Object Oriented Programming

Home Work 05 **Marks 10**

Instructions

Work on this home work individually. Absolutely NO collaboration is allowed. Any traces of plagiarism would result in a ZERO marks in this homework and possible disciplinary action. Tasks should be coded in **C++**.

Due Date

Paste the solution of the problem (source code .cpp file only) labeled with your complete roll number in SEM – HW 05 and SEA – HW 05 folders for SE Morning and SE Afternoon sections respectively on Tuesday, March 29, 2016 before 05:00 PM. These folders are available at \\printsrv\Teacher Data\Umair Babar\Students.

ADT: Cuboids

Cuboids are three-dimensional shapes having different measurements in each dimension say **height**, **width** and **depth**. **Cuboids** shapes are often used for boxes, cupboards, rooms, buildings, etc. So keeping in the mind the importance of **Cuboids** you have to implement a class **Cuboids** having following functionalities

1. The class should have following **three private data members** to which value should only be assigned to them when it is **greater than 0 and lesser than 35.00**, **1 otherwise** no matter to which dimension.
    1. A **float** named **height** that holds the **cuboids' height**.
    2. A **float** named **width** that holds the **cuboids' width**.
    3. A **float** named **depth** that holds the **cuboids' depth**.
2. Provide the implementation of **mutators** for all the data members (width, height and depth) of the class.
3. Provide the implementation of **accessors** for all the data members (width, height and depth) of the class.
4. Provide the implementation of following **constructors** and a **destructor**
    1. A **constructor** that accepts **cuboids' height**, **width** and **depth** as arguments and assigns them to the appropriate member variables.
    2. A **constructor** that accepts **cuboids' height** and **width** as arguments and assigns them to the appropriate member variables. The **depth** field should be assigned the default value.
    3. A **default constructor** that initializes all the data members of the class with **default values**.
    4. A **copy constructor** to initialize a cuboids' object with already existing object.
    5. A **destructor** that do nothing except displaying a simple message "Destructor executed…" on the screen.
5. Provide the implementation of following member functions
    1. **setCuboids** method accepts **cuboids' height**, **width** and **depth** as arguments and assigns them to the appropriate member variables.
    2. **getCuboids** method to **initialize the data** of a cuboids **taken** from the user.
    3. **putCuboids** method to display the **information** of a particular cuboids.
    4. **getSurfaceArea** method provide the facility to calculate the **surface area** of a cuboids that is

    $$2(height * widht) + 2(height * depth) + 2(width * depth)$$

    5. **getVolume** method provide the facility to calculate the **volume** of a cuboids that is $height * width * depth$
    6. **getSpaceDiagonal** method provide the facility to calculate the **space diagonal** of a cuboids that is

    $$\sqrt{height^2 + width^2 + depth^2}$$

    7. **putCuboidsInfo** method should display all the **dimensions**, **surface area**, **volume** and **space diagonal** of a cuboids.
6. Once you have written the class, write **main** function and test its functionality by creating some objects of **Cuboids**.

NOTE: - No submission will be accepted after the due date and time.

BEST OF LUCK