

Model 1 Variable Scope

As a team, review and discuss the provided *SwapCircle.java* and *SwapDriver.java* source files. Then identify the *scope* of each variable (i.e., where it can be used) based on the table below.

	Where declared?	Where used?	Example
static variables ("class variables")	declared outside of all methods (typically at the start of the class)	anywhere in the class (or in other classes if also public)	circleCount in the SwapCircle class
instance variables ("attributes")	declared outside of all methods (typically after any static variables)	any non-static method (or in static methods when another object has been created)	radius in the SwapCircle class
parameters	declared inside the ()'s of a method signature	anywhere within the method where they are declared	radius in the SwapCircle constructor
local variables	declared inside a method (or inside another block of code, like a for loop)	anywhere within the method or code block after they are declared	temp in the swapInts method

Questions (20 min)

Start time:

1. Identify one static variable from the SwapCircle class.
 - a) What is the name and purpose of the variable?
 - b) What is the scope of the variable?
 - c) What is one example of somewhere it cannot be used?
2. Identify one instance variable from the SwapCircle class.
 - a) What is the name and purpose of the variable?
 - b) What is the scope of the variable?
 - c) What is one example of somewhere it cannot be used?

3. Identify one parameter from the `SwapCircle` class.
 - a) What is the name and purpose of the variable?
 - b) What is the scope of the variable?
 - c) Where can the variable not be used?
4. Identify one local variable from the `SwapCircle` class.
 - a) What is the name and purpose of the variable?
 - b) What is the scope of the variable?
 - c) Where can the variable not be used?
5. Run the `SwapDriver` program and summarize what you learn based on the output.
6. Notice that `getRadius` returns `this.radius` (from `this` object). In contrast, `getCircleCount` does not use the keyword `this`. Why not?
7. Identify an example of where an instance variable is used within a static method.
 - a) In which method does this occur?
 - b) Why is the method able to access these instance variables, even though they are private?
 - c) Explain how this method is not a violation of the rule that instance variables cannot be accessed inside a static method.