104824 – INTRODUCTION TO SYSTEMS PROGRAMMING – Spring 2025 ..... Practice Sheet
Practice Sheet 2

This practice sheet is not meant for submission, and will not have any grade. You can ask me about any questions you have, including checking your answers.

Warning Even though this guide will not have any grade, it is important to avoid copying/plagiarism. Avoid the usage of LLMs (such as ChatGPT, DeepSeek, etc). When solving a graded assignment, this warnings will be actual rules that must be followed.

Context

The goal of this guide is to start with some simple exercises with Java programming and practice some OOP concepts.

Task 1 Consider project *figures.* Indicate which are the fields of the classes `Square`, `Circle` and `Person`, and their corresponding types.

Task 2 Open BlueJ, and load the *figures* project. Using the *Code Pad*, create a circle and a rectangle, and display both on the screen. Call methods `slowMoveHorizontal` and `slowMoveVertical` on these objects and from the Code Pad, to get familiar with the syntax of methods and parameter passing.

Task 3 Load the *house* project. Modify method `draw` in class `Picture`, so that the sun sets slowly. The sun is represented by a circle, and this class has methods that allow a figure to move slowly; you may use these methods to achieve the required behavior.

Task 4 Continuing with the previous task, modify again method `draw` in class `Picture`, this time to achieve a behavior in which the sun moves slowly to the left until it disappears, and appears again on the right, stopping at the same position where it started.

Task 5 Do exercises 1.19 and 1.20 from *Objects First with Java: A Practical Introduction using BlueJ (Barnes & Kölling).*

Task 6 Load the *lab-classes* project. Create various objects of class `Student`, passing adequate values as parameters to the constructor, so as to represent real students of this course. Please take into account that all parameters are of type `String`, and string literals are indicated between double quotes.

Task 7 Continuing with the previous task, describe the fields of class `Student`, and their corresponding types.

Task 8 Continuing with the previous task, enumerate at least two methods of class `Student` whose return type is not `void`, and describe with your own words what these methods do.

Task 9 Continuing with the previous task, create instances of class `LabClass` to represent different labs of this course. Use method `enrollStudent` to add students to the labs. Analyze the fields and methods in the `LabClass` class, in order to assign a teacher to each lab, and a room and time, with some realistic values.

Task 10 Continuing with the previous task, invoke method `printList` on the `LabClass` instances, to obtain the details of each lab.