Lab5 Project

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CSC615

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Overview:

IDE:	vim
Date:	May 20th 2009
Compiler:	SUN JDK 6.0 Linux 64bit (1.6)
Ant Makefile:	build.xml
Project URL:	http://github.com/tanxin/xin_csc615

Get SourceCode:

From Git (newest version):

```
tanxin@laptop ~/.workspace-java/csc615 $ git clone git://github.com/tanxin/xin_overlay.git
```

Compile:

```
tanxin@laptop ~/.workspace-java/csc615 $ ant compile
Buildfile: build.xml

init:
    [mkdir] Created dir: /home/tanxin/documents/school/nu/CSC615/project/build

compile:
    [javac] Compiling 7 source files to /home/tanxin/documents/school/nu/CSC615/project/build

BUILD SUCCESSFUL
Total time: 1 second
```

Run:

```
tanxin@laptop ~/.workspace-java/csc615 $ ant runl5
Buildfile: build.xml

init:

compile:
    [javac] Compiling 1 source file to /home/tanxin/documents/school/nu/CSC615/project/build

runl5:
     [java] edu.nu.csc615.lab5.Quadrilateral: java.awt.Point[x=1,y=3], java.awt.Point[x=5,y=4],
java.awt.Point[x=6,y=-4], java.awt.Point[x=0,y=-5]
     [java] edu.nu.csc615.lab5.Trapezoid: java.awt.Point[x=2,y=3], java.awt.Point[x=7,y=3],
java.awt.Point[x=10,y=10], java.awt.Point[x=0,y=10]
     [java] Height:7.0, Area:52.5
     [java] edu.nu.csc615.lab5.Parallelogram: java.awt.Point[x=2,y=3], java.awt.Point[x=10,y=3],
java.awt.Point[x=4,y=10], java.awt.Point[x=12,y=10]
     [java] Width:8.0, Height:7.0, Area:56.0
```

```
             [java] edu.nu.csc615.lab5.Rectangle: java.awt.Point[x=2,y=3], java.awt.Point[x=8,y=3],
java.awt.Point[x=8,y=10], java.awt.Point[x=2,y=10]
             [java] Width:6.0, Height:7.0, Area:42.0
             [java] edu.nu.csc615.lab5.Square: java.awt.Point[x=0,y=0], java.awt.Point[x=0,y=5],
java.awt.Point[x=5,y=5], java.awt.Point[x=5,y=0]
             [java] Width:5.0, Height:5.0, Area:25.0

         BUILD SUCCESSFUL
         Total time: 1 second
```

Screenshot:

Code List:

edu.nu.csc615.lab5.Test.java

```
        /**
         * Lab5
         *
         * Copyright 2005-2009 Shin Tan <tanxincn@gmail.com>
         *
         *
         * This program is free software; you can redistribute it and/or
         * modify it under the terms of the GNU General Public License
         * as published by the Free Software Foundation; either version 2
         * of the License, or (at your option) any later version.
         *
         * This program is distributed in the hope that it will be useful,
         * but WITHOUT ANY WARRANTY; without even the implied warranty of
```

```
         * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
         * GNU General Public License for more details.
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         * You should have received a copy of the GNU General Public License
         * along with this program; if not, write to the Free Software
         * Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA  02110-1301, USA.
         *
         *
         * @author  tanxin
         * Editor:  vim
         * Compile: sun-jdk-1.6.0.13 64bit
         * Date:    May 20th 2009
         * Makefile:build.xml (runl5)
         */
        package edu.nu.csc615.lab5;

        import java.awt.Point;

        public class Test {

            /* for test */
            public static void main(String[] args){
                Quadrilateral shape1 = new Quadrilateral(new Point(1,3), new Point(5,4), new Point(6,-4), new
Point(0,-5));

                Trapezoid shape2 = new Trapezoid(new Point(2,3), new Point(7,3), new Point(10,10), new
Point(0,10));
                System.out.println(shape2);

                Parallelogram shape3 = new Parallelogram(new Point(2,3), new Point(10,3), new Point(4,10), new
Point(12,10));
                System.out.println(shape3);

                Rectangle shape4 = new Rectangle(new Point(2,3), new Point(8,3), new Point(8,10), new
Point(2,10));
                System.out.println(shape4);

                Square shape5 = new Square(new Point(0,0), new Point(0,5), new Point(5,5), new Point(5,0));
                System.out.println(shape5);
            }

        }
```

edu.nu.csc615.lab5.Quadrilateral.java

```
        package edu.nu.csc615.lab5;

        import java.awt.Point;

        public class Quadrilateral{
            private Point p1;
            private Point p2;
            private Point p3;
            private Point p4;

            public Quadrilateral( Point p1, Point p2, Point p3, Point p4 ){
                this.p1 = p1;
                this.p2 = p2;
                this.p3 = p3;
                this.p4 = p4;
                System.out.println(getInfo());
            }

            @Override
            public String toString(){
                return getInfo();
            }

            private String getInfo(){
                String string = String.format( "%s: %s, %s, %s, %s", this.getClass().getName(), p1, p2, p3, p4 );
```

```
                return string;
            }

            /* getters and setters */
            public Point getP1() {
                return p1;
            }

            public void setP1(Point p1) {
                this.p1 = p1;
            }

            public Point getP2() {
                return p2;
            }

            public void setP2(Point p2) {
                this.p2 = p2;
            }

            public Point getP3() {
                return p3;
            }

            public void setP3(Point p3) {
                this.p3 = p3;
            }

            public Point getP4() {
                return p4;
            }

            public void setP4(Point p4) {
                this.p4 = p4;
            }

        }
```

edu.nu.csc615.lab5.Trapezoid.java

```
        package edu.nu.csc615.lab5;

        import java.awt.Point;

        public class Trapezoid extends Quadrilateral{

            public Trapezoid(Point p1, Point p2, Point p3, Point p4){
                super(p1, p2, p3, p4);
            }

            public double getHeight(){
                return (getP1().getY()==getP2().getY())?Math.abs(getP2().getY()-
getP3().getY()):Math.abs( getP1().getY()-getP2().getY());
            }

            public double getArea(){
                double height = getHeight();
                double base = (getP1().getY()==getP2().getY())?Math.abs(getP1().getX()-getP2().getX())
+Math.abs(getP3().getX()-getP4().getX()):Math.abs(getP2().getX()-getP3().getX())+Math.abs(getP4().getX()-
getP1().getX());
                return height * base / 2.;
            }

            @Override
            public String toString(){
                return String.format("Height:%s, Area:%s", getHeight(), getArea());
            }
        }
```

edu.nu.csc615.lab5.Parallelogram.java

```
package edu.nu.csc615.lab5;

import java.awt.Point;

public class Parallelogram extends Trapezoid{
    public Parallelogram(Point p1, Point p2, Point p3, Point p4){
        super(p1, p2, p3, p4);
    }

    public double getWidth(){
        return (getP1().getY()==getP2().getY())?Math.abs(getP1().getX()-
getP2().getX()):Math.abs(getP2().getX()-getP3().getX());
    }

    @Override
    public String toString(){
        return String.format("Width:%s, Height:%s, Area:%s", getWidth(), getHeight(), getArea());
    }
}
```

edu.nu.csc615.lab5.Rectangle.java

```
package edu.nu.csc615.lab5;

import java.awt.Point;

public class Rectangle extends Parallelogram{
    public Rectangle(Point p1, Point p2, Point p3, Point p4){
        super(p1, p2, p3, p4);
    }
}
```

edu.nu.csc615.lab5.Square.java

```
package edu.nu.csc615.lab5;

import java.awt.Point;

public class Square extends Rectangle{
    public Square(Point p1, Point p2, Point p3, Point p4){
        super(p1, p2, p3, p4);
    }
}
```