Static Methods

Static Method

- A **_static method_** (**_class method_**) is a block of code with a name, using which it can be **_called_** (**_invoked_**) to perform its computation

- The method "takes over" execution when it is called, until it **_returns_** to the calling program at the point it was called

- Also known as a routine, subroutine, operation, function, or procedure

Anatomy of a Static Method

```java
private static int distance(
    int a, int b) {
  int d = b – a;
  return d;
}
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The *method header* includes the method's *return type*, its *name*, and its *parameter list*. The method *name* and the parameter *types* comprise the *method signature*.

Anatomy of a Static Method

```
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    int a, int b) {
  int d = b – a;
  return d;
}
```

The ***method body*** consists of the block of code that is executed when the method is called.

Anatomy of a Static Method

```
private static int distance(
    int a, int b) {
  int d = b - a
  return d;
}
```

private limits the places from which this static method may be called: only from within this class; **public** here would allow it to be called from other classes, too.

Anatomy of a Static Method

```
private static int distance(
    int a, int b) {
  int d = b – a;
  return d;
}
```

int means the method provides a value of this type to the caller when it returns; **void** here would mean the method provides no value at all.

Anatomy of a Static Method

```
private static int distance(
    int a, int b) {
  int d = b - a;
  return d;
}
```

distance is the name of this static method, which is used when calling it.

Anatomy of a Static Method

```
private static int distance(
    int a, int b) {
    int d = b - a;
    return d;
}
```

int a is the first *formal parameter* of the method, whose initial value is supplied at the point of the call; int b is the second formal parameter.

Anatomy of a Static Method

```
private static int distance(
    int a, int b) {
  int d = b - a;
  return d;
}
```

int d is a ***local variable*** of the method.

Anatomy of a Static Method

```
private static int distance(
    int a, int b) {
  int d = b – a;
  return d;
}
```

return is a statement that hands control back to the caller; if a value is returned by the method, then an expression after return provides this value.

Return Statements

- Every ***path of execution*** through a method that returns a value *must* end in a return statement with an expression of the return type of the method

- A method that does not return a value *may* have return statement(s) without any such expression; but by default, it returns to the caller anyway when the method body completes execution

Resources

- *Big Java Late Objects*, Chapter 5

  – http://proquest.safaribooksonline.com.proxy.lib.ohio-state.edu/book/programming/java/9781118087886/chapter-5-methods/navpoint-43