

Initialization of Instance Variables

- there are three places an instance variable can be assigned a value
 - in the declaration
 - in the constructor
 - in a setter or other method
- guidelines
 - all variables must be initialized before they can be used, and only the constructor is guaranteed to be called before another method
 - to avoid sequencing problems, instance variables should generally be initialized in the declaration or the constructor
 - in the constructor is always possible
 - must be in the constructor if the value can't be hardcoded
 - for consistency, always initialize in the constructor

```
public class Demo {
    private int a_ = 10;
    private int b_;

    public Demo ( int value ) {
        b_ = value;
    }

    public void setA ( int value ){
        a_ = value;
    }

    public void setB ( int value ){
        b_ = value;
    }

    public void increment () {
        a_++;
        b_++;
    }
}
```

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Constructors – Semantics

Put the following steps in order according to how they occur when a constructor is executed.

- 2 actual parameters are evaluated (the values passed by the caller) [Choose]
 - 1 instance variables are initialized if initialized at the point of declaration, otherwise default values are assigned [Choose]
 - 5 reference to the object is returned [Choose]
 - 3 values are assigned to the formal parameters (the constructor body gains access to the values) [Choose]
 - 4 statements in the body of the constructor are executed [Choose]
- may include assignment statements to set values for the instance variables – overwrites any previous initialization

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static

A good rule of thumb –

- for classes used as a holder of subroutines (such as main), all elements are **static**
- for classes used as blueprints for objects, only global constants are **static**

The meaning of **static** –

- **static** means there is only one copy for the program (shared by all objects of that type)
- **non-static** means that each object has its own copy

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