll number of student is: %d\n",s1.rol);

    s1.mar=213;
    printf("Obtained mark(s) is: %d\n",s1.mar);
    getch();

    printf("The index of Arbind is\t%d\n",Arbind);
    printf("The index of Anil is\t%d\n",Anil);
    printf("The index of Zagir is\t%d\n",Zagir);
    printf("The index of Manish is\t%d\n",Manish);
    printf("The index of Rahul is\t%d\n",Rahul);
    printf("The index of Prasant is\t%d\n",Prasant);

    getch();

    return 0;
}
```

## Output (Compilation, Debugging and Testing):


"D:\Documents\C.practical\lab 9\lab9.8\main.exe"
Student name is: Arbind Kumar Mehta
Roll number of student is: 15
Obtained mark(s) is: 213
The index of Arbind is  1
The index of Anil is    2
The index of Zagir is   3
The index of Manish is  10
The index of Rahul is   11
The index of Prasant is 12

***