COMSATS Institute of Information Technology, Sahiwal

DEPARTMENT OF COMPUTER SCIENCE

Assignment # 01

(Submission Deadline: [in hard form] 28/09/2017, 4:00 PM)

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Copied assignments will get zero for sure!

Q1. The structure Car is declared as follows:

```
struct Car
{
char carMake[20];
char carModel[20];
int yearModel;
double cost;
};
```

Write a definition statement that defines a Car structure variable initialized with the following data:

Make: Ford
Model: Mustang
Year Model: 1997
Cost: $20,000

(i) Define an array of 35 of the Car structure variables (The structure is declared in question 1). Initialize the first three elements with the following data:

Make	Model	Year	Cost
Ford	Taurus	1997	$21,000
Honda	Accord	1992	$11,000
Lamborghini	Countach	1997	$200,000

(ii) Write a loop that will step through the array you defined in part (i), displaying the contents of each element.

Q2: Write a program that uses a structure named MovieData to store the following information about a movie:
Title
Director

Year Released
Running Time (in minutes)

The program should create two MovieData variables, store values in their members, and pass each one, in turn, to a function that displays the information about the movie in a clearly formatted manner.

Q3: Write a program that uses a structure to store the following weather data for a particular month:

Total Rainfall
High Temperature
Low Temperature
Average Temperature

The program should have an array of 12 structures to hold weather data for an entire year. When the program runs, it should ask the user to enter data for each month. (The average temperature should be calculated.) Once the data are entered for all the months, the program should calculate and display the average monthly rainfall, the total rainfall for the year, the highest and lowest temperatures for the year (and the months they occurred in), and the average of all the monthly average temperatures.

Input Validation: Only accept temperatures within the range between –100 and +140 degrees Fahrenheit.

Q4: Write a program that uses a structure to store the following data about a customer account:

Name
Address
City, State, and ZIP
Telephone Number
Account Balance
Date of Last Payment

The program should use an array of at least 20 structures. It should let the user enter data into the array, change the contents of any element, and display all the data stored in the array. The program should have a menu-driven user interface.

Input Validation: When the data for a new account is entered, be sure the user enters data for all the fields. No negative account balances should be entered.

Q5: Write a class declaration named Circle with a private member variable named radius. Write set and get functions to access the radius variable, and a function named getArea that calculate and display the area of the circle. The area is calculated as

3.14159 * radius * radius

(i) Add a default constructor to the Circle class in question 5. The constructor should initialize the radius member to 0.

Q6: Each of the following class declarations or programs contain errors. Find as many as possible.

(i)

```
class Circle:
{
private
double centerX;
double centerY;
double radius;
public
setCenter(double, double);
setRadius(double);
}
```

(ii)

```
#include <iostream>
using namespace std;
Class Moon;
{
Private;
double earthWeight;
double moonWeight;
Public;
moonWeight(double ew);
{ earthWeight = ew; moonWeight = earthWeight / 6; }
double getMoonWeight();
{ return moonWeight; }
}
int main()
{
double earth;
cout >> "What is your weight? ";
cin << earth;
Moon lunar(earth);
cout << "On the moon you would weigh "
<<lunar.getMoonWeight() << endl;
return 0;
}
```

(iii)

```
#include <iostream>
using namespace std;
```

```
class DumbBell;
{
int weight;
public:
void setWeight(int);
};
void setWeight(int w)
{
weight = w;
}
int main()
{
DumBell bar;
DumbBell(200);
cout << "The weight is " << bar.weight << endl;
return 0;
}
```

Q7: Design a class called Date. The class should store a date in three integers: month, day, and year. There should be member functions to print the date in the following forms:

12/25/10
December 25, 2010
25 December 2010

Demonstrate the class by writing a complete program implementing it.

Input Validation: Do not accept values for the day greater than 31 or less than 1. Do not accept values for the month greater than 12 or less than 1.

Q8: Design a class that holds the following personal data: name, address, age, and phone number. Write appropriate accessor (getter) and mutator (setter) functions. Demonstrate the class by writing a program that creates three instances of it. One instance should hold your information, and the other two should hold your friends' or family members' information.

Guidelines & Submission Rules:

- Every student must print his/her information in each program: (Name, Reg.no, and Class)
- The assignment should contains original outputs (in picture form). Hint: use snipping tool to capture output image.

Good Luck ☺