

**SSN COLLEGE OF ENGINEERING (Autonomous)**  
**(Affiliated to Anna University, Chennai)**  
**DEPARTMENT OF CSE**  
**UCS 1211 PROGRAMMING IN C LABORATORY**  
**A6: User Defined Data Types in C**

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**1. Program Name:** To generate the salary slip of an employee

**Program:**

```
#include<stdio.h>
#include<stdio.h>
struct emp
{
char name[30];
int empid;
float bp,da,hra,cca,ins,pf,gross,ded,net;
};
void input(struct emp *obj)
{
printf("\nEnter Employee's name : ");
gets(obj->name);
printf("\nEnter Employee ID : ");
scanf("%d",&obj->empid);
printf("\nEnter Basic Pay : ");
scanf("%f",&obj->bp);
}
void compute(struct emp *obj)
{
obj->da=0.88*obj->bp;
obj->hra=0.08*obj->bp;
obj->cca=1000;
obj->ins=2000;
obj->pf=0.12*obj->bp;
```

```

obj->gross=obj->da+obj->hra+obj->cca;
obj->ded=obj->ins+obj->pf;
obj->net=obj->gross-obj->ded;
}
void print(struct emp obj)
{
printf("\nSALARY DETAILS");
printf("\n~~~~~");
printf("\nEmployee's name : %s",obj.name);
printf("\nEmployee ID : %d",obj.empid);
printf("\nBasic Pay : %.2f",obj.bp);
printf("\nGross salary = %0.2f",obj.gross);
printf("\nDeductions = %0.2f",obj.ded);
printf("\nNet salary = %0.2f \n",obj.net);
}
void main()
{
struct emp obj;
input(&obj);
compute(&obj);
print(obj);
}

```

### **Output:**

```

csea50@jtl-13:~/assignment6$ gcc emp.c -o emp
csea50@jtl-13:~/assignment6$ ./emp

```

```

Enter Employee's name : Gayu
Enter Employee ID : 213564
Enter Basic Pay : 50000

```

```

SALARY DETAILS
~~~~~

```

```

Employee's name : Gayu
Employee ID : 213564
Basic Pay : 50000.00
Gross salary = 49000.00

```

Deductions = 8000.00  
Net salary = 41000.00

## **2.Program Name:** Medicine stock Management

### **Program:**

```
#include<stdio.h>
#include<stdio.h>
#include<string.h>
struct date
{
int d,m,yr;
};

struct medicine
{
int nos;
char name[30],vendor[30];
struct date mdate,edate;
};
void buy(struct medicine obj[],int *n)
{
int num,flag=0,i=0;
char nam[30];

printf("\nBUYING A MEDICINE");
printf("\n*****");
printf("\nEnter Medicine name: ");
scanf("%s",nam);
for(i=0;i<*n;++i)
if(strcmp(nam,obj[i].name)==0)
{
    flag=1;
    printf("\nEnter Quantity :");
    scanf("%d",&num);
    obj[i].nos+=num;
    break;
}
```

```

if(flag==0)
{
strcpy(obj[*n].name,nam);
printf("\nEnter vendor name: ");
scanf("%s",obj[*n].vendor);
printf("\nEnter Manufacture date(dd/mm/yyyy): ");
scanf("%d %d %d",&obj[*n].mdate.d,&obj[*n].mdate.m,&obj[*n].mdate.yr);
printf("\nEnter expiry date(dd/mm/yyyy): ");
scanf("%d %d %d",&obj[*n].edate.d,&obj[*n].edate.m,&obj[*n].edate.yr);
printf("\nEnter Quantity :");
scanf("%d",&num);
obj[*n].nos+=num;
++(*n);
}
printf("\nMedicine bought successfully!!!");
}

```

```

void display(struct medicine obj[],int n)
{
printf("\nName\tVendor \tManufacture date\tExpiry date\tStock ");
for(int i=0;i<n;++i)
{
printf("\n\n%s\t",obj[i].name);
printf("%s",obj[i].vendor);
printf("\t\t%d/ %d /%d\t",obj[i].mdate.d,obj[i].mdate.m,obj[i].mdate.yr);
printf("\t\t%d/ %d/ %d\t",obj[i].edate.d,obj[i].edate.m,obj[i].edate.yr);
printf("\t\t%d",obj[i].nos);

}
}

```

```

void sell(struct medicine obj[],int *n)
{
int num,flag=0,i=0;
char nam[30];
printf("\nSELLING A MEDICINE");
printf("\n*****");

```

```

printf("\nEnter Medicine name: ");
scanf("%s",nam);
for(i=0;i<*n;++i)
if(strcmp(nam,obj[i].name)==0)
{
    flag=1;
    do{
        printf("\nEnter Quantity :");
        scanf("%d",&num);
    }while(num>obj[i].nos&&printf("\nInsufficient stock"));
    obj[i].nos-=num;
    if(obj[i].nos==0)
    {
        for(;i<*n-1;++i)
            obj[i]=obj[i+1];
        --(*n);
    }
    printf("\nMedicine sold successfully!!!");

    break;
}
if(flag==0)
    printf("\nMedicine not found");
}

void check(struct medicine obj[],int n)
{
    char nam[30];
    int flag=0;
    printf("\nCHECK AVAILABILITY");
    printf("\n*****");
    printf("\nEnter medicine name: ");
    scanf("%s",nam);
    for(int i=0;i<n;++i)
    {
        if(strcmp(nam,obj[i].name)==0)
        {
            flag=1;

```

```

printf("\nName\tVendor \tManufacture date\tExpiry date\tStock ");

printf("\n\n%s\t",obj[i].name);
printf("%s",obj[i].vendor);
printf("\t\t%d/ %d /%d\t",obj[i].mdate.d,obj[i].mdate.m,obj[i].mdate.yr);
printf("\t\t%d/ %d/ %d\t",obj[i].edate.d,obj[i].edate.m,obj[i].edate.yr);
printf("\t\t%d",obj[i].nos);
break;
}
}
if(flag==0)
    printf("\nMedicine not found!!!");
}

void main()
{
    struct medicine obj[20];
    int n=0,op;
    for(int i=0;i<20;++i)
        obj[i].nos=0;
    do
    {

        printf("\n\nMENU\n*****");
        printf("\n1. Buy a new drug \n2. Sell a drug \n3. Check availability of a drug \n4.
        Display \n5.Exit");
        printf("\nEnter your choice: ");
        scanf("%d",&op);
        switch(op)
        {
            case 1: buy(obj,&n);

                break;
            case 2:sell(obj,&n);
                break;
            case 3:check(obj,n);
                break;

```

```
case 4: display(obj,n);
        break;
}
}while(op!=5);
}
```

### **Output:**

```
csea50@jtl-13:~/assignment6$ gcc med.c -o med
csea50@jtl-13:~/assignment6$ ./med
```

#### MENU

\*\*\*\*\*

1. Buy a new drug
2. Sell a drug
3. Check availability of a drug
4. Display
- 5.Exit

Enter your choice: 1

#### BUYING A MEDICINE

\*\*\*\*\*

Enter Medicine name: dolo

Enter vendor name: sam

Enter Manufacture date(dd/mm/yyyy): 12 3 2018

Enter expiry date(dd/mm/yyyy): 12 3 2020

Enter Quantity :100

Medicine bought successfully!!!

#### MENU

\*\*\*\*\*

1. Buy a new drug
2. Sell a drug
3. Check availability of a drug
4. Display

5.Exit

Enter your choice: 1

## BUYING A MEDICINE

\*\*\*\*\*

Enter Medicine name: Traptic150

Enter vendor name: james

Enter Manufacture date(dd/mm/yyyy): 1 5 2018

Enter expiry date(dd/mm/yyyy): 2 6 2019

Enter Quantity :150

Medicine bought successfully!!!

## MENU

\*\*\*\*\*

1. Buy a new drug

2. Sell a drug

3. Check availability of a drug

4. Display

5.Exit

Enter your choice: 1

## BUYING A MEDICINE

\*\*\*\*\*

Enter Medicine name: dolo

Enter Quantity :50

Medicine bought successfully!!!

## MENU

\*\*\*\*\*

1. Buy a new drug

2. Sell a drug

3. Check availability of a drug

4. Display

5.Exit

Enter your choice: 4



Name	Vendor	Manufacture date	Expiry date	Stock
dolo	sam	12/ 3 /2018	12/ 3/ 2020	150
Traptic150	james	1/ 5 /2018	2/ 6/ 2019	150

## MENU

\*\*\*\*\*

1. Buy a new drug
2. Sell a drug
3. Check availability of a drug
4. Display
- 5.Exit

Enter your choice: 2

## SELLING A MEDICINE

\*\*\*\*\*

Enter Medicine name: dolo

Enter Quantity :200

Insufficient stock

Enter Quantity :60

Medicine sold successfully!!!

## MENU

\*\*\*\*\*

1. Buy a new drug
2. Sell a drug
3. Check availability of a drug
4. Display
- 5.Exit

Enter your choice: 4

Name	Vendor	Manufacture date	Expiry date	Stock
------	--------	------------------	-------------	-------

dolo	sam	12/ 3 /2018	12/ 3/ 2020	90
Traptic150	james	1/ 5 /2018	2/ 6/ 2019	150

MENU

\*\*\*\*\*

1. Buy a new drug
2. Sell a drug
3. Check availability of a drug
4. Display
- 5.Exit

Enter your choice: 3

CHECK AVAILABILITY

\*\*\*\*\*

Enter medicine name: Traptic150

Name	Vendor	Manufacture date	Expiry date	Stock
Traptic150	james	1/ 5 /2018	2/ 6/ 2019	150

MENU

\*\*\*\*\*

1. Buy a new drug
2. Sell a drug
3. Check availability of a drug
4. Display
- 5.Exit

Enter your choice: 5

**3.Program Name:** To compute and display the rank of N students

**Program:**

```
#include<stdio.h>
#include<string.h>
struct date
{
    int dd,mm,yy;
```

```
};
```

```
struct student
```

```
{
```

```
    int rollno,rank,age;
```

```
    float marks[5],totalMarks;
```

```
    char name[30],gender[15];
```

```
    struct date dateofbirth;
```

```
};
```

```
void input(struct student S[],int n)
```

```
{
```

```
    for(int i=0;i<n;++i)
```

```
    {
```

```
        int op;
```

```
        printf("\nStudent %d\n~~~~~",i+1);
```

```
        printf("\nEnter Roll no. : ");
```

```
        scanf("%d",&S[i].rollno);
```

```
        printf("\nEnter the student's name : ");
```

```
        scanf(" %[^\n]",S[i].name);
```

```
        printf("\nEnter the age: ");
```

```
        scanf("%d",&S[i].age);
```

```
        printf("\nEnter Gender: ");
```

```
        scanf("%s",S[i].gender);
```

```
        printf("\nEnter date of birth(dd/mm/yyyy): ");
```

```
        scanf("%d %d
```

```
%d",&S[i].dateofbirth.dd,&S[i].dateofbirth.mm,&S[i].dateofbirth.yy);
```

```
        printf("\nEnter the marks:");
```

```
        S[i].totalMarks=0;
```

```
        for(int j=0;j<5;j++)
```

```
        {
```

```
            printf("\nSubject %d:",j+1);
```

```
            scanf("%f",&S[i].marks[j]);
```

```
            S[i].totalMarks+=S[i].marks[j];
```

```
        }
```

```

    }
}
void display(struct student S)
{
    printf("\nRoll no. :%d",S.rollno);
    printf("\nstudent's name : %s",S.name);
    printf("\nAge: %d",S.age);
    printf("\nGender: %s",S.gender);
    printf("\nDate of birth(dd/mm/yyyy):
%d/%d/%d",S.dateofbirth.dd,S.dateofbirth.mm,S.dateofbirth.yy);
    printf("\nMarks:");
    for(int j=0;j<5;j++)
        printf("\nSubject %d: %.2f",j+1,S.marks[j]);
    printf("\nTotal marks: %.2f",S.totalMarks);
    printf("\nRank: %d ",S.rank);
    printf("\n=====");
}
void rank(struct student S[],int n)
{
    int i,j;
    struct student p;
    for(i=0;i<n-1;i++)
        for(j=0;j<n-i-1;j++)
        {
            if(S[j].totalMarks<S[j+1].totalMarks)
            {
                p=S[j];
                S[j]=S[j+1];
                S[j+1]=p;
            }
        }
    S[0].rank=1;
    for(i=1;i<n;i++)
    {
        if(S[i].totalMarks==S[i-1].totalMarks)
            S[i].rank=S[i-1].rank;
    }
}

```

```

        else
            S[i].rank=i+1;
    }

}

void main()
{
    struct student stud[20];
    int i,j,n;
    char name[30];
    printf("\nEnter the no. of students: ");
    scanf("%d",&n);
    input(stud,n);
    rank(stud,n);
    printf("\n Ranking Details");
    printf("\n*****");
    for(i=0;i<n;++i)
        display(stud[i]);
    int ch;
    do
    {
        printf("\nTo print mark sheet of a particular student");
        printf("\n~~~~~");
        printf("\nEnter a name: ");
        scanf(" %[^\n]",name);
        for(i=0;i<n;++i)
            if(strcmp(stud[i].name,name)==0)
            {
                display(stud[i]);
                break;
            }
        printf("\nDo you want to continue?(Y/N) ");
        scanf(" %c",ch);
    }while(ch=='y' || ch=='Y');
}

```

}

**Output:**

```
csea50@jtl-13:~/assignment6$ gcc rank.c -o rank
csea50@jtl-13:~/assignment6$ ./rank
```

Enter the no. of students: 4

Student 1

~~~~~

Enter Roll no. : 101

Enter the student's name : Abhi

Enter the age: 16

Enter Gender: Male

Enter date of birth(dd/mm/yyyy): 2 3 2002

Enter the marks:

Subject 1:90

Subject 2:80

Subject 3:70

Subject 4:95

Subject 5:85

Student 2

~~~~~

Enter Roll no. : 102

Enter the student's name : Ishitha

Enter the age: 17

Enter Gender: Female

Enter date of birth(dd/mm/yyyy): 15 6 2001

Enter the marks:

Subject 1:99

Subject 2:93

Subject 3:100

Subject 4:89

Subject 5:90

### Student 3

~~~~~

Enter Roll no. : 103

Enter the student's name : Akshi

Enter the age: 16

Enter Gender: Female

Enter date of birth(dd/mm/yyyy): 16 8 2002

Enter the marks:

Subject 1:80

Subject 2:70

Subject 3:90

Subject 4:95

Subject 5:85

### Student 4

~~~~~

Enter Roll no. : 104

Enter the student's name : Prachi

Enter the age: 17

Enter Gender: Female

Enter date of birth(dd/mm/yyyy): 10 10 2001

Enter the marks:

Subject 1:85

Subject 2:65

Subject 3:75

Subject 4:95

Subject 5:80

### Ranking Details

\*\*\*\*\*

Roll no. :102

student's name : Ishitha

Age: 17

Gender: Female

Date of birth(dd/mm/yyyy): 15/6/2001

Marks:

Subject 1: 99.00

Subject 2: 93.00  
Subject 3: 100.00  
Subject 4: 89.00  
Subject 5: 90.00  
Total marks: 471.00  
Rank: 1

=====

Roll no. :101  
student's name : Abhi  
Age: 16  
Gender: Male  
Date of birth(dd/mm/yyyy): 2/3/2002  
Marks:  
Subject 1: 90.00  
Subject 2: 80.00  
Subject 3: 70.00  
Subject 4: 95.00  
Subject 5: 85.00  
Total marks: 420.00  
Rank: 2

=====

Roll no. :103  
student's name : Akshi  
Age: 16  
Gender: Female  
Date of birth(dd/mm/yyyy): 16/8/2002  
Marks:  
Subject 1: 80.00  
Subject 2: 70.00  
Subject 3: 90.00  
Subject 4: 95.00  
Subject 5: 85.00  
Total marks: 420.00  
Rank: 2

=====

Roll no. :104  
student's name : Prachi



Age: 17  
Gender: Female  
Date of birth(dd/mm/yyyy): 10/10/2001  
Marks:  
Subject 1: 85.00  
Subject 2: 65.00  
Subject 3: 75.00  
Subject 4: 95.00  
Subject 5: 80.00  
Total marks: 400.00  
Rank: 4

=====

To print mark sheet of a particular student

~~~~~

Enter a name: Akshi

Roll no. :103  
student's name : Akshi  
Age: 16  
Gender: Female  
Date of birth(dd/mm/yyyy): 16/8/2002  
Marks:  
Subject 1: 80.00  
Subject 2: 70.00  
Subject 3: 90.00  
Subject 4: 95.00  
Subject 5: 85.00  
Total marks: 420.00  
Rank: 2

=====

Do you want to continue?(Y/N) n