Hands-on Exercise Objective

After completing the hands-on exercises, you will be able to:

- Declare constructors
- Overload constructors
- Chain the constructor calling
- Apply access specifiers to constructors

Problem Statement 1: Declaring and using constructors

Create a class ***Circle.java*** in a package "***com.innovation.shapes***" , add a float instance variable ***radius*** and add a default constructor (**Constructor 1**) for the class. This constructor should initialize the radius to a default value ***1.5f***.

The above constructor should be invoked from a main method from another class, ***Shape.java*** (in different package ***com.innovation. geometry***).

Problem Statement 2: Overloading constructors and using "this" keyword.
In the Circle.java class created above add an instance float variable ***pi*** and create two overloaded constructors.

Constructor 2- with a float argument name ***radius.*** The constructor should initialize the class variable ***radius*** with the method argument radius.

NOTE: The instance variable and the method argument should be named same as "***radius***".

Constructor 3- with two float arguments ***radius and pi***. Default the class pi value to 3.5 and set the instance variable with the radius method argument.

The constructor "***constructor 2"*** should be invoked from a main method from class, ***Area.java*** (in a package ***com.innovation.shapes***).

Problem Statement 3: Constructor Chaining

In Circle.java, invoke the Constructor 3 created in the previous step from Constructor 2.

Problem Statement 4: Applying access specifiers to constructors/variables

a. (Other classes must not be able to call this constructor). Also restrict the access to the variable radius to class level
b. Provide package level access to Constructor 2 (Classes in other package must **not** be able to access this constructor). Also provide package level access to the variable pi.

Problem Statement 5: Create two methods and calculate area and circumference of a Circle

In the **Circle.java** class, create two methods as listed below

a. Method 1 - calculateCircleArea should accept the float radius as parameter and calculate the area (pi*r*r). It should return the result value to the main method where it should be printed in the console.
b. Method 2 – calculateCircumference should accept float radius as parameter and calculate the circumference (2 * pi * r). It should return the result value to the main method where it should be printed in the console.

Call these two methods from the main method in **Circle.java** by passing appropriate parameters.