КИЇВСЬКИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ УКРАЇНИ «КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ»

**Лабораторна робота №4**

З інженерії програмного забезпечення

**Тема**: «СТРУКТУРНІ ШАБЛОНИ ПРОЕКТУВАННЯ. ШАБЛОНИ FLYWEIGHT, ADAPTER, BRIDGE, FACADE»

залікова книжка № 3223

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Київ-2014

**Мета:** Вивчення структурних шаблонів. Отримання базових навичок з застосування шаблонів Flyweight, Adapter, Bridge, Facade.

1. **Завдання.**

1. Закріпити призначення шаблонів проектування ПЗ, їх класифікацію. Знати назву і коротку характеристику кожного з шаблонів, що відносяться до певного класу.

2. Повторити структурні шаблони проектування ПЗ. Знати загальну характеристику структурних шаблонів та призначення кожного з них.

3. Детально вивчити структурні шаблони проектування Flyweight,

Adapter, Bridge, Facade. Для кожного з них:

● вивчити Шаблон, його призначення, альтернативні назви, мотивацію, випадки коли його застосування є доцільним та результати такого застосування;

● знати особливості реалізації Шаблону, споріднені шаблони, відомі випадки його застосування в програмних додатках;

● вільно володіти структурою Шаблону, призначенням його класів та відносинами між ними;

● вміти розпізнавати Шаблон в UML діаграмі класів та будувати сирцеві коди Java-класів, що реалізують шаблон.

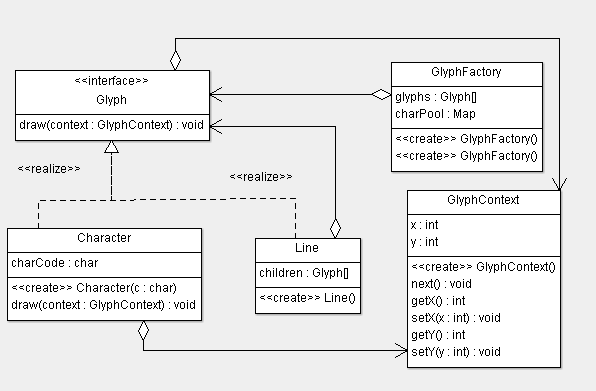
4. В підготованому проекті (ЛР1) створити програмний пакет com.lab111.labwork4. В пакеті розробити інтерфейси і класи, що реалізують завдання (згідно варіанту) з застосуванням одного чи декількох шаблонів (п.3). В розроблюваних класах повністю реалізувати методи, пов'язані з функціюванням Шаблону.

5. За допомогою автоматизованих засобів виконати повне документування розроблених класів (також методів і полів), при цьому документація має в достатній мірі висвітлювати роль певного класу в загальній структурі Шаблону та особливості конкретної реалізації.

**Мій варіант 0**

*Визначити специфікації класів та реалізацію методів для об'єктів- гліфів латинського алфавіту та об'єктів-строк. Об'єкти-гліфи мають атрибути координат та використовуються в якості складових при побудові композитних об'єктів-строк. Забезпечити ефективне використання пам'яті при роботі з великою кількістю об'єктів-гліфів. Реалізувати метод виводу рядка.*

1. **Діаграма класів**



1. **JavaDoc**

## A

**[add(Glyph)](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\Line.html" \l "add(ua.kpi.ipz.lab4.Glyph))** - Method in class ua.kpi.ipz.lab4.[Line](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html)

Method allows to add new glyph

## C

****[Character](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\Character.html" \o "class in ua.kpi.ipz.lab4)**** - Class in [ua.kpi.ipz.lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\package-summary.html)

The class represents a divisive implementation of Glyph.

[**Character(char)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Character.html#Character(char)) - Constructor for class ua.kpi.ipz.lab4.[Character](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Character.html)

An ordinary constructor which adds an internal state.

## D

**[draw(GlyphContext)](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\Character.html" \l "draw(ua.kpi.ipz.lab4.GlyphContext))** - Method in class ua.kpi.ipz.lab4.[Character](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Character.html)

The method draws this glyph in a specific context that is transfered with arguments.

[**draw(GlyphContext)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Glyph.html#draw(ua.kpi.ipz.lab4.GlyphContext)) - Method in interface ua.kpi.ipz.lab4.[Glyph](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Glyph.html)

Method draws a glyph in a given context.

[**draw(GlyphContext)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html#draw(ua.kpi.ipz.lab4.GlyphContext)) - Method in class ua.kpi.ipz.lab4.[Line](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html)

An implementation of method that's required by the interface.

## G

**[getCharacter(char)](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\GlyphFactory.html" \l "getCharacter(char))** - Method in class ua.kpi.ipz.lab4.[GlyphFactory](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html)

[**getChild(int)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html#getChild(int)) - Method in class ua.kpi.ipz.lab4.[Line](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html)

Method allows to get a child on the given index.

[**getLine(Glyph...)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html#getLine(ua.kpi.ipz.lab4.Glyph...)) - Method in class ua.kpi.ipz.lab4.[GlyphFactory](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html)

Method returns line.

[**getX()**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html#getX()) - Method in class ua.kpi.ipz.lab4.[GlyphContext](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html)

Getter for x-coordinate

[**getY()**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html#getY()) - Method in class ua.kpi.ipz.lab4.[GlyphContext](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html)

Getter for y-coordinate.

[****Glyph****](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Glyph.html) - Interface in [ua.kpi.ipz.lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\package-summary.html)

A glyph interface.

[****GlyphContext****](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html) - Class in [ua.kpi.ipz.lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\package-summary.html)

The class represents the context or the external state of the divisive glyph.

[**GlyphContext()**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html#GlyphContext()) - Constructor for class ua.kpi.ipz.lab4.[GlyphContext](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html)

Constructor by default, sets the coordinates at the start-point of (0;0).

[****GlyphFactory****](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html) - Class in [ua.kpi.ipz.lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\package-summary.html)

The factory class.

[**GlyphFactory()**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html#GlyphFactory()) - Constructor for class ua.kpi.ipz.lab4.[GlyphFactory](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html)

A basic constructor without parameters, initializes the HashMap.

[**GlyphFactory(Glyph...)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html#GlyphFactory(ua.kpi.ipz.lab4.Glyph...)) - Constructor for class ua.kpi.ipz.lab4.[GlyphFactory](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphFactory.html)

Constructor with glyph-parameters.

## L

****[Lab4](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\Lab4.html" \o "class in ua.kpi.ipz.lab4)**** - Class in [ua.kpi.ipz.lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\package-summary.html)

[**Lab4()**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Lab4.html#Lab4()) - Constructor for class ua.kpi.ipz.lab4.[Lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Lab4.html)

[****Line****](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html) - Class in [ua.kpi.ipz.lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\package-summary.html)

The class of the line (or string, semantically).

[**Line(Glyph...)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html#Line(ua.kpi.ipz.lab4.Glyph...)) - Constructor for class ua.kpi.ipz.lab4.[Line](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html)

Constructor, sets the "children" of this composite onject.

## M

**[main(String[])](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\Lab4.html" \l "main(java.lang.String[]))** - Static method in class ua.kpi.ipz.lab4.[Lab4](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Lab4.html)

## N

**[next()](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\GlyphContext.html" \l "next())** - Method in class ua.kpi.ipz.lab4.[GlyphContext](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html)

Increments the number of symbols in line.

## R

**[remove(int)](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\Line.html" \l "remove(int))** - Method in class ua.kpi.ipz.lab4.[Line](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\Line.html)

Method allows to remove a child from the array.

## S

**[setX(int)](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\GlyphContext.html" \l "setX(int))** - Method in class ua.kpi.ipz.lab4.[GlyphContext](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html)

Setter for x-coordinate

[**setY(int)**](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html#setY(int)) - Method in class ua.kpi.ipz.lab4.[GlyphContext](file:///D:\obuchenie\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\JavaDoc4\ua\kpi\ipz\lab4\GlyphContext.html)

Setter for y-coordinate

## U

[ua.kpi.ipz.lab4](file:///D:\\obuchenie\\2%20%D0%BA%D1%83%D1%80%D1%81%203%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80\\%D0%98%D0%BD%D0%B6%D0%B5%D0%BD%D0%B5%D1%80%D0%B8%D1%8F%20%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%BC%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D0%B5%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D0%BD%D0%B8%D1%8F\\JavaDoc4\\ua\\kpi\\ipz\\lab4\\package-summary.html) - package ua.kpi.ipz.lab4

1. **Роздруківка тексту**

/\*\*

\*

\*/

package ua.kpi.ipz.lab4;

/\*\*

\* A glyph interface. Sets the mandatory draw-method that has to be implemented

\* by objects of the classes which use this interface.

\*

\* @author Ruslan Popenko

\* @version 1.0

\*

\*/

public interface Glyph {

/\*\*

\* Method draws a glyph in a given context.

\*

\* @param context

\*/

public void draw(GlyphContext context);

}

/\*\*

\*

\*/

package ua.kpi.ipz.lab4;

/\*\*

\* The class represents a divisive implementation of Glyph. Thus it includes

\* only an internal state. An external state is passed to the draw-method via

\* the context. A Character is never created by simple instancing. Can only be

\* created with the help of primitive fabric.

\*

\* @author Ruslan Popenko

\* @version 1.0

\*/

public class Character implements Glyph {

private char charCode;

/\*\*

\* An ordinary constructor which adds an internal state.

\*

\* @param c

\* char, an internal state.

\*/

public Character(char c) {

charCode = c;

}

/\*\*

\* The method draws this glyph in a specific context that is transfered with

\* arguments.

\*/

public void draw(GlyphContext context) {

System.out.println(charCode + "(" + context.getX() + ";"

+ context.getY() + ")");

};

}

/\*\*

\*

\*/

package ua.kpi.ipz.lab4;

/\*\*

\* The class represents the context or the external state of the divisive glyph.

\* At the time it has to show the coordinates of divisive glyphs in a line.

\*

\* @author Ruslan Popenko

\* @version 1.0

\*

\*/

public class GlyphContext {

/\*\*

\* Coordinates

\*/

private int x;

private int y;

/\*\*

\* Constructor by default, sets the coordinates at the start-point of (0;0).

\*/

public GlyphContext() {

this.x = 0;

this.y = 0;

}

/\*\*

\* Increments the number of symbols in line.

\*/

public void next() {

if (x == 5) {

x = 0;

y++;

}

x++;

}

/\*\*

\* Getter for x-coordinate

\*

\* @return x coordinate

\*/

public int getX() {

return this.x;

}

/\*\*

\* Setter for x-coordinate

\*

\* @param x

\* coordinate

\*/

public void setX(int x) {

this.x = x;

}

/\*\*

\* Getter for y-coordinate.

\*

\* @return y coordinate

\*/

public int getY() {

return this.y;

}

/\*\*

\* Setter for y-coordinate

\*

\* @param y

\* coordinate

\*/

public void setY(int y) {

this.y = y;

}

}

/\*\*

\*

\*/

package ua.kpi.ipz.lab4;

import java.util.\*;

/\*\*

\* The factory class. It's responsible for creation of different glyph-objects.

\* Though it can also create lines, it's not a mandatory. The opportunity to do

\* that is left cause of further ideas of refactoring.

\*

\* @author Ruslan Popenko

\* @version 1.0

\*/

public class GlyphFactory {

private Glyph[] glyphs;

private Map charPool;

/\*\*

\* A basic constructor without parameters, initializes the HashMap.

\*/

public GlyphFactory() {

charPool = new HashMap<Integer, Character>();

}

/\*\*

\* Constructor with glyph-parameters.

\*

\* @param glyphs

\*/

public GlyphFactory(Glyph... glyphs) {

this.glyphs = new Glyph[glyphs.length];

for (int i = 0; i < glyphs.length; i++)

this.glyphs[i] = glyphs[i];

}

public Character getCharacter(char c) {

Character thisChar = (Character) charPool.get(c);

if (thisChar == null) {

thisChar = new Character(c);

charPool.put(c, thisChar);

}

return thisChar;

}

/\*\*

\* Method returns line. Non-mandatory, created cause of thoughts of further

\* refactoring.

\*

\* @param glyphs

\* @return

\*/

public Line getLine(Glyph... glyphs) {

return new Line(glyphs);

}

}

/\*\*

\*

\*/

package ua.kpi.ipz.lab4;

/\*\*

\* The class of the line (or string, semantically). Represents an non-divisive

\* glyph. It's a composite class so here implementation of specific "add",

\* "remove" or "get"-methods can be found. As children classes it collects other

\* glyphs like lines or, mostly, Characters.

\*

\* @author Ruslan Popenko

\*

\*/

public class Line implements Glyph {

private Glyph[] children;

/\*\*

\* Constructor, sets the "children" of this composite onject.

\*

\* @param glyphs

\*/

public Line(Glyph... glyphs) {

children = new Glyph[glyphs.length];

for (int i = 0; i < glyphs.length; i++)

children[i] = glyphs[i];

}

/\*\*

\* Method allows to add new glyph

\*

\* @param glyph

\*/

public void add(Glyph glyph) {

Glyph[] buf = new Glyph[children.length + 1];

for (int i = 0; i < buf.length - 1; i++) {

buf[i] = children[i];

}

buf[children.length] = glyph;

children = new Glyph[buf.length];

children = buf;

}

/\*\*

\* Method allows to remove a child from the array.

\*

\* @param ind

\* index of a child to remove

\*/

public void remove(int ind) {

if (children == null) {

throw new IndexOutOfBoundsException();

}

Glyph[] buffer = new Glyph[children.length - 1];

if (ind == 0) {

for (int i = 1; i < children.length; i++) {

buffer[i - 1] = children[i];

}

children = new Glyph[buffer.length];

children = buffer;

} else if (ind == children.length - 1) {

for (int i = 0; i < children.length - 1; i++) {

buffer[i] = children[i];

}

children = new Glyph[buffer.length];

children = buffer;

} else {

for (int i = 0; i < ind; i++) {

buffer[i] = children[i];

}

for (int i = ind; i < children.length - 1; i++) {

buffer[i] = children[i + 1];

}

children = new Glyph[buffer.length];

children = buffer;

}

}

/\*\*

\* Method allows to get a child on the given index.

\*

\* @param ind

\* index of child to be returned.

\* @return Glyph

\*/

public Glyph getChild(int ind) {

if (ind < children.length)

return children[ind];

return null;

}

/\*\*

\* An implementation of method that's required by the interface. In this

\* implementation the draw-methods of children-glyphs are called.

\*/

public void draw(GlyphContext context) {

for (Glyph g : children) {

g.draw(context);

context.next();

}

}

}

/\*\*

\*

\*/

package ua.kpi.ipz.lab4;

/\*\*

\* @author Ruslan Popenko

\*

\*/

public class Lab4 {

public static void main(String[] args) {

GlyphFactory factory = new GlyphFactory();

Glyph[] glyphs = { factory.getCharacter('i'),

factory.getCharacter('t'), factory.getCharacter('w'),

factory.getCharacter('o'), factory.getCharacter('r'),

factory.getCharacter('k'), factory.getCharacter('s'),

factory.getCharacter('s'), factory.getCharacter('k'),

factory.getCharacter('r'), factory.getCharacter('o'),

factory.getCharacter('v'), factory.getCharacter('t'),

factory.getCharacter('i') };

Line line = factory.getLine(glyphs);

GlyphContext context = new GlyphContext();

line.draw(context);

}

}