**Assignment on C++ Structure**

**-------------------------------------------------------------------------------**

**1.**Give the output of the following program. Assuming all the desired header files are already included, which are required to run the code.

struct Pixel  
{  
            int C, R;  
};

void Display(Pixel P)  
{  
            cout << "Col "<< P.C << " Row " << P.R << endl;  
}

int main()  
{            Pixel X = {40,50}, Y, Z;  
            Z = X;  
            X.C += 10;  
            Y = Z;  
            Y.C += 10;  
            Y.R += 20;  
            Z.C -= 15;  
            Display(X);  
            Display(Y);  
            Display(Z);

            return 0;  
}

Give the answer. Header file :- #include<iostream>

using namespace std;

Output :-

Col 50 Row 50

Col 50 Row 70

Col 25 Row 50

**2.**Find the output of the following program. Assuming all the desired header files are already included, which are required to run the code.

struct Play  
{  
            int score, bonus;  
};

void calculate(Play &P, int N = 10)  
{  
            P.score++;  
            P.bonus += N;  
}

int main()  
{  
            Play PL = {10, 15};  
            calculate(PL, 5);  
            cout << PL.score << ":" << PL.bonus << endl;  
            calculate(PL);  
            cout << PL.score << ":" << PL.bonus << endl;  
            calculate(PL, 15);  
            cout << PL.score << ":" << PL.bonus << endl;

            return 0;  
}

Give the answer. Header file :- #include<iostream>

using namespace std;

output :- 11:20

12:30

13:45

**3.**Find the output of the following program. Assuming all the desired header files are already included, which are required to run the code.

struct MyBox  
{  
            int length, breadth, height;  
};

void dimension (MyBox M)  
{  
            cout << M.length << "x" << M.breadth << "x";  
            cout << M.height << endl;  
}

int main ()  
{  
            MyBox B1 = {10, 15, 5}, B2, B3;  
            ++B1.height;  
            dimension(B1);  
            B3 = B1;  
            ++B3.length;  
            B3.breadth++;  
            dimension(B3);  
            B2 = B3;  
            B2.height += 5;  
            B2.length--;  
            dimension(B2);

           return 0;  
}

Give the answer. Header file :- #include<iostream>

using namespace std;

Output :- 10x15x6

11x16x6

10x16x11

**4.**Rewrite the following program after removing the syntactical errors (if any). Underline each correction.  
  
struct Pixels  
{  
            int color, style;  
}

void showPoint(Pixels P)  
{  
            cout << P.color, P.style << endl;  
}

int main()  
{  
            Pixels Point1 = (5, 3);  
            showPoint(Point1);  
            Pixels Point2 = Point1;  
            color.Point1 += 2;  
            showPoint(Point2);

            return 0;  
}

Give the answer. Header :- #include<iostream>

using namespace std;

Output :- 5,3

5,3

**5.**Declare a structure to represent a complex number (a number having a real part and imaginary part). Write C++ functions to add, subtract, multiply and divide two complex numbers.

Code :- #include<iostream>

using namespace std;

struct Number

{

    float a,b;

};

class Complex

{

    struct Number num;

    public:

        void acceptData();

        void showData();

};

void Complex::acceptData()

{

    cout<<"Enter 1st No. : ";

    cin>>num.a;

    cout<<"Enter 2nd No. : ";

    cin>>num.b;

}

void Complex::showData()

{

    cout<<"Sum Of Two Numbers : "<<num.a+num.b<<endl;

    cout<<"Difference Of Two Numbers : "<<num.a-num.b<<endl;

    cout<<"Multiplication Of Two Numbers : "<<num.a\*num.b<<endl;

    cout<<"Division Of Two Numbers : "<<num.a/num.b<<endl;

}

int main()

{

    Complex com;

    com.acceptData();

    com.showData();

    return 0;

}

Output :- Enter 1st No. : 45

Enter 2nd No. : 65

Sum Of Two Numbers : 110

Difference Of Two Numbers : -20

Multiplication Of Two Numbers : 2925

Division Of Two Numbers : 0.692308

**6.**An array stores details of 25 students (rollno, name, marks in three subject). Write a program to create such an array and print out a list of students who have failed in more than one subject.

Code :-

#include<iostream>

#include<string>

using namespace std;

int main()

{

    int roll[25];

    string name[25];

    float m1[25], m2[25], m3[25];

    for(int i =0 ; i < 25 ; i++)

    {

        cout<<"Enter Roll no :  ";

        cin >> roll[i];

        cout<<"Enter Name : ";

        cin.ignore();

        getline(cin, name[i]);

        cout<<"Enter marks of three subjects :";

        cin >> m1[i] >> m2[i] >> m3[i] ;

    }

    cout<< "\n STUDENTS FAILED IN MORE THAN 1 SUBJECT \n ";

    for(int i =0 ; i < 25 ; i++)

    {

        if(( m1[i] < 40 && m2[i] < 40) || (m2[i] < 40 && m3[i] < 40) || ( m1[i] < 40 && m3[i] < 40))

        cout <<"Roll No :- "<< roll[i]  << "\t" <<"Name :- "<< name[i] << "\n";

    }

    return 0;

}

7. What should be output of below program? program is compiled on g++ compiler.

#include<iostream>

using namespace std;

struct student{

char a; char b; int c;

};

int main()

{

cout<<sizeof(student);

return 0;

}

Options:

(A) 4  
(B) 6  
(C) 8  
(D) 12

Give the Answer: (C)

8. Which of the following statements assigns a value to the hourlyWage member of employee[2}?

Options:

(A) employee[2]->hourlyWage = 50.00;  
(B) employee2.hourlyWage = 7.50;  
(C) hourlyWage[2].employee = 29.75;  
(D) employee[2].hourlyWage = 75.00;

Give the answer: (D)

9. Which of the following statements outputs the value of the gpa member of element 1 of the student array?

Options:

(A) cout<<student1.gpa;  
(B) cout<<firstStudent.gpa;  
(C) cout<<student[1].gpa;  
(D) cout<<student1 ->gpa;

Give the answer: (C)

10. Which of the following statements outputs the value of the gpa member of element 1 of the student array?

Options:

(A) cout<<student1.gpa;  
(B) cout<<firstStudent.gpa;  
(C) cout<<student[1].gpa;  
(D) cout<<student1 ->gpa;

Give the answer: (C)