

```
// AbstractNumberedTicket.java
package j2.exam.ex01;

public abstract class AbstractNumberedTicket {
    protected int serialNo;
    public AbstractNumberedTicket() {
        super();
        this.serialNo = 1000;
    }
    public void print() {
        (1)
        (2)
        (3)
    }
    protected void printSerial() {
        this.serialNo ++;
        System.out.println("> NO." + this.serialNo);
    }
    protected abstract void printTop();
    protected abstract void printBottom();
}
```

```
// Ex0301.java
package j2.exam.ex01;
public class Ex0301 {
    public static void main(String[] args) {
        FinalExamTicket ticket = new FinalExamTicket();
        for (int i = 0; i < 20; i++) {
            ticket.print();
        }
    }
}
```

```
// FinalExamTicket.java
package j2.exam.ex01;
public class FinalExamTicket extends AbstractNumberedTicket {
    protected void printTop() {
        
    }
    protected void printBottom() {
        
    }
}
```

```
// Shape.java
package j2.exam.ex02;
public interface Shape {
    // この図形の面積を求める
    double area();
}
```

```
// Circle.java
package j2.exam.ex02;
public class Circle implements Shape {
    private double radius;
    // 円インスタンスを作成する
    //    radius - この円の半径
    public Circle(double radius) {
        (1).radius = radius;
    }
    // この円の面積を計算して返す
    public double area() {
        return Math.PI * this.radius * this.radius;
    }
}
```

```

// Rectangle.java
package j2.exam.ex02;
public class Rectangle implements Shape {
    private double height;
    private double width;
    // 長方形インスタンスを作成する
    //     height - この長方形の高さ
    //     width - 個の長方形の幅
    public Rectangle(double height, double width) {
        (1).height = height;
        (1).width = width;
    }
    // この長方形の面積を計算して返す
    public double area() {
        return (2);
    }
}

```

```

// RightCone.java
package j2.exam.ex02;
public class RightCone {
    private Shape base;
    private double height;
    // 指定された図形を底面にもち、指定された高さをもつ直錘インスタンスを生成する
    //     base - この直錘の底面の図形
    //     height - この直錘の高さ
    public RightCone(Shape base, double height) {
        this.base = base;
        this.height = height;
    }
    // この直錘の体積を計算して返す
    public double volume() {
        return (3);
    }
}

```

```
// Ex0302.java
package j2.exam.ex02;
public class Ex0302 {
    public static void main(String[] args) {
        Shape r = ;
        Shape c = ;
        RightCone cr = new RightCone(r, 1.5);
        RightCone cc = new RightCone(c, 12.0);
        System.out.println(" r の面積: " + r.area());
        System.out.println(" c の面積: " + c.area());
        System.out.println("cr の体積: " + cr.volume());
        System.out.println("cc の体積: " + cc.volume());
    }
}
```

```

// Ex0303.java
package j2.exam.ex03; import java.io.*; import java.util.*;

public class Ex0303 {
    public static void main(String[] args) {
        try {
            ArrayList list = drain();
            printList(list);
        } catch (IOException e) {
            System.out.println("エラーが発生しました");
        }
    }

    private static ArrayList drain() throws IOException {
        BufferedReader reader = new BufferedReader(new InputStreamReader(System.in));
        ArrayList input = new ArrayList();
        while (true) {
            String line = reader.readLine();
            if (line.equals("."))
                break;
            input.add(line);
        }
        return input;
    }

    private static void printList(ArrayList list) throws IOException {
        BufferedWriter writer = new BufferedWriter(new FileWriter("U:/exex0303.txt"));
        (1) {
            for ((3)) {
                String str = (String)list.get(i);
                writer.write(str);
                writer.newLine();
            }
        } (2) {
            writer.close();
        }
    }
}

```

```
// ButtonListenerA.java
package j2.exam.ex04;
import java.awt.event.*;
public class ButtonListenerA implements ActionListener {
    private final Ex0304 c;
    public ButtonListenerA(Ex0304 c) {
        this.c = c;
    }
    public void actionPerformed(ActionEvent e) {
        this.c.a();
    }
}
```

```
// ButtonListenerB.java
package j2.exam.ex04;
import java.awt.event.*;
public class ButtonListenerB implements ActionListener {
    private final Ex0304 c;
    public ButtonListenerB(Ex0304 c) {
        this.c = c;
    }
    public void actionPerformed(ActionEvent e) {
        this.c.b();
    }
}
```

```

// Ex0304.java
package j2.exam.ex04; import java.awt.*; import javax.swing.*;
public class Ex0304 {
    private int count;
    private JFrame frame;
    private JLabel label;
    protected void init() {
        this.count = 0;
        this.frame = new JFrame("Counter");
        this.frame.setDefaultCloseOperation(JFrame.DISPOSE_ON_CLOSE);
        this.label = new JLabel("0");
        this.label.setHorizontalAlignment(JLabel.CENTER);
        JPanel panel = new JPanel(new GridLayout(1, 2));
        JButton b1 = new JButton("inc");
        JButton b2 = new JButton("dec");
        panel.add(b1);
        panel.add(b2);
        this.frame.getContentPane().setLayout(new BorderLayout());
        this.frame.getContentPane().add(this.label, BorderLayout.CENTER);
        this.frame.getContentPane().add(panel, BorderLayout.SOUTH);
        this.frame.setSize(200, 100);
        this.frame.setVisible(true);
        b1.addActionListener(  );
        b2.addActionListener(  );
    }
    void a() {
        this.count += 1;
        this.label.setText(String.valueOf(this.count));
    }
    void b() {
        this.count -= 1;
        this.label.setText(String.valueOf(this.count));
    }
    public static void main(String[] args) {
        Ex0304 main = new Ex0304();
        main.init();
    }
}

```



```

// ExamRecord.java
package j2.exam.ex05;

public class ExamRecord{
    private String name; // Name
    private int ma;      // mathematics
    private int jp;      // japanese
    private int en;      // english

    // コンストラクタ
    public ExamRecord(String name, int ma, int jp, int en){
        this.name = name;
        this.ma = ma;
        this.jp = jp;
        this.en = en;
    }

    // 名前を返す
    public (1) getName(){
        (2)
    }

    // 3科目(数学,国語,英語)の合計を返す
    public (3) getTotal(){
        (4)
    }

    // 3科目(数学,国語,英語)の成績を表示する
    public (5) show(){
        System.out.println(name + ", ma=" + ma +
            ", jp=" + jp + ", en=" + en);
    }
}

```

```

// Ex0305.java
package j2.exam.ex05;
public class Ex0305 {
    public static void main(String[] args) {
        ExamRecord[] rec = new ExamRecord[5];
        rec[0] = new ExamRecord("Taro", 50, 90, 100);
        rec[1] = new ExamRecord("Hanako", 70, 30, 80);
        rec[2] = new ExamRecord("Kenji", 60, 50, 70);
        rec[3] = new ExamRecord("Aya", 40, 100, 90);
        rec[4] = new ExamRecord("Mai", 80, 80, 80);
        // 全レコードの表示
        for (int i = 0; i < rec.length; i++) {
            rec[i].show();
        }
        // 総合点の最高得点と最高得点者を求める
        int max = -1; // 最高得点
        int[] idxs = new int[rec.length]; // 最高得点者の index の配列
        int idxs_len = 0; // 最高得点者の index の配列の有効長
        for (int i = 0; i < rec.length; i++){
            int total = rec[i].getTotal();
            if(total > max){
                max = total;
                idxs_len = 1;
                idxs[0] = i;
            } else if (total == max) {
                idxs[idxs_len] = i;
                idxs_len++;
            } else {
                // do nothing
            }
        }
        System.out.println("総合点の最高得点 = " + max );
        System.out.println("総合点の最高得点者一覧");
        for(int i=0; i < idxs_len; i++){
            System.out.println(rec[  ].getName());
        }
    }
}

```