

# Java Programming II

## Lab5

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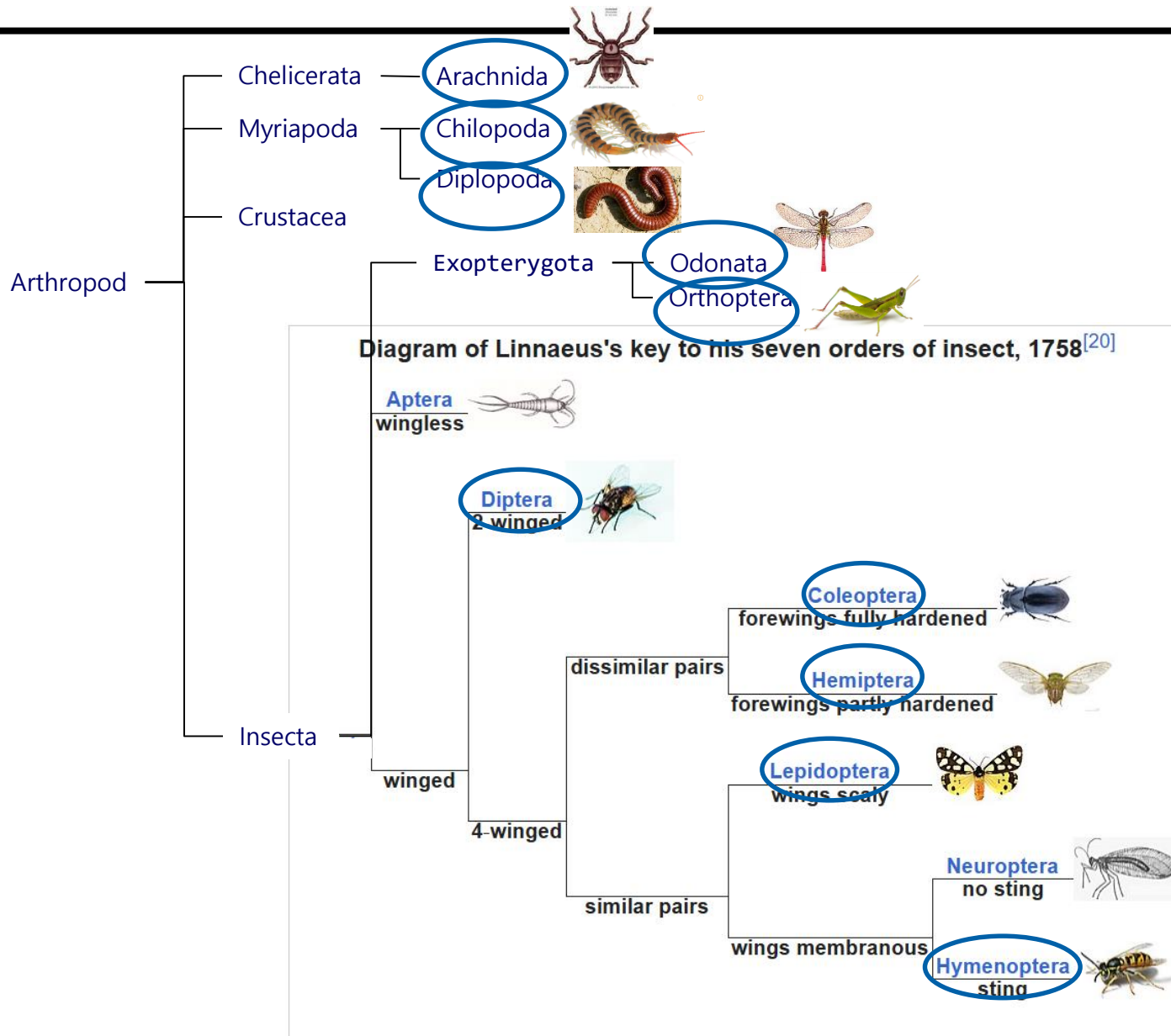
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# Lab5

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- Factory & Builder 패턴을 사용하여 다양한 곤충을 생성하는 프로그램을 작성하라.
- ArthropodClassification 클래스의 classify() 메소드에서 곤충의 특성으로 부터 곤충을 정확히 분류한다.

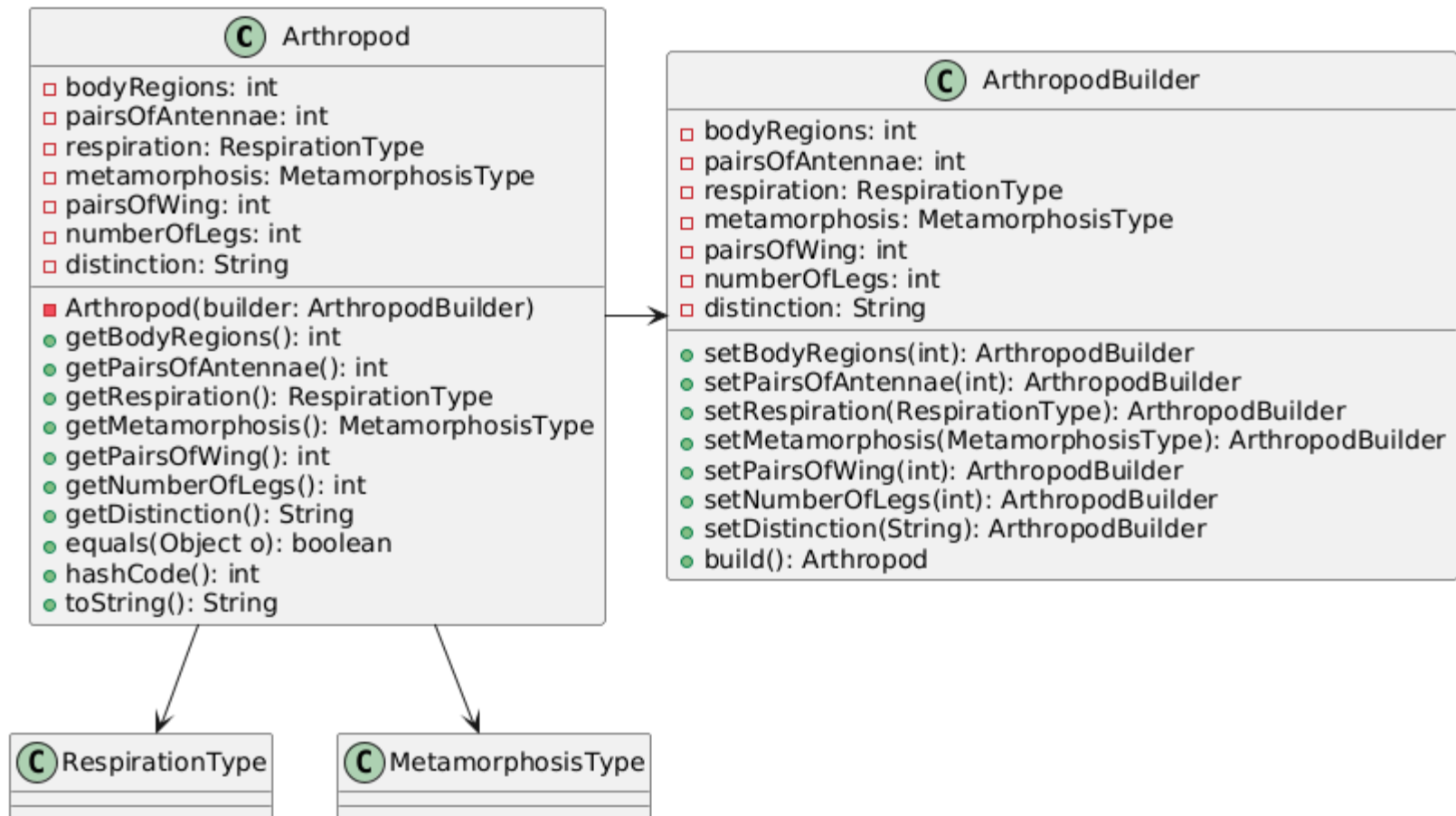
# Lab5





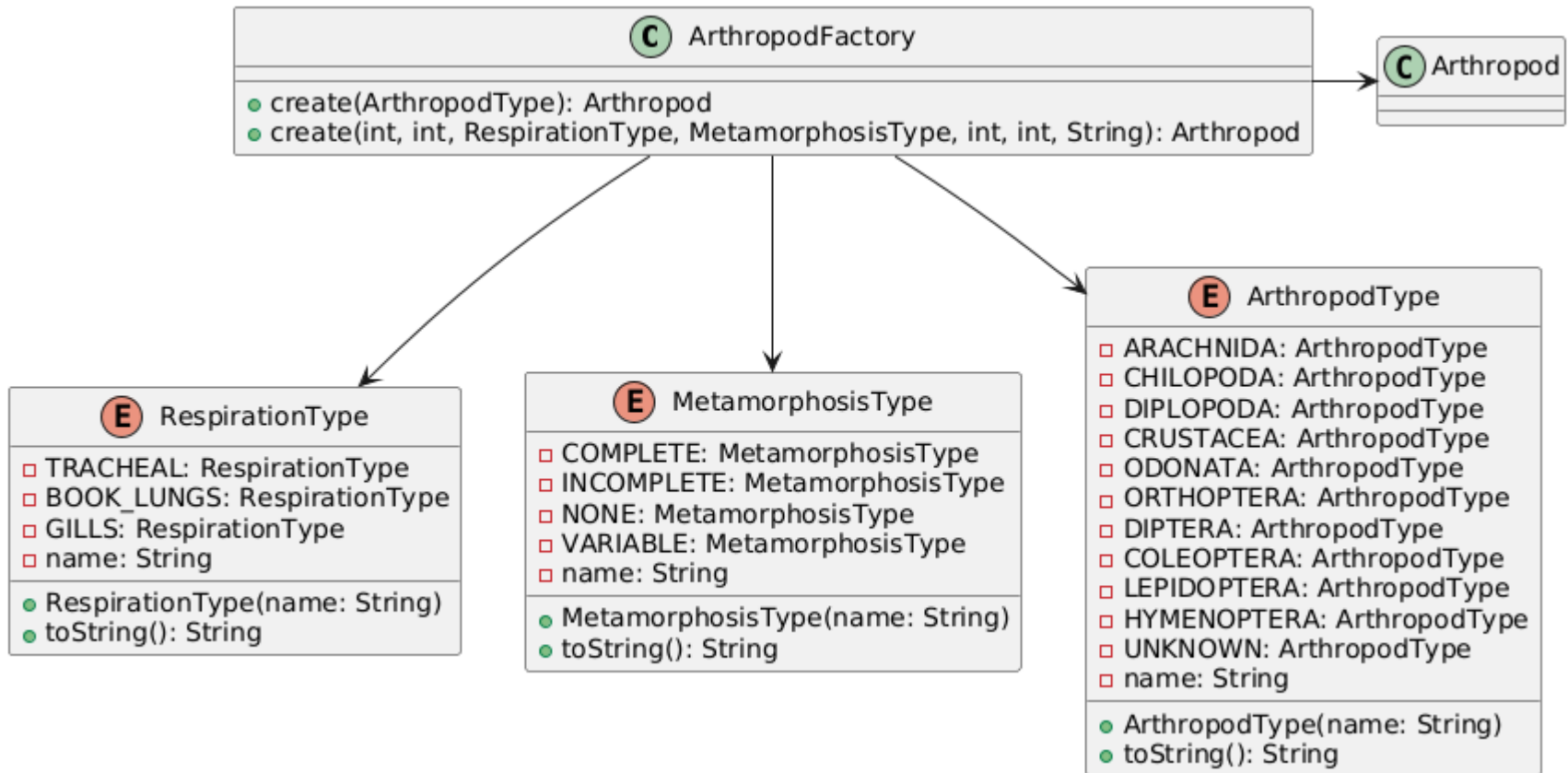
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## Builder Pattern



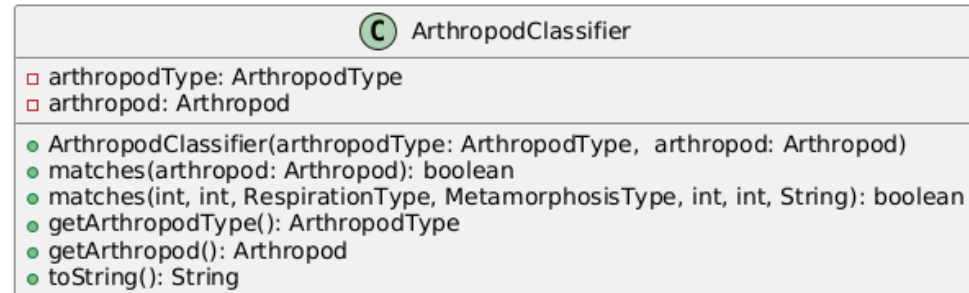
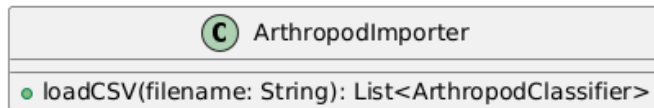
# Lab5

## Factory Pattern



# Lab5

- ArthropodClassifier는 ArthropodType과 Arthropod로 구성
- ArthropodImporter.loadCSV에서는 ArthropodFactory.create로 Arthropod 생성하고, List<ArthropodClassifier> 반환한다.
- ArthropodClassification은 List<ArthropodClassifier>를 사용하여 arthropod을 분류(classify) 한다.



# Lab5

```
public class ArthropodClassification {
    private List<ArthropodClassifier> classifiers;
    public
    ArthropodClassification(List<ArthropodClassifier>
    classifiers) {
        // 모든 곤충 분류 방법 리스트를 추가
    }
    public ArthropodType classify(Arthropod arthropod)
    {
        // 리스트에 있는 classifier와 match하는 것이 있으
    면 classifier.getArthropodType() 반환
        // 없으면, ArthropodType.UNKNOWN 반환
    }
    ...
}
```



# Lab5

```
public class App {
    public static void main(String[] args) {
        List<ArthropodClassifier> classifiers =
ArthropodImporter.loadCSV("arthropods.csv");
        ArthropodClassification classification = new
ArthropodClassification(classifiers);
        // create a beetle using Builder
        Arthropod beetle = new
Arthropod.ArthropodBuilder()
            .setBodyRegions(3)
            ... .build();
        // print details & classification result
        System.out.print(beetle);
        System.out.println(" => Arthropod Type: " +
classification.classify(beetle));
    }
}
```

# Lab5

```
// create a crab using Factory  
Arthropod crab =  
ArthropodFactory.create(ArthropodType.CRUSTACEA);  
... 출력  
// create any arthropod  
Arthropod arthropodToClassify = new  
Arthropod.ArthropodBuilder()  
    ... .build();  
// Using a lambda to classify the arthropod  
Optional<ArthropodClassifier> matchingClassifier =  
classifiers.stream().filter(classifier ->  
classifier.matches(arthropodToClassify)) .findFirst(  
);  
... 찾았음 출력
```

# Lab5

```
// get List<Arthropod> from classifiers
List<Arthropod> arthropods = classifiers.stream()
    .map(classifier ->
classifier.getArthropod())
    .collect(Collectors.toList());
// for each arthropod, classify
for(Arthropod arthropod : arthropods) {
    System.out.print(arthropod);
    System.out.println(" => Arthropod Type: " +
classification.classify(arthropod));
}
.. 모든 메소드 테스트
```

# Submit to e-learning

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- Lab5 과제에 yourcode를 추가 (yourcode 없을시 10점에서 -1점 감점)
- **Java24-5-HW2-YourID-YourName.zip** 과제(보고서에 반드시 yourcode 설명 포함)를 e러닝에 제출 (**due by 10/22**).