



## CSE215L: Programming Language II Lab

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Lab Manual 13: Abstraction

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### Objective:

- To understand the concept of Abstraction in Java
- To design and use of Abstract classes

### Abstraction:

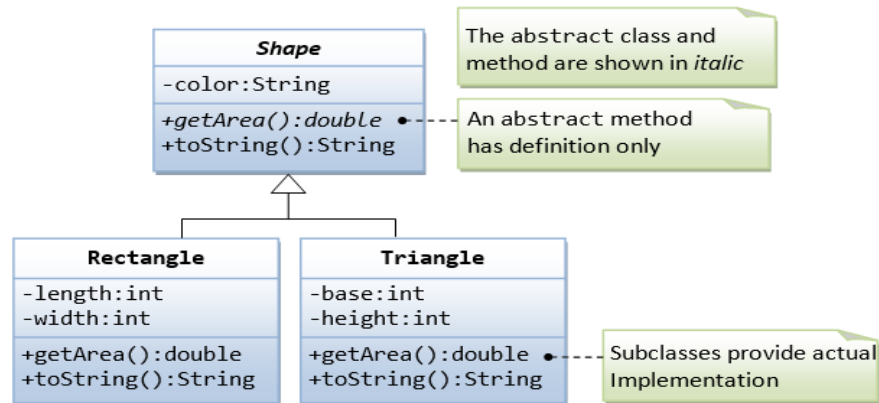
Abstraction is a process of hiding the implementation details or the non-essential units and showing only the functionality or the essential details to the user. Data abstraction may also be defined as the process of identifying only the required characteristics of an object ignoring the irrelevant details.

Consider a real-life example of a man driving a car. The man only knows that pressing the accelerator will increase the speed of the car or applying brakes will stop the car, but he does not know about how pressing the accelerator the speed is increasing, he doesn't know about the inner mechanism of the car.

So, the abstraction lets us focus on what the object does instead of how it does it. There are two ways to achieve abstraction in java: (i) *Abstract Class* and (ii) *Interface*.

**Abstract Class:** A class that is declared as *abstract* is called an abstract class. Some key points about abstract classes:

- An abstract class may or may not have all *abstract methods* (an abstract method is a method that is declared without an implementation). It can have *non-abstract methods* as well.
- In a non-abstract subclass extended from an abstract class, all the abstract methods must be implemented by overriding the methods.
- An abstract class cannot be instantiated using the *new* operator.
- Abstract class can have constructors and static methods also.



**Task:** Implement the following classes and test their methods.

