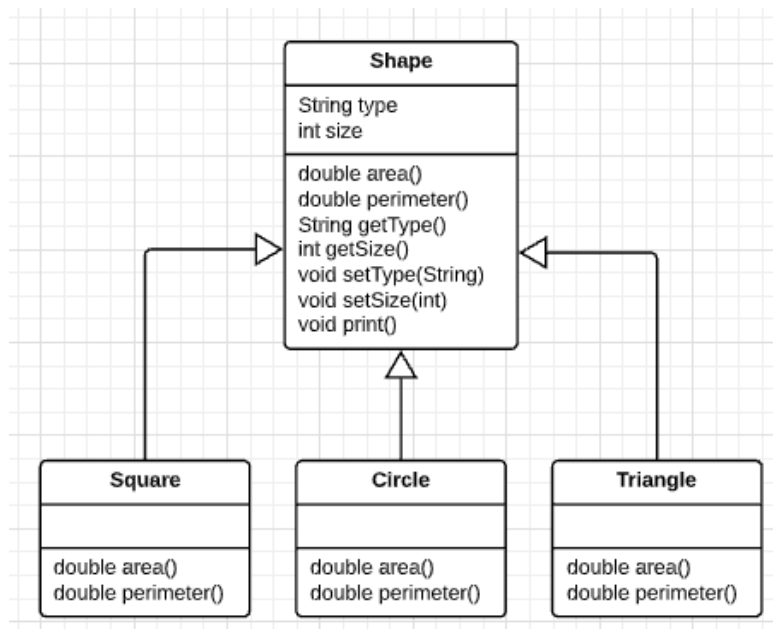# Homework 02: Shape Inheritance
CS 412

For this assignment, your task is to implement a set of classes that represent various 2D shapes. Specifically, you must implement a Shape superclass and three subclasses: 1) Square, 2) Circle, and 3) Triangle (equilateral). Your solution must work with the provided Main class (and main method) and abide by the following class hierarchy:

- Shape superclass:
  - Instance variables:
    - String type: the "type" of shape (e.g., "Circle")
    - int size: the "size" of the shape
  - methods:
    - double area():   overridden in subclasses; returns area
    - double perimeter():   overridden in subclasses; returns perimeter
    - getters: used to get each instance variable
    - setters: used to set each instance variable
    - void print( ):   makes call to System.out.println(
      - Output format: *"[type] of size [size] has area [A], perimeter [P]"*
      - E.g.,   "Triangle of size 9 has area 35.07, perimeter 27.00"

- Square, Circle, Triangle subclasses:
  - Inherits from Shape class
  - Overrides area( ) method to return appropriate area
  - Overrides perimeter( ) method to return appropriate perimeter
  - Square::size represents length of each side
  - Circle::size represents radius
  - Triangle::size represents length of each side (equilateral triangle)

- Here's a snippet of example output:

```
Triangle of size 8 has area 27.71, perimeter 24.00
Square of size 9 has area 81.00, perimeter 36.00
Circle of size 6 has area 113.10, perimeter 37.70
Triangle of size 9 has area 35.07, perimeter 27.00
Square of size 4 has area 16.00, perimeter 16.00
Triangle of size 9 has area 35.07, perimeter 27.00
Circle of size 7 has area 153.94, perimeter 43.98
Square of size 9 has area 81.00, perimeter 36.00
Triangle of size 9 has area 35.07, perimeter 27.00
Square of size 5 has area 25.00, perimeter 20.00
Circle of size 3 has area 28.27, perimeter 18.85
Triangle of size 8 has area 27.71, perimeter 24.00
Triangle of size 3 has area 3.90, perimeter 9.00
Square of size 9 has area 81.00, perimeter 36.00
Triangle of size 5 has area 10.83, perimeter 15.00
Circle of size 8 has area 201.06, perimeter 50.27
Square of size 9 has area 81.00, perimeter 36.00
Triangle of size 3 has area 3.90, perimeter 9.00
Triangle of size 3 has area 3.90, perimeter 9.00
Circle of size 2 has area 12.57, perimeter 12.57
Triangle of size 4 has area 6.93, perimeter 12.00
Circle of size 1 has area 3.14, perimeter 6.28
Square of size 9 has area 81.00, perimeter 36.00
```

REQUIREMENTS:
- Code must work with provided Main class (and main method)
  - Must work with unmodified version
- Shape class:
  - Must implement getter methods for type, size
  - Must implement setter methods for type, size
  - Must implement print method with format described previously
- Square, Circle, and Triangle classes:
  - Must inherit from Shape class
  - Must override area method
  - Must override perimeter method