

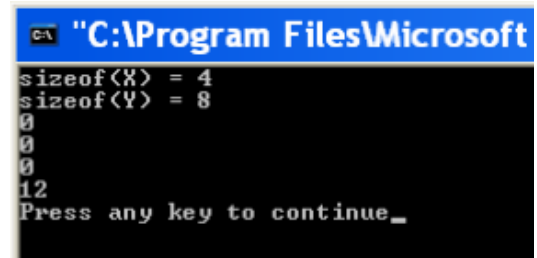
Problem: Generate a C++ object-oriented project that models the following descriptions:

1. The project contains three classes, i.e., **Point2D**, **Circle**, and **Cylinder** where Circle “is-a” Point2D, and Cylinder “is-a” Circle.
2. The “is a” relationship is modeled by *public inheritance*.
3. All classes must have a default **constructor and constructor-initializer** which takes as many parameters as needed to initialize the existing data members.
4. All classes have **set** and **get** functions included into the public section.
5. Classes **Circle** and **Cylinder** have a public method called **calculate\_area(...)**.
6. All classes have a public method **equal(...)** testing the equality of two objects of the same class.
7. Design a non-member function **distance(...)** calculating the distance to the origin for class **Point** and class **Circle**.
8. Design a member function **distance(...)** calculating the distance between the centers of two objects of class **Circle**.
9. Class **Cylinder** contains a member function **volume(...)**.
10. Class **Point2D** contains two private data members **x** and **y**, both of type *int*; class **Circle** has one private data member **radius** of type *double* and class **Cylinder** has one private data member **height** of type *double*.
11. All classes contain public **print(..)** showing the values stored into the corresponding data members as well as the area and volume when appropriate.
12. **The main (driver) program** must declare 2-3 objects each of the above classes implementing all member functions included into them as well as the two non-member functions of (7).

Requirements:

**PRINT:**

1. Draw the detailed UML class diagrams.
2. Complete source code (all necessary .h and .cpp files) with comments (there should be three .h files and four .cpp files).
3. Testing snapshots in the shown on the right format.



```
C:\Program Files\Microsoft
sizeof(X) = 4
sizeof(Y) = 8
0
0
0
0
12
Press any key to continue_
```

**Electronic submission (on my pen drive):**

All of the above plus the exe file.

**Don't forget to include as comments:**

1. **Your name**
2. **CSC330 HW1**

**Posted: February 9**

**Due: February 19**