

LAB8: C Structures

Task1(1 structure – 2 record – array notation): Write a program stores the information (name and marks) of 5 students using structures.

In this program, a structure, student is created.

This structure has two members: name (string) and marks (float).

Then, we created a structure array of size 5 to store information of 5 students.

Using for loop, the program takes the information of 5 students from the user and displays it on the screen.

Sol:

```
#include "stdafx.h"
struct student
{
    char name[50];
    float marks;
} s[2];

void main()
{
    char b[2];
    int i;
    printf("enter information of students:\n");
    for ( i = 0; i < 2; i++)
    {
        printf("enter %d.name:",i+1);
        gets(s[i].name);

        printf("enter %d.mark:",i+1);
        scanf_s("%f", &s[i].marks);

        gets(b);
        printf("\n");
    }
    printf("***student information***\n");
    printf("%5s%6s\n", "NAME", "MARK");
    for (i = 0; i < 2; i++)
    {
        printf("%5s%6.1f\n",s[i].name,s[i].marks);
    }
}
```

```

C:\WINDOWS\system32\cmd.exe
enter information of students:
enter 1.name:ali
enter 1.mark:70

enter 2.name:mary
enter 2.mark:85

***student information***
NAME  MARK
ali   70.0
mary  85.0
Press any key to continue . . .

```

Task2 (nested structure – 1 record): Design structures to store information on customers and their bank accounts based on the following form.

```

Customer
    Id
    Name
Account
    Accno
    Balance
Customer information

```

```

#include "stdafx.h"
struct customer
{
    int id;
    char name[20];
};

struct account
{
    int accno;
    float balance;
    struct customer cinfo;
};

void main()
{
    char b[2];
    struct account a;
    printf("enter name:");
    gets(a.cinfo.name);
    printf("enter id:");
    scanf_s("%d", &a.cinfo.id);
    gets(b);
    printf("enter account no:");
    scanf_s("%d", &a.accno);

    printf("enter balance:");
    scanf_s("%f", &a.balance);

```

```
printf("\ncustomer name:%s\ncustomer id:%d\n",a.cinfo.name,a.cinfo.id);
printf("account no:%d\naccount balance:%.2f\n", a.accno, a.balance);
}
```

```
C:\WINDOWS\system32\cmd.exe
enter name:john
enter id:1652
enter account no:007585
enter balance:5200

customer name:john
customer id:1652
account no:7585
account balance:5200.00
Press any key to continue . . . _
```

Task3A (nested structure – 1 record – pointer notation): Modification of Task2

```
#include "stdafx.h"
struct customer
{
    int id;
    char name[20];
};

struct account
{
    int accno;
    float balance;
    struct customer cinfo;
};

void main()
{
    char b[2];
    struct account a,*p;
    p = &a;
    printf("enter name:");
    gets((*p).cinfo.name);
    printf("enter id:");
    scanf_s("%d", &(p)->cinfo.id);
    gets(b);
    printf("enter account no:");
    scanf_s("%d", &(*p).accno);

    printf("enter balance:");
    scanf_s("%f", &(p)->balance);

    printf("\ncustomer name:%s\ncustomer id:%d\n",(*p).cinfo.name,(p)->cinfo.id);
    printf("account no:%d\naccount balance:%.2f\n", (*p).accno, (p)->balance);
}
```

```

C:\WINDOWS\system32\cmd.exe
enter name:john
enter id:1652
enter account no:007585
enter balance:5200

customer name:john
customer id:1652
account no:7585
account balance:5200.00
Press any key to continue . . .

```

Task3B(nested structure – 2 record – pointer notation): Modification of Task3A

```

#include "stdafx.h"
struct customer
{
    int id;
    char name[20];
};

struct account
{
    int accno;
    float balance;
    struct customer cinfo;
};

void main()
{
    char b[2]; int i;
    struct account a[2],*p;
    p = &a;
    for (i = 0; i < 2; i++)
    {
        printf("enter name:");
        gets((*p+i).cinfo.name);
        printf("enter id:");
        scanf_s("%d", &(p+i)->cinfo.id);
        gets(b);
        printf("enter account no:");
        scanf_s("%d", &(*p+i).accno);

        printf("enter balance:");
        scanf_s("%f", &(p+i)->balance);
        gets(b);
    }
    for (i = 0; i < 2; i++)
    {
        printf("\n\ncustomer name:%s\ncustomer id:%d\n", (*p+i).cinfo.name,
(p+i)->cinfo.id);
        printf("account no:%d\naccount balance:%.2f\n", (*p+i).accno, (p+i)-
>balance);
    }
}

```

```

C:\WINDOWS\system32\cmd.exe
enter name:John
enter id:1652
enter account no:007585
enter balance:5200
enter name:Amir
enter id:1502
enter account no:007080
enter balance:12250

customer name:John
customer id:1652
account no:7585
account balance:5200.00

customer name:Amir
customer id:1502
account no:7080
account balance:12250.00
Press any key to continue . . .

```

Task4(nested structure – 2 record – pointer notation-printing information in a function): Modification of Task3

```

#include "stdafx.h"
struct customer
{
    int id;
    char name[20];
};

struct account
{
    int accno;
    float balance;
    struct customer cinfo;
};

void printfInfo(struct account *p)
{
    for (int i = 0; i < 2; i++)
    {
        printf("\ncustomer name:%s\ncustomer id:%d\n", (*(p + i)).cinfo.name,
(p + i)->cinfo.id);
        printf("account no:%d\naccount balance:%.2f\n", (*(p + i)).accno, (p +
i)->balance);
    }
}

void main()
{
    char b[2]; int i;
    struct account a[2],*p;

    p = &a;
    for (i = 0; i < 2; i++)

```

```
{
    printf("enter name:");
    gets((*p+i).cinfo.name);
    printf("enter id:");
    scanf_s("%d", &(p+i)->cinfo.id);
    gets(b);
    printf("enter account no:");
    scanf_s("%d", &(*p+i).accno);

    printf("enter balance:");
    scanf_s("%f", &(p+i)->balance);
    gets(b);
}
printfInfo(a);
}
```