ICA7 -- Generics

Look at the skeleton code in ArrayListExample.java. Add additional methods total\_area, total\_perimeter, describe\_all, and add\_empties. Leave the main method untouched. Hint: some of these methods -- but not all -- should use wildcards in the type declarations.

You should get this output when you run the code:

Example with a list of shapes with a circle, a cone, and some empty shapes

Circle[radius=1.0]

Cone[radius=2.0,height=3.0]

Circle[radius=0.0]

Cone[radius=0.0,height=0.0]

Rectangle[width=0.0,height=0.0]

Sphere[radius=0.0]

Total number of shapes: 6

Example with a list of rectangles

Rectangle[width=2.0,height=3.0]

Rectangle[width=5.0,height=5.0]

Total number of shapes: 2

total area of rectangles: 31.0

total perimeter of rectangles: 30.0

Example with a list of 2d shapes with a circle and a rectangle

Rectangle[width=10.0,height=10.0]

Circle[radius=2.0]

Total number of shapes: 2

total area of flat shapes: 112.56637061435917

Example list of spheres

Sphere[radius=10.0]

Sphere[radius=50.0]

Sphere[radius=0.0]

Total number of shapes: 3