Object-Oriented Programming (CS F213)

Module I: Object-Oriented and Java Basics

CS F213 RL1.2: Abstraction and Encapsulation

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CS F213 RL 1.2 : Topics

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- Abstraction
- Encapsulation

Abstraction

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https://en.wikipedia.org/wiki/Abstraction_(software_engineering)

- Way of managing complexity by suppressing the complex details
- Abstraction refers to the act of representing essential features that are of interest of the users without including background details or explanation.
- Users of a complex system are presented with a well defined simple interface for its use
- Classes use the concept of abstraction for hiding unnecessary implementation/algorithmic details of its methods.
- As user of any ‘class’ what you should be aware about that class ?

Abstraction: Simple Examples

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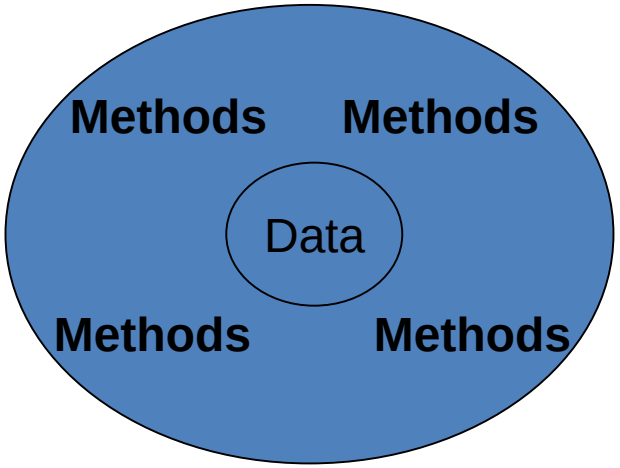
- Suppose you have to compute the square root of a ‘double’ type number in a ‘C’ program. As a programmer what You have to do.
  - #include <math.h>
  - Use sqrt() function
- What you will do if you have to compare two strings in a ‘C’ program
  - #include <string.h>
  - Use strcmp() function

Encapsulation

- Encapsulation means wrapping/binding up of data-part (state) and methods (operations , code) together in the form of a capsule.
- Access to code (Methods) and data (instance fields) is tightly controlled.
- Through Encapsulation, developer of a class can decide what and what can not be accessible outside a class. [public , private , protected]
- A class is a perfect example of an Encapsulation

Encapsulation : Examples

Encapsulation keeps Data Part + Operation Part of an object together inside a capsule




```
class BOX

{
        private double length;
        private double width;
        private double height;

        public double area()        {       }
        public double volume()      {       }

} // End of class BOX
```

Class Capsule

Thank You