

Assignment 8

Exercise 1 (5pt)

Implement the class **Circle**. The class should contain:

- The `x, y` position
- The `radius`
- An empty constructor that initialises the circle at 0,0 with radius 1
- A constructor that takes the 3 fields
- The getters and setters for all fields
- A method `contains(x, y)` that checks if a point is inside the circle
- A method `contains(circle)` that checks if the circle is inside this circle
- A method `intersects(circle)` that checks if the circle intersects this circle

Use the distance from the centres (point) and compare it with the radius to check. The distance between two points x_1, y_1 and x_2, y_2 is computed with $\text{sqrt}((x_1 - x_2)^2 + (y_1 - y_2)^2)$

Exercise 2 (7pt)

Implement the `Stack` of `int` class by extending the `ArrayList` class. It should contain the following methods:

- `size()` return the size of the list
- `peek()` returns the top integer
- `pop()` returns the top integer and returns it.
- `push(int)` adds an integer to the top of the stack
- `toString()`
- `equals()`

Note: some of the methods might be already implemented in the `ArrayList` class and you will not need to reimplement them.

Instructions

The solution of the exercises must be provided as a **java** (for the code, do not submit class files), **png** (for eventual screenshot), and **pdf** (for eventual text) files. The **files must be zipped** together before upload.

Assignments not respecting these instructions will be ignored.