**Name:**

**Advanced Programming in Java**

**Lab Exercise 12.14.2022**

1. A line in a plane can be specified in various ways:

* By giving a point (x, y) and a slope m
* By giving two points (x1, y1) and (x2, y2)
* As an equation in slope-intercept form y = mx + b
* as an equation x = a if the line is vertical

Implement a class Line with 4 constructors, corresponding to the four cases above. Implement methods.

boolean intersect(Line other)

boolean equals(Line other)

boolean isParallel(Line other)

Implement a LineTester class to test the Line class.

1. Implement a PermutationLock class. A permutation lock has a dial with 26 positions labeled A to Z. The dial needs to be set 3 times in the correct order. If it is set to the correct permutation, the lock is opened. When the lock is closed again, the permutation can be entered again. Write a LockTester class to test the PermutationLock class.

Note: A permutation is a sequence where order matters. A combination is a sequence where order does not matter. The traditional combination lock is really a permutation lock.