

TURMA 1213A	LINGUAGEM DE PROGRAMAÇÃO I Vetores Bidimensionais e Ordenação de Vetor	DATA 03-10-2016
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Resolvendo o exercício referente a distância entre pontos, vamos criar a classe ponto.java, conforme listagem anexa.

```
package classes;
```

```
public class Ponto {
    public double x1, y1, x2, y2;
    public boolean flag = false;
    public String MessageError = "";
    // Classe construtora
    public Ponto(double a, double b, double c, double d) {
        if (a < c && b > d) {
            setFlag(true);
            setMessageError("Atende a condição.");
            setX1(a);
            setY1(b);
            setX2(c);
            setY2(d);
        } else {
            setFlag(false);
            setMessageError("Não atende a condição.");
        }
    } // fim da classe construtora
    public double getX1() {
        return x1;
    }

    public void setX1(double x1) {
        this.x1 = x1;
    }

    public double getY1() {
        return y1;
    }

    public void setY1(double y1) {
        this.y1 = y1;
    }

    public double getX2() {
        return x2;
    }

    public void setX2(double x2) {
        this.x2 = x2;
    }

    public double getY2() {
        return y2;
    }

    public void setY2(double y2) {
        this.y2 = y2;
    }

    public boolean isFlag() {
        return flag;
    }

    public void setFlag(boolean flag) {
```

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```

        this.flag = flag;
    }

    public String getMessageError() {
        return MessageError;
    }

    public void setMessageError(String messageError) {
        MessageError = messageError;
    }

    public double dist(double ab1p, double or1p, double ab2p, double or2p) {
        return Math.sqrt(Math.pow(ab1p - ab2p, 2) + Math.pow(or1p - or2p, 2));
    }

    public double Perimetro() {
        return 2 * dist(getX1(), getY1(), getX1(), getY2()) +
            2 * dist(getX1(), getY1(), getX2(), getY1());
    }

    public double Area() {
        return dist(getX1(), getY1(), getX1(), getY2()) *
            dist(getX1(), getY1(), getX2(), getY1());
    }

    public double Diagonal() {
        return dist(getX1(), getY1(), getX2(), getY2());
    }

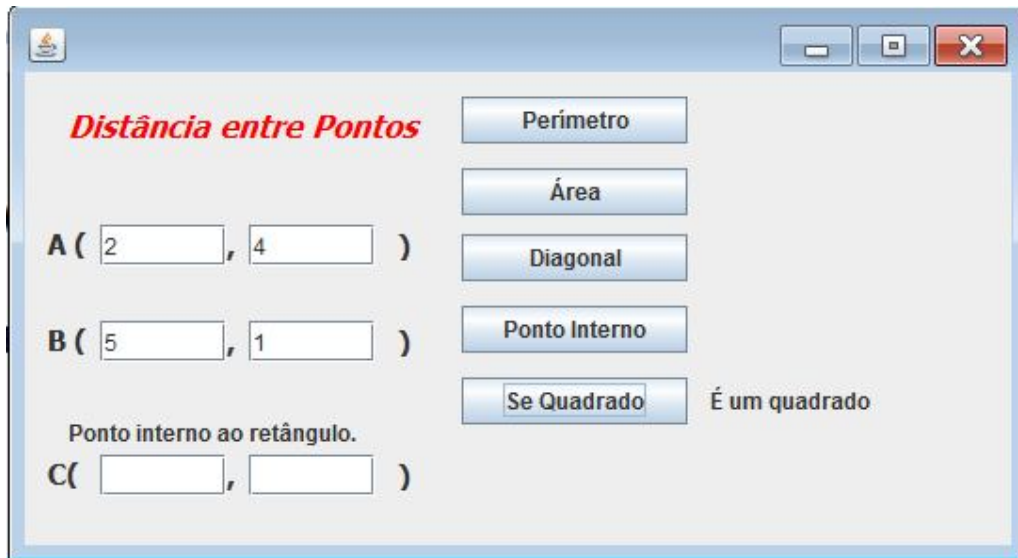
    public boolean Pontointerno(double x, double y) {
        if (getX1() < x && getY1() > y
            && x < getX2() && y > getY2()) {
            return true;
        } else {
            return false;
        }
    }

    public boolean SeQuadrado() {
        if (dist(getX1(), getY1(), getX1(), getY2()) ==
            dist(getX1(), getY1(), getX2(), getY1())) {
            return true;
        } else {
            return false;
        }
    }
}

```

Criaremos agora um frame conforme tela abaixo.

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```

package frames;

import java.awt.BorderLayout;
import java.awt.EventQueue;

import javax.swing.JFrame;
import javax.swing.JOptionPane;
import javax.swing.JPanel;
import javax.swing.border.EmptyBorder;

import classes.Ponto;

import javax.swing.JLabel;

import java.awt.Font;
import java.awt.Color;

import javax.swing.JTextField;
import javax.swing.JButton;

import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import java.awt.event.FocusAdapter;
import java.awt.event.FocusEvent;

public class main extends JFrame {

    private JPanel contentPane;
    private JTextField xa;
    private JTextField xb;
    private JTextField ya;
    private JTextField yb;
    private JTextField xint;
    private JTextField yint;

    /**

```

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```

    * Launch the application.
    */
    public static void main(String[] args) {
        EventQueue.invokeLater(new Runnable() {
            public void run() {
                try {
                    main frame = new main();
                    frame.setVisible(true);
                } catch (Exception e) {
                    e.printStackTrace();
                }
            }
        });
    }

    /**
     * Create the frame.
     */
    public main() {
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setBounds(100, 100, 542, 296);
        contentPane = new JPanel();
        contentPane.setBorder(new EmptyBorder(5, 5, 5, 5));
        setContentPane(contentPane);
        contentPane.setLayout(null);

        JLabel lblNewLabel = new JLabel("Dist\u00E2ncia entre Pontos");
        lblNewLabel.setForeground(Color.RED);
        lblNewLabel.setFont(new Font("Tahoma", Font.BOLD | Font.ITALIC,
16));

        lblNewLabel.setBounds(23, 13, 287, 33);
        contentPane.add(lblNewLabel);

        JLabel lblNewLabel_1 = new JLabel("A (");
        lblNewLabel_1.setFont(new Font("Tahoma", Font.BOLD, 15));
        lblNewLabel_1.setBounds(12, 83, 56, 16);
        contentPane.add(lblNewLabel_1);

        JLabel lblNewLabel_2 = new JLabel("B (");
        lblNewLabel_2.setFont(new Font("Tahoma", Font.BOLD, 15));
        lblNewLabel_2.setBounds(12, 134, 56, 16);
        contentPane.add(lblNewLabel_2);

        JLabel lblNewLabel_3 = new JLabel(",");
        lblNewLabel_3.setFont(new Font("Tahoma", Font.BOLD, 15));
        lblNewLabel_3.setBounds(107, 84, 56, 16);
        contentPane.add(lblNewLabel_3);

        JLabel label = new JLabel(",");
        label.setFont(new Font("Tahoma", Font.BOLD, 15));
        label.setBounds(107, 135, 56, 16);
        contentPane.add(label);

        JLabel label_1 = new JLabel("");
        label_1.setFont(new Font("Tahoma", Font.BOLD, 15));

```

```
label_1.setBounds(198, 84, 56, 16);
contentPane.add(label_1);

JLabel label_2 = new JLabel("");
label_2.setFont(new Font("Tahoma", Font.BOLD, 15));
label_2.setBounds(198, 135, 56, 16);
contentPane.add(label_2);

JLabel lbArea = new JLabel("New label");
lbArea.setBounds(364, 55, 160, 16);
lbArea.setVisible(false);
contentPane.add(lbArea);

JButton btArea = new JButton("\u00c1rea");
btArea.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {
        Ponto pt = new
            Ponto(Double.parseDouble(xa.getText()),
                Double.parseDouble(ya.getText()),
                Double.parseDouble(xb.getText()),
                Double.parseDouble(yb.getText()));
        if (pt.flag == true) {
            lbArea.setText(String.valueOf(pt.Area()));
            lbArea.setVisible(true);
        } else {
            lbArea.setText(pt.MessageError);

            lbArea.setVisible(true);
        }
    }
});
btArea.setBounds(232, 51, 120, 25);
contentPane.add(btArea);

JLabel lblInterno = new JLabel("New label");
lblInterno.setBounds(364, 128, 160, 16);
lblInterno.setVisible(false);
contentPane.add(lblInterno);

JButton btInterno = new JButton("Ponto Interno");
btInterno.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        Ponto pt = new
            Ponto(Double.parseDouble(xa.getText()),
                Double.parseDouble(ya.getText()),
                Double.parseDouble(xb.getText()),
                Double.parseDouble(yb.getText()));
        if (pt.flag == true) {
            if (pt.PontoInterno(
                Double.parseDouble(xint.getText()),
                Double.parseDouble(yint.getText()))) {
                lblInterno.setText("Interno ao ret\u00e2ngulo.");
            } else {
                lblInterno.setText("Externo ao ret\u00e2ngulo.");
            }
        }
    }
});
```

```
        lblInterno.setVisible(true);
    } else {
        lblInterno.setText(pt.getMessageError());

        lblInterno.setVisible(true);
    }
});
btInterno.setBounds(232, 124, 120, 25);
contentPane.add(btInterno);

JLabel lblDiagonal = new JLabel("New Label");
lblDiagonal.setBounds(364, 90, 160, 16);
lblDiagonal.setVisible(false);
contentPane.add(lblDiagonal);

JButton btDiagonal = new JButton("Diagonal");
btDiagonal.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        Ponto pt = new
            Ponto(Double.parseDouble(xa.getText()),
                Double.parseDouble(ya.getText()),
                Double.parseDouble(xb.getText()),
                Double.parseDouble(yb.getText()));
        if (pt.flag == true) {
            lblDiagonal.setText(String.valueOf(pt.Diagonal()));
            lblDiagonal.setVisible(true);
        } else {
            lblDiagonal.setText(pt.getMessageError());

            lblDiagonal.setVisible(true);
        }
    }
});
btDiagonal.setBounds(232, 86, 120, 25);
contentPane.add(btDiagonal);

JLabel lblQuadrado = new JLabel("New Label");
lblQuadrado.setBounds(364, 166, 160, 16);
lblQuadrado.setVisible(false);
contentPane.add(lblQuadrado);

JButton btSeQuadrado = new JButton("Se Quadrado");
btSeQuadrado.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        Ponto pt = new
            Ponto(Double.parseDouble(xa.getText()),
                Double.parseDouble(ya.getText()),
                Double.parseDouble(xb.getText()),
                Double.parseDouble(yb.getText()));
        if (pt.flag == true) {
            if (pt.SeQuadrado()) {
                lblQuadrado.setText("É um quadrado");
            } else {
                lblQuadrado.setText("Não é um quadrado");
            }
        }
    }
});
```

```
        lbQuadrado.setVisible(true);
    } else {
        lbQuadrado.setText(pt.getMessageError());

        lbQuadrado.setVisible(true);
    }
});
btSeQuadrado.setBounds(232, 162, 120, 25);
contentPane.add(btSeQuadrado);

JLabel lbPerimetro = new JLabel("New Label");
lbPerimetro.setBounds(364, 22, 160, 16);
lbPerimetro.setVisible(false);
contentPane.add(lbPerimetro);

JButton btPerimetro = new JButton("Per\u00EDmetro");
btPerimetro.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {
        Ponto pt = new
            Ponto(Double.parseDouble(xa.getText()),
                Double.parseDouble(ya.getText()),
                Double.parseDouble(xb.getText()),
                Double.parseDouble(yb.getText()));
        if (pt.flag == true) {

lbPerimetro.setText(String.valueOf(pt.Perimetro()));
            lbPerimetro.setVisible(true);
        } else {
            lbPerimetro.setText(pt.getMessageError());

            lbPerimetro.setVisible(true);
        }
    }
});
btPerimetro.setBounds(232, 13, 120, 25);
contentPane.add(btPerimetro);

xa = new JTextField();
xa.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent arg0) {
        lbPerimetro.setVisible(false);
        lbArea.setVisible(false);
        lbDiagonal.setVisible(false);
        lbInterno.setVisible(false);
        lbQuadrado.setVisible(false);
    }
});
xa.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {
        lbPerimetro.setVisible(false);
        lbArea.setVisible(false);
        lbDiagonal.setVisible(false);
        lbInterno.setVisible(false);
    }
});
```

```
        lbQuadrado.setVisible(false);
    }
});
xa.setBounds(40, 81, 67, 22);
xa.setColumns(10);
contentPane.add(xa);

ya = new JTextField();
ya.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        lbPerimetro.setVisible(false);
        lbArea.setVisible(false);
        lbDiagonal.setVisible(false);
        lbInterno.setVisible(false);
        lbQuadrado.setVisible(false);
    }
});
ya.setColumns(10);
ya.setBounds(119, 81, 67, 22);
contentPane.add(ya);

xb = new JTextField();
xb.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        lbPerimetro.setVisible(false);
        lbArea.setVisible(false);
        lbDiagonal.setVisible(false);
        lbInterno.setVisible(false);
        lbQuadrado.setVisible(false);
    }
});
xb.setBounds(40, 132, 67, 22);
contentPane.add(xb);
xb.setColumns(10);
yb = new JTextField();
yb.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        lbPerimetro.setVisible(false);
        lbArea.setVisible(false);
        lbDiagonal.setVisible(false);
        lbInterno.setVisible(false);
        lbQuadrado.setVisible(false);
    }
});
yb.setColumns(10);
yb.setBounds(119, 132, 67, 22);
contentPane.add(yb);

JLabel lbPontoDentro = new
        JLabel("Ponto interno ao ret\u00E2ngulo.");
lbPontoDentro.setBounds(23, 183, 174, 16);
contentPane.add(lbPontoDentro);
```



```
JLabel lblC = new JLabel("C");
lblC.setFont(new Font("Tahoma", Font.BOLD, 15));
lblC.setBounds(12, 205, 56, 16);
contentPane.add(lblC);

xint = new JTextField();
xint.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        lblPerimetro.setVisible(false);
        lblArea.setVisible(false);
        lblDiagonal.setVisible(false);
        lblInterno.setVisible(false);
        lblQuadrado.setVisible(false);
    }
});
xint.setColumns(10);
xint.setBounds(40, 203, 67, 22);
contentPane.add(xint);

JLabel label_4 = new JLabel(",");
label_4.setFont(new Font("Tahoma", Font.BOLD, 15));
label_4.setBounds(107, 206, 56, 16);
contentPane.add(label_4);

yint = new JTextField();
yint.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        lblPerimetro.setVisible(false);
        lblArea.setVisible(false);
        lblDiagonal.setVisible(false);
        lblInterno.setVisible(false);
        lblQuadrado.setVisible(false);
    }
});
yint.setColumns(10);
yint.setBounds(119, 203, 67, 22);
contentPane.add(yint);

JLabel label_5 = new JLabel("");
label_5.setFont(new Font("Tahoma", Font.BOLD, 15));
label_5.setBounds(198, 206, 56, 16);
contentPane.add(label_5);
}
}
```