

# Object Oriented Programming

## Lab 10 Factory Design Pattern

April 13, 2023

### 1 Lab Goal

The purpose of this lab is to understand how we can create different objects using the Singleton Factory Design Pattern. You can access Java Documentation at this link.

### 2 Problems

We will read the problems carefully as one will lead to another.

#### 2.1 Problem 1- Duck Simulation – Choosing Appropriate design pattern

Choose appropriate design pattern for Duck problem discussed in class and also provide reason for that.

#### 2.2 Problem 2 - Reading City Data

Go to the following link and download the data of 158 cities as a CSV file. It is basically a text file where all entries are separated by commas. Write code such that you read only the first 6 column entries to define the attributes of a city and create a city object.

#### 2.3 Problem 3 - Who runs the cities?

Define different ArrayLists based on the admin name that hold the various cities. Put Islamabad into Punjab rather than in Islamabad.

#### 2.4 Problem 4 - Factory to return cities

Now create a factory class that holds all these arraylists and returns a city by removing it from the list. What this means is the the user just asks for a city from the factory by passing only the admin name to the factory and it returns a city.