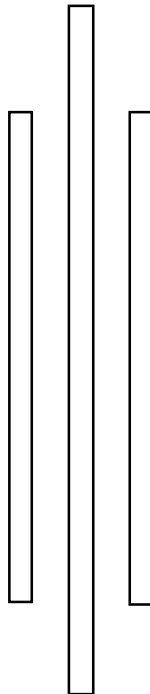


# TRIBHUVAN UNIVERSITY



## INSTITUTE OF ENGINEERING

### Lab Sheet #9



**PURWANCHAL CAMPUS**

DHARAN-8

**Submitted by:**

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Date: .....

**Submitted to:**

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## **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):

```
"D:\Documents\C.practical\lab 9\lab9.1\main.exe"
Please make a choice:
Press '1' to make a new record.
Press '2' to edit record.
Press '3' to view stored record.
Press '4' to exit.
1
Enter the total number of student(Max.100):
3
Enter the name of student(Max.30 char.):
Arbind Mehta
Enter the roll number of Arbind Mehta:
17
Enter the marks of Arbind Mehta:
78
Enter the name of student(Max.30 char.):
Rajesh Karki
Enter the roll number of Rajesh Karki:
98
Enter the marks of Rajesh Karki:
412
```

```
"D:\Documents\C.practical\lab 9\lab9.1\main.exe"
Enter the roll number of Mahesh Bhatta:
23
Enter the marks of Mahesh Bhatta:
369
Record has been created sucessfully!!!

Please make a choice:
Press '1' to make a new record.
Press '2' to edit record.
Press '3' to view stored record.
Press '4' to exit.
3
The information of student according to roll number is:
S.No.  Roll Number  Name  Marks  Percent(%)  Rank  Remark
*****
1      17          Arbind Mehta  78      15.600      3      Fail
2      98          Rajesh Karki  412     82.400     1      Pass
3      23          Mahesh Bhatta 369     73.800     2      Pass
*****
```

```
"D:\Documents\C.practical\lab 9\lab9.1\main.exe"
Press '1' to make a new record.
Press '2' to edit record.
Press '3' to view stored record.
Press '4' to exit.
2
Press '1' to edit name of student.
Press '2' to edit roll number of student.
Press '3' to edit marks of student
Press '4' to go to main menu.
3
Enter the roll number of student to be edited.17
The name of student is Arbind Mehta and mark(s) is 78
Enter new mark(s):429
Changed sucessfully!!!

Please make a choice:
Press '1' to make a new record.
Press '2' to edit record.
Press '3' to view stored record.
Press '4' to exit.
```



```
"D:\Documents\C.practical\lab 9\lab9.1\main.exe"
Enter the roll number of student to be edited.17
The name of student is Arbind Mehta and mark(s) is 78
Enter new mark(s):429
Changed sucessfully!!!

Please make a choice:

Press '1' to make a new record.
Press '2' to edit record.
Press '3' to view stored record.
Press '4' to exit.
3
The information of student according to roll number is:
S.No.  Roll Number  Name  Marks  Percent(%)  Rank  Remark
*****
1      17          Arbind Mehta  429      85.800      1      Pass
2      98          Rajesh Karki  412      82.400      2      Pass
3      23          Mahesh Bhatta  369      73.800      3      Pass
*****
```

## 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\tAddress\tPhone Number\tNumber of
Employee\tRemark\n");

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

for(i=0;i<sn;i++)
{
printf("%d\t%s\t%s\t%s\t%d\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)**

```
"D:\Documents\C.practical\lab 9\lab9.2\main.exe"

Press '1' to make a new record.
Press '2' to view stored record.
Press '3' to exit.

1
Enter the total number of company(Max.100):
3
Enter the name of company(Max.30 char.):
SAMSUNG
Enter the address of SAMSUNG:
Veitnam
Enter the employee number number of SAMSUNG:
4596
Enter the phone number of SAMSUNG:
9875463612
Enter remark (if any):
N
Enter the name of company(Max.30 char.):
APPLE
Enter the address of APPLE:
Califorina
Enter the employee number number of APPLE:
23
Enter the phone number of APPLE:
9863254125
Enter remark (if any):

Enter the name of company(Max.30 char.):
```

```
"D:\Documents\C.practical\lab 9\lab9.2\main.exe"

9863254123
Enter remark (if any):
L

Record has been created sucessfully!!!

Please make a choice:

Press '1' to make a new record.
Press '2' to view stored record.
Press '3' to exit.
2
The information of company is:
S.No.   Name      Address      Phone Number      Number of Employee      Remark
*****
1       SAMSUNG    Veitnam      9875463612        4596                   N
2       APPLE     Califorina   9863254125        23                     L
3       KHALTI    Kathmandu    9863254123        9                      L
```

## Title:

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

## Code:

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

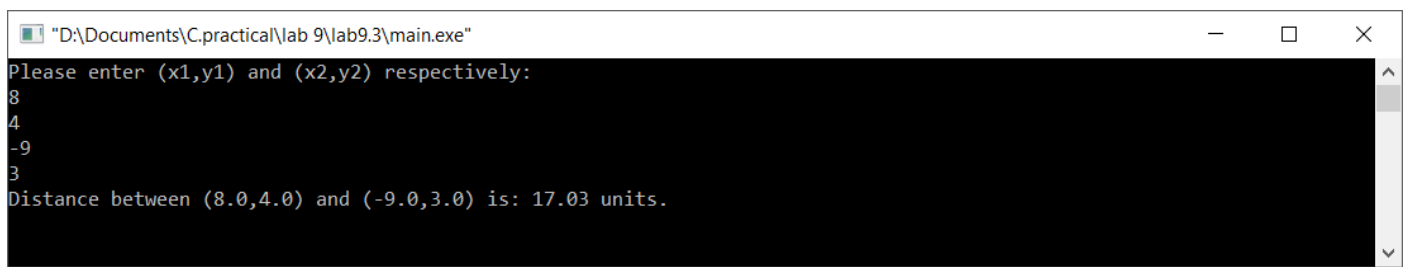
```
#include <stdlib.h>
```

```
#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):**



```
"D:\Documents\C.practical\lab 9\lab9.3\main.exe"
Please enter (x1,y1) and (x2,y2) respectively:
8
4
-9
3
Distance between (8.0,4.0) and (-9.0,3.0) is: 17.03 units.
```

### **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):

```
"D:\Documents\C.practical\lab 9\lab 9.4\main.exe"
Enter your name:
Arbind Mehta
Enter your age:
18
Your name is: Arbind Mehta
Your age is: 18
Process returned 0 (0x0) execution time : 10.948 s
Press any key to continue.
```

## 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("*****\\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):**

```

"D:\Documents\C.practical\lab 9\lab 9.5\main.exe"
Enter the name of company(Max.30 char.):
SAMSUNG
Enter the address of SAMSUNG:
Veitnam
Enter the employee number number of SAMSUNG:
8963
Enter the phone number of SAMSUNG:
9863526482
Enter remark (if any):

Record has been created sucessfully!!!

The information of company is:
Name      Address      Phone Number      Number of Employee      Remark
*****
SAMSUNG    Veitnam      9863526482      8963
*****
Process returned 0 (0x0)   execution time : 26.590 s
Press any key to continue.

```

### **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):**



```
"D:\Documents\C.practical\lab 9\lab9.6\main.exe"
Enter (x1,j1i) and (x2,j2i):
4
-7.3
1
9.7
The sum is: (5.0,2.4i) and difference is: (3.0,-17.0i)
```

### **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"); //assignment 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
```

\*\*\*