**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. 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. 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.

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.

**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.

#include <iostream>

using namespace std;

struct complexNumber {

   float real;

   float imag;

};

complexNumber Add(complexNumber num1,complexNumber num2) {

   complexNumber temp;

   temp.real = num1.real + num2.real;

   temp.imag = num1.imag + num2.imag;

   return(temp);

}

complexNumber Subtract(complexNumber num1,complexNumber num2) {

   complexNumber temp;

   temp.real = num1.real - num2.real;

   temp.imag = num1.imag - num2.imag;

   return(temp);

}

int main() {

   complexNumber num1, num2, sum,sub;

   cout << "Enter real and imaginary part of Number1: " << endl;

   cin >> num1.real>>num1.imag;

   cout << "Enter real and imaginary part of Number2: " << endl;

   cin >> num2.real>>num2.imag;

   sum = Add(num1, num2);

   sub = Subtract(num1, num2);

   if(sum.imag >= 0)

   cout << "Sum of the two complex numbers is "<< sum.real <<" + "<< sum.imag <<"i"<<endl;

   else

   cout << "Sum of the two complex numbers is "<< sum.real <<" + ("<< sum.imag <<")i"<<endl;

   if(sub.imag >= 0)

   cout << "Subtraction of the two complex numbers is "<< sub.real <<" + "<< sub.imag <<"i"<<endl;

   else

   cout << "Subtraction of the two complex numbers is "<< sub.real <<" + ("<< sub.imag <<")i"<<endl;

   return 0;

}

**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.

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: Option 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: Option 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: Option 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: Option C