

## Lab-9

### Question 1

Write a program that is able to produce balanced meal. Start by defining a structure that contains the name of a food, its calories, its food type such that as meat or fruit and its costs. The food should be stored as an array of structures. The program should construct a meal of four different types which should be input through user and also displayed using for loop.

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

struct menu
{
    char food;
    int calories;
    char foodType;
    int cost;
};

int main()
{
    struct menu meal[4];

    for(int i=1; i<=4; i++)
    {
        printf("\nThis is the menu of meal %d \n",i);
        printf("Enter the food of meal %d:",i);
        scanf("%s",&meal[i].food);
        printf("Enter the calories of meal %d:",i);
        scanf("%d",&meal[i].calories);
        printf("Enter the foodType of meal %d:",i);
        scanf("%s",&meal[i].foodType);
        printf("Enter the cost of meal %d:",i);
        scanf("%d",&meal[i].cost);
        printf("menu of meal %d = {%c,%d,%c,%d}",i, meal[i].food, meal[i].calories,
meal[i].foodType, meal[i].cost);
        printf("\n");
    }
}
```

### Question 2

Write a menu driven program that depicts the working of a library. The menu options should be:

1. Add book information
2. Display book information
3. List all books of a specified author
4. List the title of specified book
5. List the count of books in the library
6. Exit

Create a structure called library to hold title of book, author name, price of book and a variable indicating whether book is issued or not.

```

#include <stdio.h>
#include <string.h>
#include <stdlib.h>

struct library
{
    char title[60];
    char author[40];
    int price;
    char issue[10];
} book[100];

int main()
{
    int i, n, option;
    int count = 0;
    char Author[40];
    char Title[40];

    do
    {
        printf("\n 1. Add Book Information.\n");
        printf("2. Display Book Information.\n");
        printf("3. List All Books Of A Specified author.\n");
        printf("4. List The Title Of Specified Book.\n");
        printf("5. List The Count Of Books In The Library.\n");
        printf("6. Exit\n");

        printf("\n Enter any option: ");
        scanf("%d", &option);

        switch(option)
        {
            case 1:
                printf("\n Number of books to enter: ");
                scanf("%d", &n);

                for(i = 1; i <= n; i++)
                {
                    printf("\n Enter the title of book:");
                    scanf("%s", book[i].title);

                    printf("\n Enter the author of book:");
                    scanf("%s", book[i].author);

                    printf("\n Enter the price of book:");
                    scanf("%d", &book[i].price);

                    printf("\n Is the Book Issued (Yes or No):");
                    scanf("%s", book[i].issue);
                }
                break;

```

case 2:

```
printf("\n Book Information.\n");

for(i = 1; i <= n; i++ )
{
    printf("Book[%d], = {%s, %s, %d, %s} \n", i, book[i].title,
book[i].author, book[i].price, book[i].issue);
}
break;
```

case 3:

```
printf("Enter the name of the author: ");
scanf("%s", Author);

for(i = 1; i <= n; i++)
{
    if(strcmp(book[i].author, Author) == 0)
    {
        printf("List of book of the Author %s are: ", Author);
        printf("%s", book[i].title);
        printf("\n");
    }
}
break;
```

case 4:

```
printf("Enter the title of the Book: ");
scanf("%s", Title);

for(i = 1; i <= n; i++)
{
    if(strcmp( book[i].title, Title))
    {
        printf("The detail of the mentioned book %s: ",Title);
        printf("book[%d] = {%s,%s,%d,%s}", i, book[i].title,
book[i].author, book[i].price, book[i].issue);
        printf("\n");
    }
}
break;
```

case 5:

```
for(i = 1; i <= n; i++)
{
    count++;
}
printf("\n Total number of books in the library: %d", count);
printf("\n");
break;
```

case 6:

```

        exit(0);
    }
}
while(count != 6);
return 0;
}

```

### Question 3

Define a structure that can describe a hotel. It should have members that include the name, address, grade, average room charge and number of rooms.

1. Print out hotels of a given grade in order of charges.
2. Print out hotels with room charges less than a given values

```

#include <stdio.h>
#include <conio.h>

struct hotel
{
    char name[20];
    char add[20];
    int grade;
    int arc;
    int rooms;
};

void output();
void out();

struct hotel inn[]={
    {"Ludrong Hotel","Thimphu",4,4600,60},
    {"Hotel Pelri","Gelephu",5,4600,10},
    {"Zhingkham Resort","Punakha",3,4000,40},
    {"Hotel Ugyen Ling","Bumthang",5,6000,20},
    {"Hotel Palm","Phuntsholing",2,3500,50}
};

void main()
{
    int go;
    printf("Enter 1 to show the hotels of a given grade in order of charges\n");
    printf("Enter 2 to show hotels with room charges less than a given values: \n\n");
    scanf("%d",&go);
    switch(go)
    {
        case 1: output();
        break;
        case 2: out();
        break;
        default:printf("Wrong input");
        break;
    }
    getch();
}

```

```

void output()
{
    int gr,i;
    printf("Enter Grade 1 to 5:");
    scanf("%d",&gr);
    if(gr>=1||gr<=5)
    {
        for(i=0;i<=4;i++)
        {
            if(inn[i].grade==gr)
                printf("Hotel Name: %s\nAddress:%s\nGrade:%d\nAverage Room charge:%d\n\n",inn[i].name,inn[i].add,inn[i].grade,inn[i].arc,inn[i].rooms);
        }
    }
    else
        printf("Wrong grade input!");
}

```

```

void out()
{
    int ch,i=0;
    printf("Enter the Room charges not greater than 6000:");
    scanf("%d",&ch);
    while(i<5)
    {
        if(inn[i].arc<ch)
            printf("Hotel Name: %s\nAddress:%s\nGrade:%d\nAverage Room charge:%d\n",inn[i].name,inn[i].add,inn[i].grade,inn[i].arc,inn[i].rooms);
        i++;
    }
}

```

#### Question 4

Write a program to Add Two Distances (in inch-feet) System Using Structures. Program takes two distances in inch-feet system and stores in data members of two Structure variables. Then, this program calculates the sum of two distances and displays it.

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

```

struct distance
{
    int feet;
    float inch;
} result;

```

```

int main()
{
    struct distance d1;
    struct distance d2;

```

```

struct distance result;

//information about the d1.
printf("This is the information about d1.\n");
printf("Enter the feet of d1:");
scanf("%d",&d1.feet);
printf("Enter the inch of d1:");
scanf("%f",&d1.inch);

printf("\n");

//information about the d2.
printf("This is the information about d2.\n");
printf("Enter the feet of d2:");
scanf("%d",&d2.feet);
printf("Enter the inch of d2:");
scanf("%f",&d2.inch);

printf("\n");

result.feet = d1.feet + d2.feet;
result.inch = d1.inch + d2.inch;

//to convert inch to feet. 12 inch is equal to 1 feet.
if(result.inch >= 12)
{
    result.inch = result.inch - 12;
    result.feet++;
}

printf("The sum of distance = %d' - %f" \n", result.feet, result.inch);
return 0;
}

```

### Question 5

Write a C Program to Add Two Complex Numbers by using Structures.

```

#include <stdio.h>

struct Complex_num
{
    int real_num;
    int img_num;
};

int main()
{
    struct Complex_num a, b, sum;

    printf("Enter a real number for first complexe_number: ");
    scanf("%d", &a.real_num);
    printf("Enter a imaginary number for first complexe_number: ");

```

```
scanf("%d", &a.img_num);
```

```
printf("Enter a real number for second complexe_number: ");
```

```
scanf("%d", &b.real_num);
```

```
printf("Enter a imaginary number for second complexe_number: ");
```

```
scanf("%d", &b.img_num);
```

```
sum.real_num = a.real_num + b.real_num;
```

```
sum.img_num = a.img_num + b.img_num;
```

```
printf("Sum of two complex number: (%d) + (%d)\n", sum.real_num, sum.img_num);
```

```
return 0;
```

```
}
```