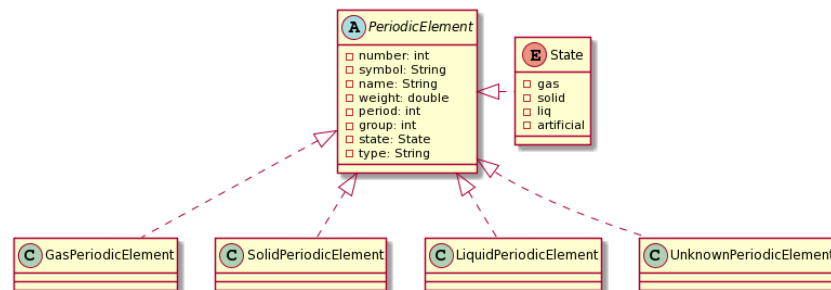


Java Programming II Lab5

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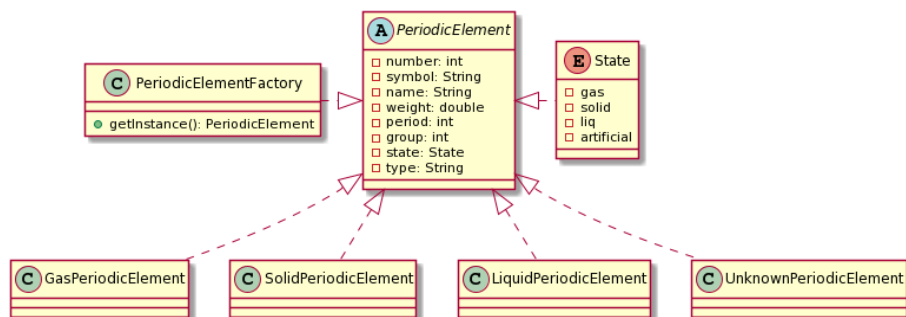
Lab5

- Practice to write a Period Element program using **Factory pattern**.
 - PeriodElement** has number, symbol, name, weight, period, group, state, type.
 - GasPeriodicElement, SolidPeriodicElement, LiquidPeriodicElement, UnknownPeriodicElement** has **gas, solid, liq, artificial** State.

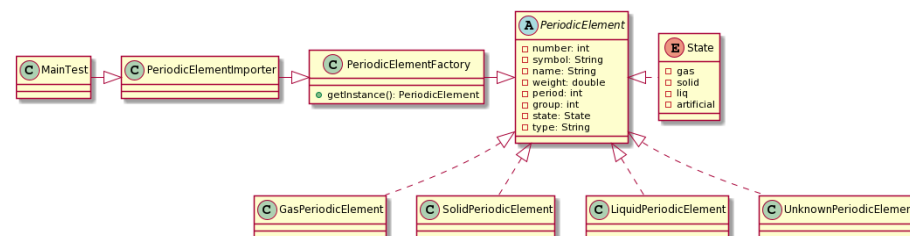


Lab5

- PeriodicElementFactory** getInstance() creates **GasPeriodicElement, SolidPeriodicElement, LiquidPeriodicElement, UnknownPeriodicElement** by **State**.



Lab5



Lab5

```
public class PeriodicElementFactory {
    public static PeriodicElement getInstance(int
number, String name, String symbol, double weight,
int period, int group, State state, String type) {
    switch (state) {
        case gas:
            return new GasPeriodicElement(number, name,
symbol, weight, period, group, state, type);
        case solid:
            return new SolidPeriodicElement(number, name,
symbol, weight, period, group, state, type);
        ...
        default:
            return null;
    }
}
```

Lab5

```
public class PeriodicElementImporter {
    public static PeriodicElement parse(String[]
items) {
        try {
            int number = Integer.parseInt(items[0]);
            String name = items[1];
            String symbol = items[2];
            double weight = Double.parseDouble(items[3]);
            ...

            return PeriodicElementFactory.getInstance(
                number, name, symbol, weight, period,
                group, state, type);
        } catch (Exception e) {
            System.out.println("Exception!");
        }
        return null;
    }
}
```

Lab5

```
public static List<PeriodicElement>
loadCSV(String filename) {
    List<PeriodicElement> list = new ArrayList<>();
    try (BufferedReader br = new BufferedReader(new
FileReader(filename))) {
        ...
        String[] items = line.split(", ");
        PeriodicElement p = parse(items);
        list.add(p);
        ...
    } catch (Exception e) {
        ...
    }
    return list;
}
```

Lab5

```
public class MainTest {
    public static void main(String[] args[]) {
        List<PeriodicElement> list =
PeriodicElementImporter.loadCSV("PeriodicElements.csv");
        list.forEach(System.out::println);

        // search by number
        int number = UserInput.getIntegerBetween(1, 118);
        PeriodicElement element = list.stream().filter(e -> e.
getNumber() == number).findAny().orElse(null);

        // search by name, symbol, period, group, State
    }
}
```

Submit to e-learning

- Add your code (e.g., additional method, class, routine, etc) in the Lab5 assignment.
- Submit the Lab5 assignment (JAVA21-2-Lab5-ID-name.zip including the report) to e-learning (due by 10/17).