Static attributes and methods

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Static attributes of a class are those attributes whose values are **common to all objects**, and which thus become directly associated with the class, as well as methods that can be executed directly from the class, will be declared as static. They can be used in the absence of any object. A static method can only use static attributes, and can only call methods within it that are also declared as static.

01

Static attributes

Instance variables are variables specific to an object. It is possible to define a class variable which is shared between all instances of the same class: it therefore only exists once in memory.

Such a variable allows you to store a constant or a value modified in turn by the instances of the class. It is defined with the static keyword.

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02

Static methods

- A static method is a method which does not act on instance variables but only on class variables (static variables). These methods can be used without instantiating an object of the class.
- Methods defined in this way can be called with the notation class.method() instead of object.method(): the first form is strongly recommended to avoid any confusion.
- It is not possible to call an instance method or access an instance variable from a static class method.

- Note that the functions of the ***Math class*** are static methods because you do not have to instantiate an object of the Math class to use the methods you just have to write: ***Math.PI, Math.sin()….***
- On the other hand, the methods of the ***Scanner class*** are not static methods because you have to instantiate an object of the Scanner class to use the methods:

Scanner sc= new Scanner(System.in)

03
Static and Final attributes

- A variable declared ***final*** changes no more value once initialized.
- If it is ***static***, then it can be used without creating an instance of the class.
- finally, if it is also ***public***, the variable can be used everywhere.
- Therefore, a ***public, static, final variable is a constant.*** By convention, it is written in capital letters, and an underlined space separates the words.