**Lab: Inheritance**

This document defines the lab for the ["Java HYPERLINK "https://softuni.bg/modules/59/java-advanced"Advanced HYPERLINK "https://softuni.bg/modules/59/java-advanced"" course @ Software University](https://softuni.bg/modules/59/java-advanced). Please submit your solutions (source code) to all below-described problems in [Jud HYPERLINK "https://judge.softuni.bg/Contests/1574/Inheritance-Lab"g HYPERLINK "https://judge.softuni.bg/Contests/1574/Inheritance-Lab"e](https://judge.softuni.bg/Contests/1574/Inheritance-Lab).

**Part I: Inheritance**

* **Single Inheritance**

Create two classes named **Animal** and **Dog**.

**Animal** with a single public method **eat()** that prints: **"eating…"**

**Dog** with a single public method **bark()** that prints: **"barking…"**

The **Dog** should inherit from the **Animal**.





**Hints**

Use the **extends** keyword to build a hierarchy.

* **Hierarchical Inheritance**

Create three classes named **Animal**, **Dog,** and **Cat**.

**Animal** with a single public method **eat()** that prints: **"eating…"**

**Dog** with a single public method **bark()** that prints: **"barking…"**

**Cat** with a single public method **meow()** that prints: **"meowing…"**

**Dog** and **Cat** should inherit from **Animal**.





**Part II: Reusing Classes**

* **Random Array List**

Create a **RandomArrayList** class that has all the functionality of an **ArrayList**.

Add an additional function that **returns** and **removes** a random element from the list.

* Public method: **getRandomElement(): Object**
* **Stack of Strings**

Create a class **Stack** that can store only strings and has the following functionality:

* Private field: **data: ArrayList<String>**
* Public method: **push(String item): void**
* Public method: **pop(): String**
* Public method: **peek(): String**
* Public method: **isEmpty(): boolean**



**Hints**

Use composition/delegation to have a field in which to store the stack's data.