

(STRUCTURES QUESTIONS)

(MADE BY ALI AKBER)

(BSCS IST SS1)

Question no 1:

Write a program that declares a structure of MyStructure that store no with integer data type. The program should define structure variables, inputs the value and then display the value.

```
#include <iostream>

using namespace std;

struct MyStructure{
    int no;
};

int main(){
    MyStructure n;

    cout<<"Enter the integer"<<endl;

    cin>>n.no;

    cout<<"The entered number is "<<n.no<<endl;

    return 0;
}
```

Question 2:

Write a program that declares a structure of Person that store Person id, name and age with appropriate data types. The program should define structure variables, inputs the values and then displays their values.

```
#include <iostream>

using namespace std;

struct person{
    int pid;
```

```

        char fname[40],sname[30];

        int age;

};

int main(){

    person p;

    cout<<"Enter person id: "<<endl;

    cin>>p.pid;

    cout<<" Enter person first name : "<<endl;

    cin>>p.fname;

    cout<<" Enter person second name : "<<endl;

    cin>>p.sname;

    cout<<"Enter person age: "<<endl;

    cin>>p.age;

    cout<<"The Person data is as follows:\t "<<endl;

    cout<<"The Person id is: "<<p.pid<<endl;

    cout<<" The Person name is: "<<p.fname<<"   "<<p.sname<<endl;

    cout<<"The Person age is: "<<p.age<<endl;

    return 0;

}

```

Question 3: Write a program that declares a structure Student to store Roll No, English, physics, computer subject Marks, average marks of a student. The program should define a structure variable, inputs the values, finds the average and then displays the student values on the screen.

```

#include <iostream>

using namespace std;

struct student{

    int rno;

```

```

    int engmarks;

    int phymarks;

    int compmarks;

    float avg;
};

int main(){

    student s;

    cout<<"Enter roll no: ";

    cin>>s.rno;

    cout<<"Enter marks in English: ";

    cin>>s.engmarks;

    cout<<"Enter marks in Physics: ";

    cin>>s.phymarks;

    cout<<"Enter marks in Computer: ";

    cin>>s.compmarks;

    s.avg=(s.engmarks+s.phymarks+s.compmarks)/3;

    cout<<"\t The student data is given as: \t"<<endl;

    cout<<"The student roll no is"<<s.rno<<endl;

    cout<<"The student marks in English are: "<<s.engmarks<<endl;

    cout<<"The student marks in Phycis are: "<<s.phymarks<<endl;

    cout<<"The student marks in Computer are: "<<s.compmarks<<endl;

    cout<<"The student average marks   are: "<<s.avg<<"%"<<endl;

    return 0;

}

```

Question 4:

Write a program that declares a structure to store Computer id (int), brand name(string)

and price(float) of a computer. It defines two structure variables and inputs values. It displays the record of costliest computer on the screen.

```
#include <iostream>

using namespace std;

    struct computer{

        int id;

        string bname;

        float price;

};

int main(){

    computer c1, c2;

    cout<<"Enter details of computer 1"<<endl;

    cout<<"Enter id of the computer: "<<endl;

    cin>>c1.id;

    cout<<"Enter brand name   of the computer: "<<endl;

    cin>>c1.bname;

    cout<<"Enter price of the computer: "<<endl;

    cin>>c1.price;

    cout<<"Enter details of computer 2"<<endl;

    cout<<"Enter id of the computer: "<<endl;

    cin>>c2.id;

    cout<<"Enter brand name   of the computer: "<<endl;

    cin>>c2.bname;

    cout<<"Enter price of the computer: "<<endl;

    cin>>c2.price;

    cout<<" The most costly computer is as follows: "<<endl;
```

```

    if (c1.price> c2.price){

        cout<<"Computer id: "<<c1.id<<endl;

        cout<<"Computer brand name : "<<c1.bname<<endl;

        cout<<"Computer price : "<<c1.price<<endl;

    }

    else {

        cout<<" Computer id: "<<c2.id<<endl;

        cout<<"Computer brand name "<<c2.bname<<endl;

        cout<<"Computer price :"<<c2.price<<endl;

    }

    return 0;

}

```

Question no 5+6:

Write a program that uses a structure to store employee number, name, hours worked, hourly rate and gross pay. The program inputs employee number, name, hours worked and hourly rate the user, calculates gross pay and then displays all employee data on screen.

```

#include <iostream>

using namespace std;

struct einfo{

    int eno;

    char fname[40],sname[30];

    double hrs,hrsrate,gsal;

};

int main(){

```

```

    einfo e;

    cout<<" Enter employee number: "<<endl;

    cin>>e.eno;

    cout<<" Enter employee first name : "<<endl;

    cin>>e.fname;

    cout<<" Enter employee second name : "<<endl;

    cin>>e.sname;

    cout<<" Enter employee's hours worked: "<<endl;

    cin>>e.hrs;

    cout<<"Enter empolyee's hourly rate : "<<endl;

    cin>>e.hrsrate;

    e.gsal=e.hrs*e.hrsrate;

    cout<<" \t The Empolyee data is as follows :\t "<<endl;

    cout<<" Employee number: "<<e.eno<<endl;

    cout<<" Employee first name : "<<e.fname<<endl;

    cout<<" Employee second name : "<<e.sname<<endl;

    cout<<" Employee's hours worked: "<<e.hrs<<endl;

    cout<<" Employee's hourly rate : "<<e.hrsrate<<endl;

    cout<<"  Empolyee's gross salary: Rs  "<<e.gsal<<endl;

    return 0;

}

```

Question 7:

Write a program that creates a structure Complex which represents fields by integer real and imaginary. Program allows the user to enter the real and imaginary parts complex number and then print the complex number on the screen. For example, if user entered two complex numbers as

Enter Real part=12

Enter imaginary Part = 4

Then output of program will be

Complex no = 12+4i

```
#include <iostream>
```

```
using namespace std;
```

```
    struct complex{
```

```
        int realno;
```

```
        int imgno;
```

```
};
```

```
int main(){
```

```
    complex c;
```

```
    cout<<"Enter the real part: "<<endl;
```

```
    cin>>c.realno;
```

```
    cout<<"Enter the imaginary part: "<<endl;
```

```
    cin>>c.imgno;
```

```
    cout<<"The output of program will be: "<<endl;
```

```
    cout<<"Complex number"<<" = "<<c.realno<<"+"<<c.imgno<<"i"<<endl;
```

```
    return 0;
```

```
}
```

Question :8

Write a program that creates a structure Complex which represents fields by integers real and imaginary. Program allows the user to enter the real and imaginary parts of two complex numbers. This program calculates the sum of two complex numbers which will be entered by the user. Program will add real parts and imaginary parts of complex numbers and prints the sum of complex number on the screen.

For example, if user entered two complex numbers as

Enter Real part = 12

Enter imaginary Part = 4

Enter Real part = 3

Enter imaginary Part = 5

Then output of program will be

Addition of complex no = 15 + 9i

```
#include <iostream>
```

```
using namespace std;
```

```
    struct complex{
```

```
        int realno;
```

```
        int imgno;
```

```
};
```

```
complex add(complex c1, complex c2);
```

```
int main(){
```

```
    complex c1,c2,result;
```

```
    cout<<" Enter value for 1st complex numbers: "<<endl;
```

```
    cout<<"Enter the real part: "<<endl;
```

```
    cin>>c1.realno;
```

```
    cout<<"Enter the imaginary part: "<<endl;
```

```
    cin>>c1.imgno;
```

```
    cout<<" Enter value for 2nd complex numbers: "<<endl;
```

```
    cout<<"Enter the real part: "<<endl;
```

```
    cin>>c2.realno;
```

```
    cout<<"Enter the imaginary part: "<<endl;
```

```
    cin>>c2.imgno;
```

```
    result= add (c1,c2);
```



```

        cout<<"The output of program will be: "<<endl;

        cout<<" Addition of Complex number"<<" = "<<result.realno<<"+"<<result.imgno<<"i"<<endl;

        return 0;
    }

    complex add(complex c1, complex c2){

        complex temp;

        temp.realno= c1.realno+c2.realno;

        temp.imgno= c1.imgno+c2.imgno;

        return (temp);

    }

```

Question 9: Write a program that creates a structure Player that store distance covered by the player along with the minutes and seconds taken to cover the distance. The program should input the record of two players and then display the record of the winner player.

```

#include <iostream>

using namespace std;

struct player{

    int distance;

    int minutes;

    int seconds;

};

int main(){

    player p1,p2;

    float t1,t2;

    cout<<" Enter   Details of ist player\t: "<<endl;

```

```

cout<<"enter distance covered by 1st player: ";

cin>>p1.distance;

cout<<"enter minutes and seconds for 1st player distance : ";

cin>>p1.minutes>>p1.seconds;

cout<<" Enter   Details of 2nd player\t: "<<endl;

cout<<"enter distance covered by 2nd player: ";

cin>>p2.distance;

cout<<"enter minutes and seconds for 2nd player distance : ";

cin>>p2.minutes>>p2.seconds;

t1=(p1.minutes*60+p1.seconds);

t2=(p2.minutes*60+p2.seconds);

cout<<"The record of the winner player is : "<<endl;

if (t1<t2){

    cout<<"Distance: "<<p1.distance<<endl;

    cout<<"Minutes: "<<p1.minutes<<endl;

    cout<<"seconds : "<<p1.seconds<<endl;

}

else{

    cout<<"Distance: "<<p2.distance<<endl;

    cout<<"Minutes: "<<p2.minutes<<endl;

    cout<<"seconds : "<<p2.seconds<<endl;

}

return 0;

}

```

Question:10

Create a structure called TIME. It three members, all type int, should be called hours, minutes, and seconds. Write a program that create one structure variable in main () and prompts the user to enter a TIME value in hours, minutes, and seconds. This can be in 12:59:59 format, or each number can be entered at a separate prompt ("Enter hours:" and so forth). The program should then store the time in a variable of type struct TIME, then pass structure variable to user define function. The function prints the total number of seconds represented by this time variable.

```
#include <iostream>
```

```
using namespace std;
```

```
struct time {
```

```
    int hours;
```

```
    int minutes;
```

```
    int seconds;
```

```
};
```

```
void show(time);
```

```
int main(){
```

```
    time t;
```

```
    cout<<"Enter hours: "<<endl;
```

```
    cin>>t.hours;
```

```
    cout<<"Enter minutes: "<<endl;
```

```
    cin>>t.minutes;
```

```
    cout<<"Enter seconds: "<<endl;
```

```
    cin>>t.seconds;
```

```
    show(t);
```

```
    return 0;
```

```
}
```

```
void show(time t){
```

```
    t.seconds +=(t.hours*3600)+(t.minutes*60);
```

```
        cout<<"Total seconds are: "<<t.seconds<<endl;
    }
}
```

Question 11:

Write a program that declares a structure to store the code number, salary and grade of an employee. The program defines two structure variables, inputs records of two employees and then displays the record of the employee with more salary.

```
#include <iostream>

using namespace std;

struct empolyee{

    int code;

    float salary;

    int grade;

};

int main(){

    empolyee e1,e2;

    cout<<" Enter   Details of ist empolyee\t: "<<endl;

    cout<<"enter empolyee code number: ";

    cin>>e1.code;

    cout<<"enter empolyee salary : ";

    cin>>e1.salary;

    cout<<"enter empolyee grade: ";

    cin>>e1.grade;

    cout<<" Enter Details of 2nd empolyee : "<<endl;

    cout<<"enter empolyee code number: ";

    cin>>e2.code;

    cout<<"enter empolyee salary: ";
```

```
cin>>e2.salary;

cout<<"enter empolyee grade : ";

cin>>e2.grade;

cout<<"The empolyee with more salary is : "<<endl;

if (e1.salary>e2.salary){

cout<<"code number: "<<e1.code<<endl;

cout<<"salary: "<<e1.salary<<endl;

cout<<"grade : "<<e1.grade<<endl;

}

else{

    cout<<"code number: "<<e2.code<<endl;

cout<<"salary: "<<e2.salary<<endl;

cout<<"grade : "<<e2.grade<<endl;

}

return 0;

}
```