**SSN COLLEGE OF ENGINEERING (Autonomous)**

**Affiliated to Anna University**

**DEPARTMENT OF CSE**

**UCS 1211 PROGRAMMING IN C LABORATORY**

**A6: User Defined Data Types in C**

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**1. Generate the salary slip of a single employee using structure and functions. Use separate functions for getting input, computing and displaying output. Pass the structure by reference. Display the pay slip with proper formatting. Use pointer notation. (Hint: Take the required data from Ex. 1)**

#include<stdio.h>

#include<string.h>

struct salary

{

char name[30];

int bp;

float da;

float insurence;

float pf;

float grosspay;

float deductions;

float netpay;

};

float netpay(int bp, struct salary \*s,int hra,int cca)

{

s->insurence=2000;

s->da=0.88\*bp;

s->pf=0.10\*bp;

s->grosspay=bp+s->da+hra+cca;

s->deductions=s->insurence+s->pf;

s->netpay=s->grosspay-s->deductions;

printf("\n the da is\t %f",s->da);

printf("\n the hra is\t %f",hra);

printf("\n the pf is\t %f",s->pf);

printf("\n the grosspay is\t %f",s->grosspay);

printf("\n the deductions is\t %f",s->deductions);

printf("\n the netpay is\t %f",s->netpay);

}

float calhra(int bp,char city)

{

int hra;

if(city=="m")

hra=bp\*0.10;

else if(city=="c")

hra=bp\*0.80;

else

hra=bp\*0.50;

return hra;

}

int calcca(char emp)

{

int cca;

if(emp=="w")

cca=1000;

else if(emp=="e")

cca=2000;

else

cca=5000;

return cca;

}

void main()

{

struct salary a;

int bp,hra,cca;

char city,emp;

printf("enter basic pay");

scanf(" %d",&bp);

printf("enter city to find hra");

scanf(" %c",&city);

printf("enter emp to find cca");

scanf(" %c",&emp);

hra=calhra(bp,city);

cca=calcca(emp);

netpay(bp,&a,hra,cca);

}

**Output:**

cseb112@jtl-10:gcc 6.1.c –o ass6.1

cseb112@jtl-10:./6.1

enter basic pay 185001112

enter city to find hra m

enter emp to find cca w

the da is 162800976.000000

the hra is 162800976.000000

the pf is 18500112.000000

the grosspay is 440307648.000000

the deductions is 18502112.000000

the netpay is 421805536.000000

**2. Define a structure called Medicine which contains the attributes Name, Vendor, Manufacture Date, Expiry Date, Cost and other required attributes. Simulate the working of an online medical store. Write a method that automatically generates a message whenever any particular medicine is low in stock and also perform the following operations: i) Buy a new drug ii) Sell a drug iii) Check availability of a drug iv) Display all drugs with details in table format Whenever a drug is bought or sold, update the available stock. Write required functions for the above operations and develop as an application.**

#include<stdio.h>

#include<string.h>

typedef struct medicine

{

char name[100];

char vendor[100];

float mfgdate,expdate;

int cost,quantity;

};

void buys(struct medicine m[]);

void table(struct medicine m[]);

void main()

{

int i;

struct medicine m[5];

for(i=0;i<5;i++)

{

printf("\n enter the name of the medicine %d",i+1);

scanf(" %s",m[i].name);

printf("\n enter the vendor name of the medicine %d",i+1);

scanf(" %s",m[i].vendor);

printf("\n enter the mfgdate of the medicine %d",i+1);

scanf(" %f",&m[i].mfgdate);

printf("\n enter the expdate of the medicine %d",i+1);

scanf(" %f",&m[i].expdate);

printf("\n enter the quantity available of the medicine %d",i+1);

scanf(" %d",&m[i].quantity);

printf("\n enter the cost of medicine %d",i+1);

scanf(" %d",&m[i].cost);

}

printf("\nname");

printf(" vendor name");

printf(" mfgdate");

printf(" expdate");

printf(" quantity");

printf(" cost");

for(i=0;i<5;i++)

{

printf("\n%-14s",m[i].name);

printf("%15s",m[i].vendor);

printf("%12.2f",m[i].mfgdate);

printf("%18.2f",m[i].expdate);

printf("%9d",m[i].quantity);

printf("%12d",m[i].cost);

}

buys(m);

table(m);

}

void buys(struct medicine m[])

{

int i,a,n,b,c;

char buy[100],x;

buy:

a=0;

b=0;

n=0;

printf("\n enter the medicine that you are gonna buy");

scanf("%s",buy);

for(i=0;i<5;i++)

{

a=strcmp(buy,m[i].name);

if(a==0)

{

b=i;

printf("\n enter the quantity of the medicine");

scanf("%d",&n);

m[b].quantity=m[b].quantity-n;

c=m[b].quantity;

if(c<=10)

{

printf("\n the quantity of the medicine is low please purchase it from the vendor");

}

break;

}

}

printf("\n do you want to buy more medicines,enter y or n");

scanf(" %c",&x);

if(x=='y')

goto buy;

else

printf("\n thank you visit again");

}

void table(struct medicine m[])

{int i;

printf("\nname");

printf(" vendor name");

printf(" mfgdate");

printf(" expdate");

printf(" quantity");

printf(" cost");

for(i=0;i<5;i++)

{

printf("\n%-14s",m[i].name);

printf("%15s",m[i].vendor);

printf("%12.2f",m[i].mfgdate);

printf("%18.2f",m[i].expdate);

printf("%9d",m[i].quantity);

printf("%12d",m[i].cost);

}

}

**Output:**

cseb112@jtl-10:gcc 6.2.c –o 6.2

cseb112@jtl-10:./6.2

enter total no of available drugs 3

enter serial no 1

enter medicine name ab

enter vendor name cd

enter mfg date as dd-mm-yy 3

03

03

enter expiry date as dd-mm-yy03

03

13

enter medicine cost3

enter amount of medicine left in stock1234

enter serial no2

enter medicine nameef

enter vendor namegh

enter mfg date as dd-mm-yy1

1

1

enter expiry date as dd-mm-yy1

1

11

enter medicine cost6

enter amount of medicine left in stock566

enter serial no3

enter medicine nameij

enter vendor namekll

enter mfg date as dd-mm-yy2

2

2

enter expiry date as dd-mm-yy2

2

12

enter medicine cost8

enter amount of medicine left in stock543534

WARNING: THE DRUG ef IS LIMITED

enter 1 to add a drug

enter 2 to buy a drug

enter 3 to check availability of drug

enter 4 to display all drugs and details

enter 5 to exit

1

enter medicine nameab

enter no of medicine stock to be added

555

WARNING: THE DRUG ef IS LIMITED

enter 1 to add a drug

enter 2 to buy a drug

enter 3 to check availability of drug

enter 4 to display all drugs and details

enter 5 to exit

2

enter medicine nameab

enter no of medicine stock to buy

1550

WARNING: THE DRUG ab IS LIMITEDWARNING: THE DRUG ef IS LIMITED

enter 1 to add a drug

enter 2 to buy a drug

enter 3 to check availability of drug

enter 4 to display all drugs and details

enter 5 to exit

3

enter medicine nameef

the remaining stock of ef is 566

WARNING: THE DRUG ab IS LIMITEDWARNING: THE DRUG ef IS LIMITED

enter 1 to add a drug

enter 2 to buy a drug

enter 3 to check availability of drug

enter 4 to display all drugs and details

enter 5 to exit

4

s.no id name vend mfg exp cost stock

0 1 ab cd 3-3-3 3-3-13 3.00 239

1 2 ef gh 1-1-1 1-1-11 6.00 566

2 3 ij kll 2-2-2 2-2-12 8.00 54353

WARNING: THE DRUG ab IS LIMITEDWARNING: THE DRUG ef IS LIMITED

enter 1 to add a drug

enter 2 to buy a drug

enter 3 to check availability of drug

enter 4 to display all drugs and details

enter 5 to exit

5

THANKYOU

**3. Define a data type for Date having 3 members namely day, month and year. Define a data type for Student with members rollnum, name, marks[5], totalMarks, rank, dateofbirth (of type Date), age, gender. Use an enumerated data type for gender with values MALE, FEMALE, TRANSGENDER. Write a C program that gets data for N students and computes and display the rank of the students. Use array of structures. Write a C function that takes an array of structures of students and compute their rank. If total marks of M students are same and get the same rank R, then assign R+M as the rank for next student. Write another C function that prints the mark sheet of a particular student with all the details in a proper format designed by you.**

#include<stdio.h>

#include<string.h>

#include<ctype.h>

#include<stdlib.h>

struct date

{

int dd,mm,yyyy;

};

struct rank

{

int rnum;

char name[30];

int marks[5], total,rank,age;

struct date d;

char g[12];

};

void print(struct rank s[], int n)

{

printf("\nroll \tname \tm1 \tm2 \tm3 \tm4 \tm5 \ttotal \trank \tDOB \tage \tgender \t");

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

{

printf("\n %d \t %s \t %d \t %d \t %d \t %d \t %d \t %d \t %d \t %d-%d-%d \t %d \t %s \t",s[i].rnum,s[i].name,s[i].marks[0],s[i].marks[1],s[i].marks[2],s[i].marks[3],s[i].marks[4],s[i].total,s[i].rank,s[i].d.dd,s[i].d.mm,s[i].d.yyyy,s[i].age,s[i].g);

}

}

void calrank(struct rank s[], int n)

{

int r[n],m,p=0;

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

{

r[i]=s[i].total;

}

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

{

for (int j=i;j<n;j++)

{

if(r[i]>r[j])

{

m=r[i];

r[i]=r[j];

r[j]=m;

}

}

}

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

printf(" %d",r[i]);

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

{

for (int j=i;j<n;j++)

{

if(s[i].total==r[j])

{

s[i].rank=n-j;

}

}

}

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

{

if(s[i].total==s[i+1].total)

{

s[i+1].rank=s[i].rank;

}

}

}

void main()

{

int n;

printf("\nEnter total students\t");

scanf(" %d",&n);

struct rank s[n];

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

{

printf("\nEnter details of student %d :\n",i+1);

printf("\nEnter roll no\t");

scanf(" %d",&s[i].rnum);

printf("\nEnter student name\t");

scanf(" %s",s[i].name);

printf("\nEnter student marks\t");

s[i].total=0;

s[i].rank=0;

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

{

scanf(" %d",&s[i].marks[j]);

s[i].total+=s[i].marks[j];

}

printf("\nEnter DOB as dd-mm-yyyy\n");

scanf(" %d",&s[i].d.dd);

scanf(" %d",&s[i].d.mm);

scanf(" %d",&s[i].d.yyyy);

char ran[11];

printf("\nEnter student's age\t");

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

printf("\nEnter gender of student\t");

scanf(" %s",s[i].g);

}

calrank(s,n);

print(s,n);

}

**Output:**

cseb112@jtl-10:gcc 6.3.c –o 6.3

cseb112@jtl-10:./6.3

Enter total students 4

Enter details of student 1 :

Enter roll no 1

Enter student name prathyush

Enter student marks 8

9

8

9

8

Enter DOB as dd-mm-yyyy

25

10

2000

Enter student's age 18

Enter gender of student male

Enter details of student 2 :

Enter roll no 2

Enter student name praveen

Enter student marks 8

8

8

8

8

Enter DOB as dd-mm-yyyy

02

11

2000

Enter student's age 18

Enter gender of student male

Enter details of student 3 :

Enter roll no 3

Enter student name pooja

Enter student marks 9

9

8

8

8

Enter DOB as dd-mm-yyyy

03

05

2001

Enter student's age 17

Enter gender of student female

Enter details of student 4 :

Enter roll no 4

Enter student name prabha

Enter student marks 9

9

9

9

0

Enter DOB as dd-mm-yyyy

22

03

2000

Enter student's age 19

Enter gender of student female

name m1 m2 m3 m4 m5 total rank DOB age gender

prathyush 8 9 8 9 8 42 1 25-10-00 18 male

praveen 8 8 8 8 8 40 3 2-11-00 18 male

pooja 9 9 8 8 8 42 1 3-5-01 17 female

prabha 9 9 9 9 0 36 4 22-3-00 19 female