

Name: Antarin Ghosal

Ha 10.1

```
/*
Name: Antarin ghosal
WAP to create a new data type DATE with the help of structure and typedef. Write the
following user defined functions for the date manipulations.
a) To return next date
b) To return next month.
c) To return next year.
d) to add few days in a date.
e) To add few months in a date.
f) To add few years in a date.
g) To return month name from a date.
h) To display date in various format such as DD-MM-YYYY, DD.MM.YY etc.*/
#include<stdio.h>
typedef struct date
{
    int day;
    int month;
    int year;
}d;
int main()
{
    d date;
    int n,x;
    printf("Enter Date :~");
    scanf("%i %i %i",&date.day,&date.month,&date.year);
    printf("Enter Command Number For Function:~\n");
    printf("1 for Next Day\n");
    printf("2 for Next Month\n");
    printf("3 for Next Year\n");
    printf("4 for Add Date\n");
    printf("5 for Add Month\n");
    printf("6 for Add Year\n");
    printf("7 for Different Styles\n");
    printf("Enetr Function key:~");
    scanf("%i",&n);
    switch (n)
    {
        case 1:
            printf("Next Date Is %i/%i/%i",date.day+1,date.month,date.year);
            break;
        case 2:
            printf("Next Month Is %i",date.month+1);
            break;
        case 3:
            printf("Next Year Is %i",date.year+1);
```

```

        break;
    case 4:
        printf("Enter Date To Add:~");
        scanf("%i",&x);
        printf("Resultant Date Is %i",date.year+x);
        break;
    case 5:
        printf("Enter Month To Add:~");
        scanf("%i",&x);
        printf("Resultant Month Is %i",date.month+x);
        break;
    case 6:
        printf("Enter Year To Add:~");
        scanf("%i",&x);
        printf("Resultant Year Is %i",date.year+x);
        break;
    case 7:
        printf("Date Is %i/%i/%i\n",date.day+1,date.month,date.year);
        printf("Date Is %i.%i.%i\n",date.day+1,date.month,date.year);
        printf("Date Is %i-%i-%i\n",date.day+1,date.month,date.year);
        break;
    default:
        printf("Please Enter Valid Number");
        break;
}
}

```

```

Enter Date :~10 1 21
Enter Command Number For Function:~
1 for Next Day
2 for Next Month
3 for Next Year
4 for Add Date
5 for Add Date
6 for Add Date
7 for Different Styles
Enetr Function key:~2
Next Month Is 2

```

```

Enter Date :~10 1 12
Enter Command Number For Function:~
1 for Next Day
2 for Next Month
3 for Next Year
4 for Add Date
5 for Add Month
6 for Add Year
7 for Different Styles
Enetr Function key:~4
Enter Date To Add:~1 3 22
Resultant Date Is 13

```

Ha 10.2

```
/*
Name: Antarin ghosal
HA10.2 WAP to calculate the difference between two time periods. Times are given in hr, min
and sec.
*/

#include<stdio.h>

struct time{
    int second,min,hr;
}t1,t2,D;

int main()
{
    printf("Time1:\n");
    printf("ENTER TIME:hr:");
    scanf("%d",&t1.hr);
    printf("min:");
    scanf("%d",&t1.min);
    printf("Sec:");
    scanf("%d",&t1.second);

    printf("Time2:\n");
    printf("ENTER TIME:hr:");
    scanf("%d",&t2.hr);
    printf("min:");
    scanf("%d",&t2.min);
    printf("Sec:");
    scanf("%d",&t2.second);

    //DIFERENCE

    D.hr=t1.hr-t2.hr;
    D.min=t1.min-t2.min;
    D.second=t1.second-t2.second;

    while(D.second<0)
    {
        D.second=60+D.second;
        D.min=D.min-1;
    }
    while(D.min<0)
    {
        D.min+=60;
        D.hr=-1;
    }

    printf("TIME DIFFERENCE:%d:%d:%d",D.hr,D.min,D.second);
    return 0;
}
```

```

Time1:
ENTER TIME:hr:2
min:26
Sec:50
Time2:
ENTER TIME:hr:1
min:26
Sec:40
TIME DIFFERENCE:1:0:10

```

```

deRunnerFile.c -O tempC
Time1:
ENTER TIME:hr:10
min:20
Sec:40
Time2:
ENTER TIME:hr:1
min:26
Sec:40
TIME DIFFERENCE:-1:54:0

```

Ha 10.3

```

/*
Name: Antarin ghosal
HA10.3 WAP to extract individual bytes from an unsigned int using union.
*/

#include<stdio.h>
union tagname
{
    unsigned int a;
    unsigned char s[4];
}object;

int main()
{
    char i; //for Loop counter

    printf("ENter an integer number: ");
    scanf("%d",&object.a);

    printf("Integer number: %ld, hex: %X\n",object.a,object.a);

    printf("Indivisual bytes: ");
    for(i=3;i>=0;i--)
        printf("%02X ",object.s[i]);

    printf("\n");
    return 0;
}

```

```

Enter an integer number: 4
Integer number: 4, hex: 4
Indivisual bytes: 00 00 00 04

```

```

Enter an integer number: 10
Integer number: 10, hex: A
Indivisual bytes: 00 00 00 0A

```

La 10.1

```
/*Author : Antarin Ghosal
Program : WAP to store n student's information (i.e. student's roll no, name, gender,
marks in 5 subjects
etc) of an educational institute and display all the data with total marks of each
student, using
array of structure. If full mark of each subject is considered as 100 and pass mark as 40,
then
display the list of students failed in a particular subject.
*/

#include<stdio.h>

struct student
{
    int roll;
    char name[30];
    char gender;
    int marks1;
    int marks2;
    int marks3;
    int marks4;
    int marks5;
}

stu[5]={
    {1,"Ramesh",'M',74,68,70,76,80},
    {2,"Suresh",'M',89,90,86,74,83},
    {3,"Kamli",'F',78,36,78,80,62},
    {4,"Ananya",'F',58,93,32,78,80},
    {5,"Kamlesh",'M',89,64,80,28,90},
};

int main(){

    printf("The Student details of individual student are : \n");
    for(int i=0;i<5;i++){
        printf("\t %d \t %s \t %c \t %d \t %d \t %d \t %d \t %d \t\n",stu[
i].roll,stu[i].name,stu[i].gender,stu[i].marks1,stu[i].marks2,stu[i].marks3,stu[i].marks4,
stu[i].marks5);
    }

    return 0;
}
```

The Student details of individual student are :

1	Ramesh	M	74	68	70	76	80
2	Suresh	M	89	90	86	74	83
3	Kamli	F	78	36	78	80	62
4	Ananya	F	58	93	32	78	80
5	Kamlesh	M	89	64	80	28	90

La 10.2

```
/*
Name: Antarin ghosal
LA10.2 WAP to add two distances (in km-meter) using structures.
*/

#include<stdio.h>
struct dis
{
    int km;
    int m;
};

int main()
{
    struct dis d1,d2,sum;

    printf("Enter distance1:KM:");
    scanf("%d",&d1.km);
    printf("M:");
    scanf("%d",&d1.m);

    printf("Enter distance2:KM:");
    scanf("%d",&d2.km);
    printf("M:");
    scanf("%d",&d2.m);

    sum.km=d1.km+d2.km;
    sum.m=d1.m+d2.m;

    if(sum.m>1000)
    {
        int temp=sum.m/1000;
        sum.km=sum.km+temp;
        sum.m=sum.m%1000;
    }

    printf("Total distance: %dkm %dm",sum.km,sum.m);

    return 0;
```

```
Enter distance1:KM:10
M:20
Enter distance2:KM:30
M:
20
Total distance: 40km 40m
```

```
Enter distance1:KM:5
M:10
Enter distance2:KM:8
M:10
Total distance: 13km 20m
```

La 10.3

```
#include<stdio.h>
struct Time
{
    int h;
    int m;
    int s;
};

int main()
{
    struct Time T1,T2,S;

    printf("\nEnter time 1\n");
    printf("Hour:");
    scanf("%d",&T1.h);
    printf("MINUTE:");
    scanf("%d",&T1.m);
    printf("SECOUND:");
    scanf("%d",&T1.s);

    printf("\nEnter time 2\n");
    printf("Hour:");
    scanf("%d",&T2.h);
    printf("MINUTE:");
    scanf("%d",&T2.m);
    printf("SECOUND:");
    scanf("%d",&T2.s);

    S.h=T1.h+T2.h;
    S.m=T1.m+T2.m;
    S.s=T1.s+T2.s;

    while(S.s>60)
    {
        S.s-=60;
        S.m+=1;
    }
```

```

while(S.m>60)
{
    S.m-=60;
    S.h+=1;
}
printf("\nT1 : %d:%d:%d",T1.h,T1.m,T1.s);
printf("\nT2 : %d:%d:%d",T2.h,T2.m,T2.s);
printf("\nADDED TIME: %d:%d:%d",S.h,S.m,S.s);

return 0;
}

```

```

Enter time 1
Hour:10
MINUTE:20
SECOUND:30

Enter time 2
Hour:10
MINUTE:20
SECOUND:20

T1 : 10:20:30
T2 : 10:20:20
ADDED TIME: 20:40:50

```

```

Enter time 1
Hour:20
MINUTE:30
SECOUND:40

Enter time 2
Hour:20
MINUTE:30
SECOUND:40

T1 : 20:30:40
T2 : 20:30:40
ADDED TIME: 41:1:20

```

La 10.4

```

#include<stdio.h>
struct info
{
    char name[20];
    char Gender;
    char designaton[25];
    char depatment[25];
    float BP;
    float GP;
};

int main()
{
    printf("Enter number of employee: ");
    int n,i;
    scanf("%d",&n);

```



```

struct info employee[n];

printf("\n\t\tEnter information of the employee\n");
float HR,DA;
for(i=0;i<n;i++)
{
    printf("\t\t\t\tEMPLOYEE %d\n\n",i+1);
    printf("Enter name: ");
    scanf(" %[^\\n]s",&employee[i].name);
    printf("Enter Gender: ");
    scanf(" %c",&employee[i].Gender);
    printf("Enter DEIGNATION: ");
    scanf(" %[^\\n]s",&employee[i].designaton);
    printf("Enter DEPARTMENT: ");
    scanf(" %[^\\n]s",&employee[i].depatment);
    printf("ENTER BP(basic pay): ");
    scanf("%f",&employee[i].BP);
    HR=(float)25*employee[i].BP/100;
    DA=(float)75*employee[i].BP/100;

    employee[i].GP=employee[i].BP+HR+DA;
}

//DISPLAY
printf("\n %10s\t %10s\t %10s\t %10s\t %10s\t %10s\n",
"NAME", "GENDER", "DESIGNATION", "DEPARTMANT", "BP", "GP");

for(i=0;i<n;i++)
    printf("\n %10s\t %10c\t %10s\t %10s\t %10.2f\t %10.2f\n",
employee[i].name,employee[i].Gender,employee[i].designaton,employee[i].depatment,emp
loye[i].BP,employee[i].GP);

return 0;
}

```

```

Enter information of the employee
EMPLOYEE 1

Enter name: Antarin
Enter Gender: M
Enter DEIGNATION: manager
Enter DEPARTMENT: It
ENTER BP(basic pay): 1000000

EMPLOYEE 2

Enter name: Kolluri
Enter Gender: M
Enter DEIGNATION: Ceo
Enter DEPARTMENT: IT
ENTER BP(basic pay): 5000000

```

NAME	GENDER	DESIGNATION	DEPARTMANT	BP	GP
Antarin	M	manager	It	1000000.00	2000000.00
Kolluri	M	Ceo	IT	5000000.00	10000000.00

La 10.5

```
/*
Name: Antarin ghosal
WAP to declare an union named as ABC having three members a, b and c as character, integer
and double respectively. Assign user entered values to these members respectively one by
one
and display these values immediately. Again assign these user entered values to a, b, c
one by
one all together and display these values at last. Find the difference.*/
#include<stdio.h>
union ABC
{
    char a;
    int b;
    double c;
}ob;
int main()
{
    int n;
    char s;
    double x;
    printf("Enter Value Of int:~");
    scanf("%i",&n);
    printf("Enter Charater Value:~\n");
    scanf("\n%c",&s);
    printf("Enter Double Value:~\n");
    scanf("%ld",&x);
    ob.a = s;
    printf("Current Value In %u Is %c After Adding a Value\n",&ob,ob.a);
    ob.b = n;
    printf("Current Value In %u Is %i After Adding b Value\n",&ob,ob.b);
    ob.c = x;
    printf("Current Value In %u Is %i After Adding b Value\n",&ob,ob.c);
    ob.a = s;
    ob.b = n;
    ob.c = x;
    printf("Current Value In %u Is %c After Adding All Values\n",&ob,ob.a);
    printf("Current Value In %u Is %i After Adding All Values\n",&ob,ob.b);
    printf("Current Value In %u Is %ld After Adding All Values",&ob,ob.c);
}
```

```

Enter Value Of int:~2
Enter Charater Value:~
a
Enter Double Value:~
2.3
Current Value In 2565951552 Is a After Adding a Value
Current Value In 2565951552 Is 2 After Adding b Value
Current Value In 2565951552 Is 2 After Adding b Value
Current Value In 2565951552 Is 0 After Adding All Values
Current Value In 2565951552 Is 2 After Adding All Values
Current Value In 2565951552 Is 2 After Adding All Values

```

Sa 10.1

```

/*
Name: Antarin ghosal
SA10.1 WAP to store one student's information (i.e. student's roll no, name, gender,
marks etc) of an
educational institute and display all the data, using structure.
24/05/2022
*/
#include<stdio.h>
#include<string.h>
struct stdinf
{
    char name[20];
    int roll;
    char gender;
    int marks;
};

int main()
{
    struct stdinf std1={"Antarin",2106096,'M',100};
    printf("Name:%s\nRoll:%d\nGender:%c\nMarks:%d",std1.name,std1.roll,std1.gender,std1.ma
rks);
    return 0;
}

```

```

Name:Antarin
Roll:2106069
Gender:M
Marks:100

```

Sa 10.2

```
/*
Name: Antarin ghosal
SA10.2 WAP to store n student's information (i.e. student's roll no, name, gender, marks
etc) of an
educational institute and display all the data, using array of structure.
24/05/2022
*/
#include<stdio.h>
#include<string.h>
struct stdinf
{
    char name[20];
    int roll;
    char gender;
    int marks;
};

int main()
{
    int n,i;
    printf("Enter the value of n:(total number of student)");
    scanf("%d",&n);
    struct stdinf std[n];
    //input
    for(i=0;i<n;i++)
    {
        printf("\n-----for student %d-----",i+1);
        printf("\nEnter name: ");
        scanf("%s",&std[i].name);
        printf("\nEnter roll: ");
        scanf("%d",&std[i].roll);
        printf("\nEnter gender: ");
        scanf(" %c",&std[i].gender);
        printf("\nEnter marks: ");
        scanf("%d",&std[i].marks);
    }
    //display
    printf("\n\nSno.\tName\tRoll\tGender\tmarks\n");
    for(i=0;i<n;i++)
        printf("%d\t%s\t%d\t%c\t%d\n",i+1,std[i].name,std[i].roll,std[i].gender,std[i].marks);

    return 0;
}
```

Enter the value of n:(total number of student)2

-----for student 1-----

Enter name: Antarin

Enter roll: 2106096

Enter gender: M

Enter marks: 100

-----for student 2-----

Enter name: Ayush

Enter roll: 2106137

Enter gender: M

Enter marks: 100

Sno.	Name	Roll	Gender	marks
1	Antarin	2106096	M	100
2	Ayush	2106137	M	100

Sa 10.4

```
/*
Name: Antarin ghosal
WAP to add two complex numbers by passing structure to a function
24/05/2022
*/
#include <stdio.h>
typedef struct complex
{
    float real;
    float imag;
} complex;
complex add(complex n1, complex n2)
{
    complex temp;
    temp.real = n1.real + n2.real;
    temp.imag = n1.imag + n2.imag;
    return (temp);
}
int main() {
    complex n1, n2, result;
    printf("For 1st complex number \n");
```

```

printf("Enter the real then imaginary parts: ");
scanf("%f %f", &n1.real, &n1.imag);

printf("\nFor 2nd complex number \n");
printf("Enter the real then imaginary parts: ");
scanf("%f %f", &n2.real, &n2.imag);

result = add(n1, n2);

printf("Sum = %.1f + %.1fi", result.real, result.imag);
return 0;
}

```

```

For 1st complex number
Enter the real then imaginary parts: 10 5

For 2nd complex number
Enter the real then imaginary parts: 5 10
Sum = 15.0 + 15.0i

```

```

For 1st complex number
Enter the real then imaginary parts: 12 1

For 2nd complex number
Enter the real then imaginary parts: 19
3
Sum = 31.0 + 4.0i

```

Sa 10.5

```

/*
Name: Antarin ghosal
WAP to store n books data such as title, author, pulication, price etc using structures
with
dynamically memory allocation. Display all the books information of a particular author.*/
#include<stdio.h>
#include<string.h>
#define SIZE 20
struct bookdetail
{
    char name[20];
    char author[20];
    int pages;
    float price;
};

```

```

void output(struct bookdetail v[],int n)
{
    int i,t=1;
    for(i=0;i<n;i++,t++)
    {
        printf("\n");
        printf("Book No.%d\n",t);
        printf("\t\tBook %d Name is=%s \n",t,v[i].name);
        printf("\t\tBook %d Author is=%s \n",t,v[i].author);
        printf("\t\tBook %d Pages is=%d \n",t,v[i].pages);
        printf("\t\tBook %d Price is=%f \n",t,v[i].price);
        printf("\n");
    }
}

void main()
{
    struct bookdetail b[SIZE];
    int num,i;
    printf("Enter the Numbers of Books:");
    scanf("%d",&num);
    printf("\n");
    for(i=0;i<num;i++)
    {
        printf("\t=Book %d Detail:=\n",i+1);
        printf("\nEnter the Book Name:\n");
        scanf("%s",b[i].name);
        printf("Enter the Author of Book:\n");
        scanf("%s",b[i].author);
        printf("Enter the Pages of Book:\n");
        scanf("%d",&b[i].pages);
        printf("Enter the Price of Book:\n");
        scanf("%f",&b[i].price);
    }
    output(b,num);
}

```

```

Enter the Numbers of Books:2

      =:Book 1 Detail:=

Enter the Book Name:
alaska
Enter the Author of Book:
james
Enter the Pages of Book:
270
Enter the Price of Book:

100

      =:Book 2 Detail:=

Enter the Book Name:
look
Enter the Author of Book:
james
Enter the Pages of Book:
240
Enter the Price of Book:
200

Book No.1

      Book 1 Name is=alaska
      Book 1 Author is=james
      Book 1 Pages is=270
      Book 1 Price is=100.000000

Book No.2

      Book 2 Name is=look
      Book 2 Author is=james
      Book 2 Pages is=240
      Book 2 Price is=200.000000

```

Sa 10.6

```

/*
Name: Antarin ghosal
WAP to read item details used in party and calculate all expenses, divide expenses in all
friends equally.*/
#include <stdio.h>

```



```

#define MAX 50
//structure definition
typedef struct item_details
{
    char itemName[30];
    int quantity;
    float price;
    float totalAmount;
}item;
int main()
{
    item thing[MAX];
    int i,choice;
    int count=0;
    float expenses=0.0f;
    i=0;
    //infinite loop
    do{
        printf("Enter item details [%2d]:\n",i+1);
        printf("Item:  ");
        fgets(thing[i].itemName,30,stdin);
        printf("Price?  ");
        scanf("%f",&thing[i].price);
        printf("Quantity:  ");
        scanf("%d",&thing[i].quantity);
        thing[i].totalAmount=(float)thing[i].quantity*thing[i].price;
        expenses += thing[i].totalAmount;
        i++;
        count++;
        printf("\nWant to more items (press 1): ");
        scanf("%d",&choice);
        getchar();
    }while(choice==1);
    //print all items
    printf("All details are:\n");
    for(i=0; i<count; i++)
    {
        printf("%-30s\t %.2f \t %3d\n %.2f\n",thing[i].itemName, thing[i].price,
thing[i].quantity, thing[i].totalAmount);
    }
    printf("#### Total expense: %.2f\n",expenses);
    printf("Want to divide in friends (press 1 for yes): ");
    scanf("%d",&choice);
    if(choice==1)
    {
        printf("How many friends? ");
        scanf("%d",&i);
        printf("Each friend will have to pay: %.2f\n",(expenses/(float)i));
    }
    printf("~Thanks for using me... Enjoy your party!!!~\n");
    return 0;
}

```

```

Enter item details [ 1]:
Item? book
Price? 100
Quantity? 10

Want to more items (press 1): 1
Enter item details [ 2]:
Item? games
Price? 10
Quantity? 2

Want to more items (press 1):
2
All details are:
book
                                100.00      10
1000.00
games
                                10.00      2
20.00
#### Total expense: 1020.00
Want to divide in friends (press 1 for yes): 1
How many friends? 2
Each friend will have to pay: 510.00
~Thanks for using me... Enjoy your party!!!~

```

Sa 10.7

```

/*
Name: Antarin ghosal
WAP to declare an union named as ABC having two members a as character and b as
integer . Assign 'A' to a, 1088 to b respectively through an union variable ob one by one
and
display these these values immediately. Now assign these values to a, b through ob all
together and display these values at last. Find the difference.*/
#include<stdio.h>
union Ob
{
    char a;
    int b;
}ob;
int main()
{
    int n;
    char s;

```

```

printf("Enter Value Of int:~");
scanf("%i",&n);
printf("Enter Charater Value:~");
scanf("%c",&s);
ob.a = s;
printf("Current Value In %u Is %c After Adding a Value\n",&ob,ob.a);
ob.b = n;
printf("Current Value In %u Is %i After Adding b Value\n",&ob,ob.b);
ob.a = s;
ob.b = n;
printf("Current Value In %u Is %c After Adding Both Values\n",&ob,ob.a);
printf("Current Value In %u Is %i After Adding Both Value",&ob,ob.b);
}

```

```

Enter Value Of int:~4
Enter Charater Value:~Current Value In 1891323968 Is
After Adding a Value
Current Value In 1891323968 Is 4 After Adding b Value
Current Value In 1891323968 Is ♦ After Adding Both Values
Current Value In 1891323968 Is 4 After Adding Both Value

```

```

Enter Value Of int:~1
Enter Charater Value:~Current Value In 3550236736 Is
After Adding a Value
Current Value In 3550236736 Is 1 After Adding b Value
Current Value In 3550236736 Is 0 After Adding Both Values
Current Value In 3550236736 Is 1 After Adding Both Value

```