**SSN COLLEGE OF ENGINEERING (Autonomous)**

**Affiliated to Anna University**

**DEPARTMENT OF CSE**

**UCS 1211 PROGRAMMING IN C LABORATORY**

**Assignment 6 : Structures in C**

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**CLASS : CSE-B (SEMESTER-2)**

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***1. Generate the salary slip of a single employee using structure and functions. Use separate functions forgetting input, computing and displaying output. Pass the structure by reference. Display the pay slip with proper formatting. Use pointer notation.***

#include<stdio.h>

#include<string.h>

struct name

{

char cname[40];

char ename[40];

char wname[40];

};

struct grosspay

{

float BP,DA,HRA,CCA;

};

struct dedu

{

float INS,PF;

};

struct payslip

{

struct name sname;

struct grosspay gp;

struct dedu sdedu;

float netpay;

};

int main()

{

struct payslip spay;

getdata(&spay);

calc(&spay);

display(&spay);

return 0;

}

void display(struct payslip \*spay)

{

printf(" Name of the Company:%s\n",spay->sname.cname);

printf("Name of the employer:%s\n",spay->sname.ename);

printf("Name of the employee:%s\n",spay->sname.wname);

printf(" Income details:\n");

printf("BP:%.2f\n",spay->gp.BP);

printf("DA:%.2f\n",spay->gp.DA);

printf("HRA:%.2f\n",spay->gp.HRA);

printf("CCA:%.2f\n",spay->gp.CCA);

printf(" Deduction Details:\n");

printf("Insurance:%.2f\n",spay->sdedu.INS);

printf("PF:%.2f\n",spay->sdedu.PF);

printf("\t\t\tNETPAY:Rs%.2lf\n",spay->netpay);

}

void getdata(struct payslip \*spay)

{

printf("Enter the name of the company: ");

scanf("%s",spay->sname.cname);

printf("Enter the name of the employer: ");

scanf("%s",spay->sname.ename);

printf("Enter the name of the employee: ");

scanf("%s",spay->sname.wname);

printf("Enter Basic Pay: ");

scanf("%f",&spay->gp.BP);

}

void calc(struct payslip \*spay)

{

float total,dedu;

spay->gp.DA=0.88\*spay->gp.BP;

spay->gp.HRA=0.08\*spay->gp.BP;

spay->gp.CCA=1000;

spay->sdedu.INS=2000;

spay->sdedu.PF=0.10\*spay->gp.BP;

total=spay->gp.BP+spay->gp.DA+spay->gp.HRA+spay->gp.CCA;

dedu=spay->sdedu.INS+spay->sdedu.PF;

spay->netpay=total-dedu;

}

***Output:***

cseb121@jtl-19:~$gcc a6\_1 -o a6\_1

cseb121@jtl-19:~$./a6\_1

Enter the name of the company: Google

Enter the name of the employer: Ramakrishna

Enter the name of the employee: Rahul

Enter Basic Pay: 100000

Name of the Company:Google

Name of the employer:Ramakrishna

Name of the employee:Rahul

Income details:

BP:100000.00

DA:88000.00

HRA:8000.00

CCA:1000.00

Deduction Details:

Insurance:2000.00

PF:10000.00

NETPAY:Rs185000.00

***2. Define a structure called Medicine which contains the attributes Name, Vendor, Manufacture Date, ExpiryDate, 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>

struct mfgdate

{

int mday,mmon,myr;

};

struct expdate

{

int eday,emon,eyr;

};

struct Medicine

{

char name[50],vname[40];

struct mfgdate mdate;

struct expdate edate;

float cost;

int items;

};

int main()

{

void getdata(int \*num,struct Medicine \*med);

void selldrug(int \*num,struct Medicine \*med);

void deldrug(int \*num,struct Medicine \*med);

void checkdata(int \*num,struct Medicine \*med);

void displaydata(int \*num,struct Medicine \*med);

void checkwarning(int \*num,struct Medicine \*med);

int searchdrug(int \*n,struct Medicine \*med);

struct Medicine med[1000];

int num=0,n;

printf("PRESS\n");

printf("1.Add drug(while buying a new drug) or create drug list.\n2.Sell a drug\n3.Delete a particular drug\n4.Check availability of a drug\n5.Display all the drug in the form of a list\n6.Close the application\n");

scanf("%d",&n);

while(n!=6)

{

switch (n)

{

case 1:getdata(&num,&med);break;

case 2:selldrug(&num,&med);checkwarning(&num,&med);break;

case 3:deldrug(&num,&med);break;

case 4:checkdata(&num,&med);break;

case 5:displaydata(&num,&med);break;

case 6:checkwarning(&num,&med);return 0;

default:printf("Enter a valid input\n");break;

}

printf("1.Add drug(while buying a new drug) or create drug list.\n2.Sell a drug\n3.Delete a particular drug\n4.Check availability of a drug\n5.Display all the drug in the form of a list\n6.Close the application\n");

scanf("%d",&n);

if (n==6)

{

checkwarning(&num,&med);

}

}

return 0;

}

void getdata(int \*num,struct Medicine \*med)

{

char ch;

ch ='Y';

while(ch=='Y')

{

\*num=\*num+1;

printf("Enter the name of the drug:");

scanf("%s",med[\*num-1].name);

printf("Enter the name of the vendor:");

scanf("%s",med[\*num-1].vname);

printf("Enter the manufactured date of the drug in the format day month year:");

scanf("%d %d %d",&med[\*num-1].mdate.mday,&med[\*num-1].mdate.mmon,&med[\*num-1].mdate.myr);

printf("Enter the expiry date of the drug in the format day month year:");

scanf("%d %d %d",&med[\*num-1].edate.eday,&med[\*num-1].edate.emon,&med[\*num-1].edate.eyr);

printf("Enter the cost of the drug:");

scanf("%f",&med[\*num-1].cost);

printf("Amount of this drug bought:");

scanf("%d",&med[\*num-1].items);

printf("Enter Y to continue entering the data, N to stop entering the data:");

scanf(" %c",&ch);

}

printf("DRUGS LIST UPDATED!\n");

}

void selldrug(int \*num,struct Medicine \*med)

{

int x,y;

x=searchdrug(&(\*num),&(\*med));

if(x==-1)

{return;}

printf("Enter the amount of drug you sold:");

scanf("%d",&y);

med[x].items=med[x].items-y;

printf("DRUGS LIST UPDATED!\n");

}

void deldrug(int \*num,struct Medicine \*med)

{

int x,y;

x=searchdrug(&(\*num),&(\*med));

if(x==-1)

{return;}

for (int i=x;i<(\*num-1);i++)

{

int a,b;

a=strlen(med[i+1].name);

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

{

med[i].name[j]=med[i+1].name[j];

}

med[i].name[a]='\0';

b=strlen(med[i+1].vname);

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

{

med[i].vname[j]=med[i+1].vname[j];

}

med[i].vname[b]='\0';

med[i].mdate.mday=med[i+1].mdate.mday;

med[i].mdate.mmon=med[i+1].mdate.mmon;

med[i].mdate.myr=med[i+1].mdate.myr;

med[i].edate.eday=med[i+1].edate.eday;

med[i].edate.emon=med[i+1].edate.emon;

med[i].edate.eyr=med[i+1].edate.eyr;

med[i].cost=med[i+1].cost;

med[i].items=med[i+1].items;

}

\*num=\*num-1;

printf("DELETION COMPLETED!\n");

}

void checkdata(int \*num,struct Medicine \*med)

{

int x,y;

x=searchdrug(&(\*num),&(\*med));

if(x==-1)

{return;}

y=med[x].items;

printf("AMOUNT OF DRUG IN THE STOCK IS: %d\n",y);

}

void displaydata(int \*num,struct Medicine \*med)

{

int a1,a2;

printf("\t\t\t\tDRUG LIST\n");

printf("S/No\tName of drug\t\tVendor name\t\tManufactured date\tExpiry date\tCost\tStock\n");

for(int i=0;i<\*num;i++)

{

a1=20-strlen(med[i].name);

a2=18-strlen(med[i].vname);

printf("%d\t",i+1);

printf("%s\t\t%s\t\t%d:%d:%d\t\t\t%d:%d:%d\t%.2f\t%d\n",med[i].name,med[i].vname,med[i].mdate.mday,med[i].mdate.mmon,med[i].mdate.myr,med[i].edate.eday,med[i].edate.emon,med[i].edate.eyr,med[i].cost,med[i].items);

}

}

void checkwarning(int \*n,struct Medicine \*med)

{

int x=0;

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

{

if ((med[i].items)<10)

{

printf("AVAILABILITY OF %s DRUG IS LESS THAN 10.BUY NOW!!\n",med[i].name);

x=1;

}

}

if (x==0)

{

printf("EVERY DRUG STOCK IS ABOVE 10.GOOD WORK!!\n");

}

}

int searchdrug(int \*n,struct Medicine \*med)

{

int x=0,y;

char srch[50];

printf("Enter the name of the drug you want to search:");

scanf("%s",srch);

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

{

if (strcmp(srch,med[i].name) == 0)

{

y=i;

x=1;

}

}

if (x==0)

{

printf("The given drug is not found in the list!\n");

y=-1;

}

return y;

}

***Output:***

cseb121@jtl-19:~$gcc a6\_2 -o a6\_2

cseb121@jtl-19:~$./a6\_2

PRESS

1.Add drug(while buying a new drug) or create drug list.

2.Sell a drug

3.Delete a particular drug

4.Check availability of a drug

5.Display all the drug in the form of a list

6.Close the application

1

Enter the name of the drug:Amoxylin

Enter the name of the vendor:Rama

Enter the manufactured date of the drug in the format day month year:12

4

2014

Enter the expiry date of the drug in the format day month year:

12

4

2019

Enter the cost of the drug:300

Amount of this drug bought:299

Enter Y to continue entering the data, N to stop entering the data:Y

Enter the name of the drug:Paramol

Enter the name of the vendor:Rahul

Enter the manufactured date of the drug in the format day month year:12 3 2015

Enter the expiry date of the drug in the format day month year:21 5 2019

Enter the cost of the drug:400

Amount of this drug bought:599

Enter Y to continue entering the data, N to stop entering the data:Y

Enter the name of the drug:Gelusil

Enter the name of the vendor:Prithvi

Enter the manufactured date of the drug in the format day month year:12 7 2016

Enter the expiry date of the drug in the format day month year:12 8 2020

Enter the cost of the drug:400

Amount of this drug bought:300

Enter Y to continue entering the data, N to stop entering the data:N

DRUGS LIST UPDATED!

1.Add drug(while buying a new drug) or create drug list.

2.Sell a drug

3.Delete a particular drug

4.Check availability of a drug

5.Display all the drug in the form of a list

6.Close the application

2

Enter the name of the drug you want to search:Gelusil

Enter the amount of drug you sold:291

DRUGS LIST UPDATED!

AVAILABILITY OF Gelusil DRUG IS LESS THAN 10.BUY NOW!!

1.Add drug(while buying a new drug) or create drug list.

2.Sell a drug

3.Delete a particular drug

4.Check availability of a drug

5.Display all the drug in the form of a list

6.Close the application

4

Enter the name of the drug you want to search:Paramol

AMOUNT OF DRUG IN THE STOCK IS: 599

1.Add drug(while buying a new drug) or create drug list.

2.Sell a drug

3.Delete a particular drug

4.Check availability of a drug

5.Display all the drug in the form of a list

6.Close the application

5

DRUG LIST

S/No Name of drug Vendor name Manufactured date Expiry date Cost Stock

1 Amoxylin Rama 12:4:2014 12:4:2019 300.00 299

2 Paramol Rahul 12:3:2015 21:5:2019 400.00 599

3 Gelusil Prithvi 12:7:2016 12:8:2020 400.00 9

1.Add drug(while buying a new drug) or create drug list.

2.Sell a drug

3.Delete a particular drug

4.Check availability of a drug

5.Display all the drug in the form of a list

6.Close the application

6

AVAILABILITY OF Gelusil DRUG IS LESS THAN 10.BUY NOW!!

***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>

typedef struct

{

int day;

int month;

int year;

}date;

typedef struct

{

int rollno,age,rank;

char name[50];

int mark[5],totalmarks;

date dat;

enum {MALE,FEMALE,TRANSGENDER} gender;

}student;

int main()

{

student s[100];

int n,maxm;

printf("Enter the number of students:");

scanf("%d",&n);

printf("Enter the maximum total marks:");

scanf("%d",&maxm);

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

{

inputs(&s,&i);

}

comrank(&s,n,maxm);

display(&s,n);

return 0;

}

void inputs(student \*s,int \*i)

{

int sum=0;

char g[12];

printf("Enter the name of the %dth student:",\*i+1);

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

printf("Enter the rollno of the %dth student:",\*i+1);

scanf("%d",&s[\*i].rollno);

printf("Enter the age of the %dth student:",\*i+1);

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

printf("Enter the birthdate in the format day month year:");

scanf("%d %d %d",&s[\*i].dat.day,&s[\*i].dat.month,&s[\*i].dat.year);

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

{

printf("Enter the %dth mark:",j+1);

scanf("%d",&s[\*i].mark[j]);

sum+=s[\*i].mark[j];

}

s[\*i].totalmarks=sum;

printf("Gender(MALE/FEMALE/TRANSGENDER):");

scanf("%s",g);

if(strcmp(g,"MALE")==0)

{

s[\*i].gender=0;

}

else if(strcmp(g,"FEMALE")==0)

{

s[\*i].gender=1;

}

else

{

s[\*i].gender=2;

}

}

void comrank(student \*s,int n,int maxm)

{

int r=1,r1=1;

for (int i=maxm;i>=0;i--)

{

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

{

if (s[j].totalmarks==i)

{

s[j].rank=r;

r1+=1;

}

}

r=r1;

}

}

void display(student \*s,int n)

{

int pos,a=1;

char sname[50];

while(a!=0)

{

pos=-1;

printf("Enter the name of the student whose detais you want:");

scanf("%s",sname);

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

{

if(strcmp(s[i].name,sname)==0)

{

pos=i;

break;

}

}

if(pos==-1)

{

printf("No such person found!\nTry another name!\n");

continue;

}

printf("\t\t\t\t%s's Mark Sheet\n",s[pos].name);

printf("Name:%s\n",s[pos].name);

printf("Rollno:%d\n",s[pos].rollno);

printf("Age:%d\n",s[pos].age);

printf("Date of Birth:%d:%d:%d\n",s[pos].dat.day,s[pos].dat.month,s[pos].dat.year);

if (s[pos].gender==0)

{

printf("Gender:Male\n");

}

else if(s[pos].gender==1)

{

printf("Gender:Female\n");

}

else

{

printf("Gender:Transgender\n");

}

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

{

printf("Marks of %dth subject:%d\n",j+1,s[pos].mark[j]);

}

printf("Totalmark:%d\n",s[pos].totalmarks);

printf("Rank:%d\n",s[pos].rank);

printf("Press 1 to get the marksheet of other students or Press 0 to exit:");

scanf("%d",&a);

}

}

***Output:***

cseb121@jtl-19:~$gcc a6\_3 -o a6\_3

[cseb121@jtl-19:~$./a6\_3](mailto:cseb121@jtl-19:~$./a6_3)

Enter the number of students:4

Enter the maximum total marks:500

Enter the name of the 1th student:Rahul

Enter the rollno of the 1th student:121

Enter the age of the 1th student:17

Enter the birthdate in the format day month year:30 5 2001

Enter the 1th mark:80

Enter the 2th mark:80

Enter the 3th mark:80

Enter the 4th mark:80

Enter the 5th mark:80

Gender(MALE/FEMALE/TRANSGENDER):MALE

Enter the name of the 2th student:Raghu

Enter the rollno of the 2th student:120

Enter the age of the 2th student:18

Enter the birthdate in the format day month year:30 7 2000

Enter the 1th mark:54

Enter the 2th mark:54

Enter the 3th mark:54

Enter the 4th mark:45

Enter the 5th mark:45

Gender(MALE/FEMALE/TRANSGENDER):MALE

Enter the name of the 3th student:Rama

Enter the rollno of the 3th student:123

Enter the age of the 3th student:17

Enter the birthdate in the format day month year:21 5 2001

Enter the 1th mark:80

Enter the 2th mark:80

Enter the 3th mark:80

Enter the 4th mark:80

Enter the 5th mark:80

Gender(MALE/FEMALE/TRANSGENDER):MALE

Enter the name of the 4th student:Priya

Enter the rollno of the 4th student:124

Enter the age of the 4th student:17

Enter the birthdate in the format day month year:21 4 2001

Enter the 1th mark:99

Enter the 2th mark:99

Enter the 3th mark:99

Enter the 4th mark:99

Enter the 5th mark:99

Gender(MALE/FEMALE/TRANSGENDER):FEMALE

Enter the name of the student whose detais you want:Rahul

Rahul's Mark Sheet

Name:Rahul

Rollno:121

Age:17

Date of Birth:30:5:2001

Gender:Male

Marks of 1th subject:80

Marks of 2th subject:80

Marks of 3th subject:80

Marks of 4th subject:80

Marks of 5th subject:80

Totalmark:400

Rank:2

Press 1 to get the marksheet of other students or Press 0 to exit:1

Enter the name of the student whose detais you want:Raghu Raghu's Mark Sheet

Name:Raghu

Rollno:120

Age:18

Date of Birth:30:7:2000

Gender:Male

Marks of 1th subject:54

Marks of 2th subject:54

Marks of 3th subject:54

Marks of 4th subject:45

Marks of 5th subject:45

Totalmark:252

Rank:4

Press 1 to get the marksheet of other students or Press 0 to exit:1

Enter the name of the student whose detais you want:Priya

Priya's Mark Sheet

Name:Priya

Rollno:124

Age:17

Date of Birth:21:4:2001

Gender:Female

Marks of 1th subject:99

Marks of 2th subject:99

Marks of 3th subject:99

Marks of 4th subject:99

Marks of 5th subject:99

Totalmark:495

Rank:1

Press 1 to get the marksheet of other students or Press 0 to exit:1

Enter the name of the student whose detais you want:Rama

Rama's Mark Sheet

Name:Rama

Rollno:123

Age:17

Date of Birth:21:5:2001

Gender:Male

Marks of 1th subject:80

Marks of 2th subject:80

Marks of 3th subject:80

Marks of 4th subject:80

Marks of 5th subject:80

Totalmark:400

Rank:2

Press 1 to get the marksheet of other students or Press 0 to exit:0