

Lab 2: OOP - Inheritance 02

- **Author:** Hieu Nguyen
- **Subjects:** PRO192

Submission:

- Using templates: https://drive.google.com/drive/folders/1qTLYES8WC0TCjl9KZdaoNZh9TkqEhj33?usp=drive_link
- Update project name: <StudentNameCode>Lab2. Ex: **NguyenCTCE172070Lab2**
- Zip this project: **NguyenCTCE172070Lab2.zip**

Problem Context:

You are asked to implement a simple zoo system using Java OOP principles.

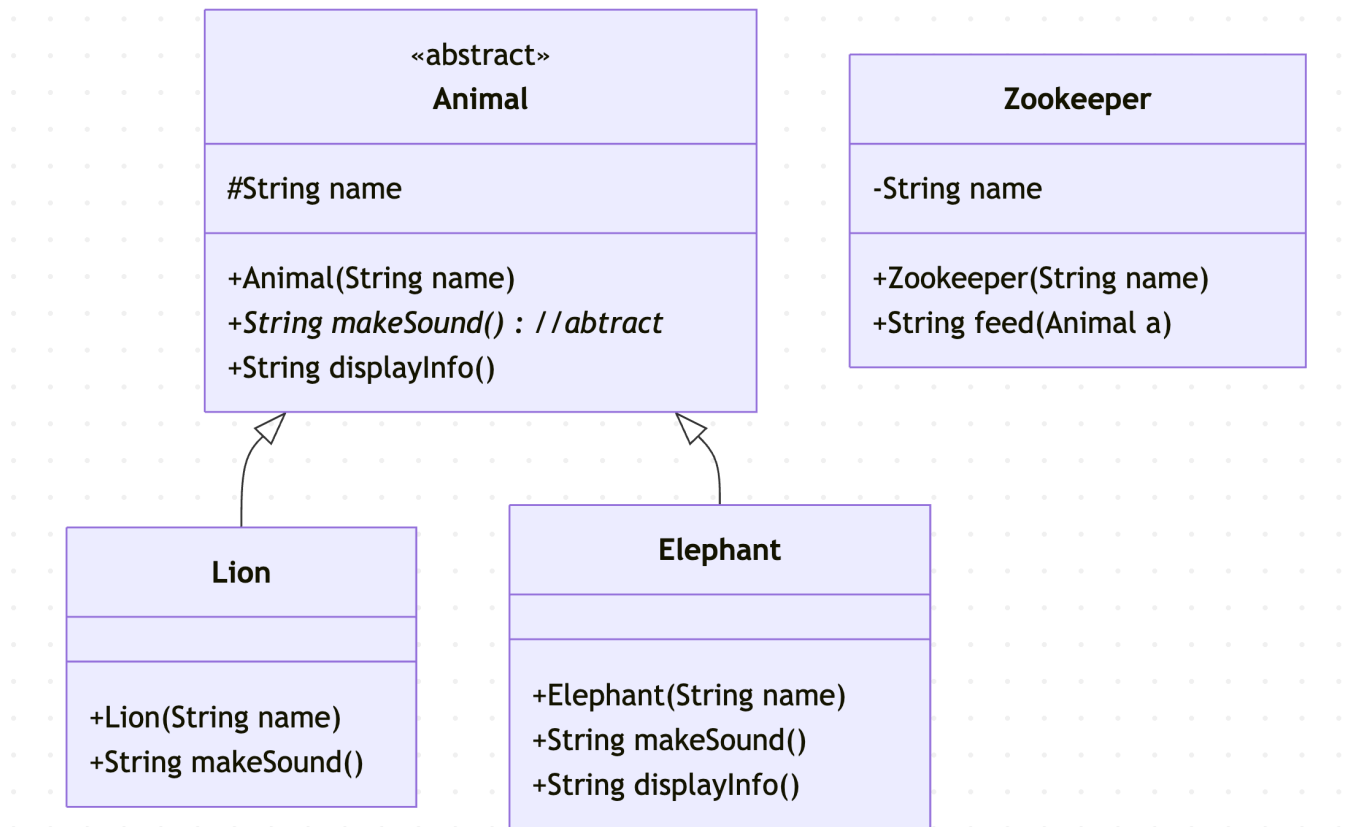
```
classDiagram
    class Animal {
        <>
        #String name
        +Animal(String name)
        +String makeSound()*
        +String displayInfo()
    }

    class Lion {
        +Lion(String name)
        +String makeSound()
    }

    class Elephant {
        +Elephant(String name)
        +String makeSound()
        +String displayInfo()
    }

    class Zookeeper {
        -String name
        +Zookeeper(String name)
        +String feed(Animal a)
    }

    Animal <|-- Lion
    Animal <|-- Elephant
```



Resolve problems:

New input file format

```

m n
<command 1 of question m>
<command 2 of question m>
...

```

- `m`: Câu hỏi số `m` (từ 1 đến 5, tương ứng với phần yêu cầu trong đề).
- `n`: Số lượng dòng lệnh (command) sẽ chạy cho câu hỏi đó.
- Các dòng tiếp theo: Các lệnh như `Employee name salary`, `Intern name allowance`, etc.

Requirements

1. Case `m = 1`: Animal Info Display

Command examples:

```

Lion Simba
Elephant Dumbo

```

Requirement:

- Create animal objects based on input.

- Call the `displayInfo()` method on each `Animal` object.

Output format:

```
Sound: Roar
Name: Dumbo
Sound: Trumpet
```

2. Case m = 2: Elephant Only – Overriding

Command example:

```
Elephant Elly
```

Requirement:

- Only create and call `displayInfo()` for `Elephant` objects.
- The method must include the overridden behavior.

Output format:

```
Name: Elly
Sound: Trumpet
This is a big animal
```

3. Case m = 3: Zookeeper Interaction

Command example:

```
3 2
Zookeeper John
Lion Nala
```

Requirement:

- Create a `Zookeeper` and at least one `Animal`.
- Call `feed(Animal a)` for each animal.

Output format:

```
Zookeeper John feeds Nala
```

4. Case m = 4: Count Lions

Command example:

```
4 3  
Lion Simba  
Elephant Bobo  
Lion Kovu
```

Requirement:

- Count the number of objects of type Lion in the array.
- Use static method `ZooUtility.countLions(Animal[] animals)`

Output:

```
2
```