

```
class Kadai1 {
    public static void main(String[] args) {
        System.out.println("白神 直弘");
    }
}

import java.io.*;
class Kadai2 {
    public static void main(String args[]) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("住所:");
        System.out.println("私は" + br.readLine() + "に住んでいます。");
    }
}

class Kadai3 {
    public static void main(String[] args) {
        int age = Integer.parseInt(args[0]);
        System.out.println("私は" + age + "才です。");
    }
}

import java.io.*;
class Kadai4 {
    public static void main(String args[]) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("買う個数:");
        int n = Integer.parseInt(br.readLine());
        System.out.println("支払い金額は" + 160*n + "円です。");
    }
}

class Kadai5 {
    public static void main(String[] args) {
        int m = Integer.parseInt(args[0]);
        int n = Integer.parseInt(args[1]);
        System.out.println("余りは" + m % n);
    }
}

class Kadai6 {
    public static void main(String[] args) {
        int n = Integer.parseInt(args[0]);
        int fact = 1;
        for(int i = 1; i <= n; i++)
            fact *= i;
        System.out.println(n + "の階乗は" + fact);
    }
}
```

```

import java.io.*;
class Kadai7 {
    public static void main(String args[]) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("セ氏温度：");
        double c = Integer.parseInt(br.readLine());
        double f = 9*c/5 + 32;
        System.out.println("カ氏温度は" + f + "度です。");
    }
}

```

```

import java.io.*;
class Kadai8 {
    public static void main(String args[]) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("カ氏温度：");
        double f = Integer.parseInt(br.readLine());
        double c = 5*(f - 32)/9;
        System.out.println("セ氏温度は" + c + "度です。");
    }
}

```

```

import java.io.*;

class Kadai9 {
    public static void main(String args[]) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("税抜き値段：");
        int price = Integer.parseInt(br.readLine());
        int price_tax = (int)(price * 1.05);
        System.out.println("税込価格は" + price_tax + "円です。");
    }
}

```

```

class Kadai10 {
    public static void main(String[] args) {
        double r = Double.parseDouble(args[0]);
        double v = 4*Math.PI*r*r*r/3;
        System.out.println("半径" + r + "の球の体積は" + v );
    }
}

```

```

import java.io.*;
class Kadai11 {
    public static void main(String args[]) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        int price;
        System.out.print("買う枚数：");
        int n = Integer.parseInt(br.readLine());
        if( n > 10)
            price = 10 * 20 + ( n - 10 ) * 15;
        else
            price = n * 20;
        System.out.println("支払い金額は" + price + "円です。");
    }
}

```

```

class Kadai12 {
    public static void main(String[] args) {
        int age = Integer.parseInt(args[0]);
        int price;
        if(age <= 6)
            price = 0;
        else if(7 <= age && age <=12)
            price = 300;
        else
            price = 500;
        System.out.println("支払い金額は" + price + "円です。");
    }
}

```

```

class Kadai13 {
    public static void main(String[] args) {
        int n = Integer.parseInt(args[0]);
        if(n % 2 == 0)
            System.out.println(n + "は偶数です。");
        else
            System.out.println(n + "は奇数です。");
    }
}

```

```

import java.io.*;
class Kadai14 {
    public static void main(String args[]) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("n :");
        int n = Integer.parseInt(br.readLine());
        int sum = 0;
        for(int i = 1; i <= n; i++)
            sum += i;
        System.out.println("1から" + n + "までの和は" + sum);
    }
}

```

```

class Kadai15 {
    public static void main(String args[]) {
        int i = 0;
        int sum = 0;
        while( sum < 10000) {
            i++;
            sum += i;
        }
        System.out.println("和が 10000 を超える n の値は" + i);
    }
}

```

```

class Kadai16 {
    public static void main(String[] args) {
        System.out.println("n = 10 のとき" + series(10));
        System.out.println("n = 100 のとき" + series(100));
        System.out.println("n = 1000 のとき" + series(1000));
    }

    static double series(int n) {
        double e = 0;
        for(int i = 1; i <= n; i++)
            e += 1.0/i;
        return e;
    }
}

```

```

class Kadai17 {
    public static void main(String[] args) {
        System.out.println(" | 1 2 3 4 5 6 7 8 9");
        System.out.println("-----");
        for(int i = 1; i <= 9; i++) {
            System.out.printf("%2d|", i);
            for(int j = 1; j <= 9; j++)
                System.out.printf("%4d", i * j);
            System.out.println();
        }
    }
}

```

```

class Kadai18 {
    public static void main(String[] args) {
        int[] data = { 12, 45, 72, 45, 66, 98, 61, 70, 32, 27 };
        int max = data[0];
        for(int i = 0; i < data.length; i++)
            if( data[i] > max )
                max = data[i];
        System.out.println("最大値は" + max);
    }
}

```

```

class Kadai19 {
    public static void main(String[] args) {
        int[] data = { 12, 45, 72, 45, 66, 98, 61, 70, 32, 27 };
        int min = data[0];
        for(int i = 0; i < data.length; i++)
            if( data[i] < min )
                min = data[i];
        System.out.println("最小値は" + min);
    }
}

```

```

class Kadai20 {
    public static void main(String[] args) {
        int[] data = { 12, 45, 72, 45, 66, 98, 61, 70, 32, 27 };
        System.out.println("最大値は" + evalmax(data));
        System.out.println("最小値は" + evalmin(data));
    }

    static int evalmax(int[] array) {
        int max = array[0];
        for(int i = 0; i < array.length; i++)
            if( array[i] > max )
                max = array[i];
        return max;
    }

    static int evalmin(int[] array) {
        int min = array[0];
        for(int i = 0; i < array.length; i++)
            if( array[i] < min )
                min = array[i];
        return min;
    }
}

```

```

class Pencil {
    String color;
    double size;
}
class Kadai21 {
    public static void main(String[] args) {
        Pencil p1 = new Pencil();
        Pencil p2 = new Pencil();
        Pencil p3 = new Pencil();
        p1.color = "黒";
        p1.size = 0.5;
        p2.color = "赤";
        p2.size = 0.7;
        p3.color = "青";
        p3.size = 0.8;
        System.out.println("色：" + p1.color);
        System.out.println("サイズ：" + p1.size);
        System.out.println("色：" + p2.color);
        System.out.println("サイズ：" + p2.size);
        System.out.println("色：" + p3.color);
        System.out.println("サイズ：" + p3.size);
    }
}

```

```

class Pencil {
    String color;
    double size;
    void showColor() {
        System.out.println("色：" + color);
    }
    void showSize() {
        System.out.println("サイズ：" + size);
    }
}
class Kadai22 {
    public static void main(String[] args) {
        Pencil p1 = new Pencil();
        Pencil p2 = new Pencil();
        Pencil p3 = new Pencil();
        p1.color = "黒";
        p1.size = 0.5;
        p2.color = "赤";
        p2.size = 0.7;
        p3.color = "青";
        p3.size = 0.8;
        p1.showColor();
        p1.showSize();
        p2.showColor();
        p2.showSize();
        p3.showColor();
        p3.showSize();
    }
}

```

```

class Pencil {
    String color;
    double size;
    void show(String color) {
        System.out.println("色：" + color);
    }
    void show(double size) {
        System.out.println("サイズ：" + size);
    }
    void show() {
        System.out.println("色：" + color);
        System.out.println("サイズ：" + size);
    }
}
class Kadai23 {
    public static void main(String[] args) {
        Pencil p1 = new Pencil();
        Pencil p2 = new Pencil();
        Pencil p3 = new Pencil();
        p1.color = "黒";
        p1.size = 0.5;
        p2.color = "赤";
        p2.size = 0.7;
        p3.color = "青";
        p3.size = 0.8;
        p1.show(p1.color);
        p1.show(p1.size);
        p2.show(p2.color);
        p2.show(p2.size);
        p3.show();
    }
}

```

```
class Pencil {
    String color;
    double size;
    void set(String color) {
        this.color = color;
    }
    void set(double size) {
        this.size = size;
    }
    void set(String color, double size) {
        this.color = color;
        this.size = size;
    }
    void show() {
        System.out.println("色:" + color);
        System.out.println("サイズ:" + size);
    }
}
class Kadai24 {
    public static void main(String[] args) {
        Pencil p1 = new Pencil();
        Pencil p2 = new Pencil();
        Pencil p3 = new Pencil();
        p1.set("黒");
        p1.set(0.5);
        p2.set("赤");
        p2.set(0.7);
        p3.set("青", 0.8);
        p1.show();
        p2.show();
        p3.show();
    }
}
```

```
class Person {
    private String name;
    Person() {
        name = "鈴木";
    }
    Person(String name) {
        this.name = name;
    }
    void setName(String name) {
        this.name = name;
    }
    String getName() {
        return name;
    }
    void showName() {
        System.out.println("名前は" + name + "です。");
    }
}
class Kadai25 {
    public static void main(String[] args) {
        Person p1 = new Person();
        Person p2 = new Person("佐藤");
        p1.showName();
        p2.showName();
        p1.setName("田中");
        p1.showName();
        p2.showName();
    }
}
```



```

class Circle {
    private double r;
    Circle() {
        r = 1.0;
    }
    Circle(double r) {
        this.r = r;
    }
    void setR(double r) {
        this.r = r;
    }
    double getR() {
        return r;
    }
    double calcArea() {
        return Math.PI*r*r;
    }
}

class Kadai26 {
    public static void main(String[] args) {
        Circle c1 = new Circle();
        Circle c2 = new Circle(3.0);
        System.out.println("円1の半径は" + c1.getR());
        System.out.println("円1の面積は" + c1.calcArea());
        System.out.println("円2の半径は" + c2.getR());
        System.out.println("円2の面積は" + c2.calcArea());
    }
}

class Square {
    protected double a;
    Square() {
        a = 1.0;
    }
    Square(double a) {
        this.a = a;
    }
    void setA(double a) {
        this.a = a;
    }
    double getA() {
        return a;
    }
    double calcArea() {
        return a*a;
    }
}

class Kadai27 {
    public static void main(String[] args) {
        Square s1 = new Square();
        Square s2 = new Square(3.0);
        System.out.println("正方形1の辺の長さは" + s1.getA());
        System.out.println("正方形1の面積は" + s1.calcArea());
        System.out.println("正方形2の辺の長さは" + s2.getA());
        System.out.println("正方形2の面積は" + s2.calcArea());
    }
}

```

```

class Point {
    private double x;
    private double y;
    Point(double x, double y) {
        this.x = x;
        this.y = y;
    }
    boolean equals(Point p) {
        if(this.x == p.x && this.y == p.y)
            return true;
        else
            return false;
    }
}
class Kadai28 {
    public static void main(String[] args) {
        Point a = new Point(2.0, 3.0);
        Point b = new Point(2.0, 5.0);
        Point c = new Point(2.0, 3.0);
        System.out.println(a.equals(c));
        System.out.println(a == c);
    }
}

class Person {
    protected String name;
    Person() {
        name = "鈴木";
    }
    Person(String name) {
        this.name = name;
    }
    void setName(String name) {
        this.name = name;
    }
    String getName() {
        return name;
    }
    void showName() {
        System.out.println("名前は" + name + "です。");
    }
}
class ExPerson extends Person {
    private int age;
    ExPerson(String name, int age) {
        super(name);
        this.age = age;
    }
    void show() {
        System.out.println("名前は" + name + "で" + age + "才です。");
    }
}
class Kadai29 {
    public static void main(String[] args) {
        ExPerson p1 = new ExPerson("斉藤", 25);
        ExPerson p2 = new ExPerson("山田", 32);
        p1.show();
        p2.show();
    }
}

```

```
class Square {
    protected double a;
    Square() {
        a = 1.0;
    }
    Square(double a) {
        this.a = a;
    }
    void setA(double a) {
        this.a = a;
    }
    double getA() {
        return a;
    }
    double calcArea() {
        return a*a;
    }
}
class Rectangle extends Square {
    private double b;
    Rectangle(double a, double b) {
        this.a = a;
        this.b = b;
    }
    double calcArea() {
        return a*b;
    }
}
class Kadai30 {
    public static void main(String[] args) {
        Rectangle r1 = new Rectangle(2.0, 3.0);
        Rectangle r2 = new Rectangle(3.0, 2.0);
        System.out.println("長方形1の面積は" + r1.calcArea());
        System.out.println("長方形2の面積は" + r2.calcArea());
    }
}
```

```
class Point {
    protected double x;
    protected double y;
    Point(double x, double y) {
        this.x = x;
        this.y = y;
    }
    boolean equals(Point p) {
        if(this.x == p.x && this.y == p.y)
            return true;
        else
            return false;
    }
}
class Point3D extends Point {
    private double z;
    Point3D(double x, double y, double z) {
        super(x, y);
        this.z = z;
    }
    boolean equals(Point3D p) {
        if(this.x == p.x && this.y == p.y && this.z == p.z)
            return true;
        else
            return false;
    }
}
class Kadai31 {
    public static void main(String[] args) {
        Point3D a = new Point3D(2.0, 3.0, 1.0);
        Point3D b = new Point3D(2.0, 5.0, 1.0);
        Point3D c = new Point3D(2.0, 3.0, 1.0);
        System.out.println(a.equals(c));
        System.out.println(a == c);
    }
}
```

```

abstract class Figure {
    protected double a;
    Figure(double a) {
        this.a = a;
    }
    abstract double calcArea();
}
class Square extends Figure {
    Square(double a) {
        super(a);
    }
    double calcArea() {
        return a*a;
    }
}
class Circle extends Figure {
    Circle(double a) {
        super(a);
    }
    double calcArea() {
        return Math.PI*a*a;
    }
}
class Kadai32 {
    public static void main(String[] args) {
        Square s = new Square(2.0);
        Circle c = new Circle(2.0);
        System.out.println("正方形の面積は" + s.calcArea());
        System.out.println("円の面積は" + c.calcArea());
    }
}

interface Figure {
    double calcArea();
}
class Square implements Figure {
    private double a;
    Square(double a) {
        this.a = a;
    }
    public double calcArea() {
        return a*a;
    }
}
class Circle implements Figure {
    private double a;
    Circle(double a) {
        this.a = a;
    }
    public double calcArea() {
        return Math.PI*a*a;
    }
}
class Kadai33 {
    public static void main(String[] args) {
        Square s = new Square(2.0);
        Circle c = new Circle(2.0);
        System.out.println("正方形の面積は" + s.calcArea());
        System.out.println("円の面積は" + c.calcArea());
    }
}

```

```
interface Figure {
    double calcArea();
}
class Square implements Figure{
    double a;
    Square(double a) {
        this.a = a;
    }
    public double calcArea() {
        return a*a;
    }
}
class Circle implements Figure{
    double a;
    Circle(double a) {
        this.a = a;
    }
    public double calcArea() {
        return Math.PI*a*a;
    }
}
class Kadai34 {
    public static void main(String[] args) {
        Figure[] f = new Figure[6];
        f[0] = new Square(1.0);
        f[1] = new Square(2.0);
        f[2] = new Square(3.0);
        f[3] = new Circle(4.0);
        f[4] = new Circle(5.0);
        f[5] = new Circle(6.0);
        double sum = 0.0;
        for(int i = 0; i < f.length; i++)
            sum += f[i].calcArea();
        System.out.println("面積：" + sum);
    }
}
```

```

import java.io.*;
class Kadai35 {
    public static void main(String[] args) throws IOException {
        String alphabet = "abcdefghijklmnopqrstuvwxy";
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("アルファベットを入力:");
        System.out.println(alphabet.indexOf(br.readLine())+1);
    }
}

```

```

import java.io.*;
class Kadai36 {
    public static void main(String[] args) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("英単語を入力:");
        String word = br.readLine();
        System.out.println(word.substring(0, 1).toUpperCase()
            + word.substring(1));
    }
}

```

```

import java.io.*;
class Kadai37 {
    public static void main(String[] args) throws IOException {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("英単語を入力:");
        String word = br.readLine();
        for(int i = word.length() - 1; i >= 0; i--)
            System.out.print(word.charAt(i));
    }
}

```

```

class Kadai38 {
    public static void main(String[] args) {
        int[] a = { 10, 20, 30, 40, 50 };
        try {
            for(int i=0; i<=5; i++)
                System.out.println("a[" + i + "] = " + a[i]);
        } catch(ArrayIndexOutOfBoundsException e) {
            System.out.println("配列要素がありません。");
        }
    }
}

```

```

import java.io.*;
class Kadai39 {
    public static void main(String[] args) {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        try {
            System.out.print("数値を入力:");
            int n = Integer.parseInt(br.readLine());
            System.out.println("2乗は" + n * n);
        } catch(IOException e) {
        } catch(NumberFormatException e) {
            System.out.println("数値ではありません。");
        }
    }
}

```

```

import java.io.*;
import java.util.*;
class Kadai40 {
    public static void main(String[] args) {
        String line;
        try {
            BufferedReader br = new BufferedReader(new FileReader(args[0]));
            int i = 1;
            while((line = br.readLine()) != null) {
                System.out.printf("%4d: ", i);
                System.out.println(line);
                i++;
            }
        }
        catch(IOException e) {
            System.out.println("読み込みエラー");
        }
    }
}

```

```

/*
<applet code="Kadai41.class" width="400" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
public class Kadai41 extends Applet {
    public void paint(Graphics g) {
        g.drawLine(100, 250, 300, 250);
        g.drawLine(300, 250, 200, 77);
        g.drawLine(200, 77, 100, 250);
    }
}

```

```

/*
<applet code="Kadai42.class" width=400 height=300>
</applet>
*/
import java.applet.Applet;
import java.awt.*;
public class Kadai42 extends Applet {
    public void paint(Graphics g) {
        g.drawOval(200,50,100,100);
        g.drawOval(130,120,100,100);
    }
}

```

```

/*
<applet code="Kadai43.class" width="600" height="400">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
public class Kadai43 extends Applet {
    public void paint(Graphics g) {
        Image photo = getImage(getDocumentBase(), "photo.jpg");
        g.drawImage(photo, 100, 50, this);
    }
}

```



```
/*
<applet code="Kadai44.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
public class Kadai44 extends Applet {
    public void paint (Graphics g) {
        setBackground(Color.lightGray);
        g.setColor(Color.white);
        g.fillRect(75,50,150,100);
        g.setColor(Color.red);
        g.fillOval(120,70,60,60);
    }
}
```

```
/*
<applet code="Kadai45.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
public class Kadai45 extends Applet {
    public void paint (Graphics g) {
        int x, y, radius;
        int R, G, B;
        g.setFont(new Font("MS ゴシック",Font.BOLD,12));
        g.drawString("ランダムな円", 0,12);
        for(int n = 1; n < 100; n++) {
            x = (int)(300 * Math.random());
            y = (int)(300 * Math.random());
            radius = (int)(50 * Math.random());
            R = (int)(255 * Math.random());
            G = (int)(255 * Math.random());
            B = (int)(255 * Math.random());
            g.setColor(new Color(R, G, B));
            g.drawOval(x, y, radius, radius);
        }
    }
}
```

```

/*
<applet code="Kadai46.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai46 extends Applet implements ActionListener {
    Button b1 = new Button("Up");
    int count = 0;
    public void init() {
        add(b1);
        b1.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        count++;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(count);
        g.setFont(new Font("Times New Roman", Font.PLAIN, 72));
        g.drawString(s,125,150);
    }
}

```

```

/*
<applet code="Kadai47.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai47 extends Applet implements ActionListener {
    Button b1 = new Button("Up");
    Button b2 = new Button("Clear");
    int count = 0;
    public void init() {
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        if(e.getSource() == b1)
            count++;
        else
            count = 0;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(count);
        g.setFont(new Font("Times New Roman", Font.PLAIN, 72));
        g.drawString(s,125,150);
    }
}

```

```
/*
<applet code="Kadai48.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai48 extends Applet implements ActionListener {
    Button b1 = new Button("Up");
    Button b2 = new Button("Clear");
    Button b3 = new Button("Down");
    int count = 0;
    public void init() {
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
        add(b3);
        b3.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        if(e.getSource() == b1)
            count++;
        else if(e.getSource() == b3)
            count--;
        else
            count = 0;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(count);
        g.setFont(new Font("Times New Roman", Font.PLAIN, 72));
        g.drawString(s,125,150);
    }
}
```

```

/*
<applet code="Kadai49.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai49 extends Applet implements ActionListener {
    Button b1 = new Button("正方形");
    Button b2 = new Button(" 円 ");
    Object btn;
    public void init() {
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        btn = e.getSource();
        repaint();
    }
    public void paint(Graphics g) {
        if(btn == b1)
            g.drawRect(100,100,100,100);
        else if(btn == b2)
            g.drawOval(100,100,100,100);
    }
}

```

```

/*
<applet code="Kadai50.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai50 extends Applet implements ActionListener {
    Button b1 = new Button("正方形");
    Button b2 = new Button(" 円 ");
    Button b3 = new Button("クリア");
    Object btn;
    public void init() {
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
        add(b3);
        b3.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        btn = e.getSource();
        repaint();
    }
    public void paint(Graphics g) {
        if(btn == b1)
            g.drawRect(100,100,100,100);
        else if(btn == b2)
            g.drawOval(100,100,100,100);
        else
            g.clearRect(0,0,300,300);
    }
}

```

```
/*
<applet code="Kadai51.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai51 extends Applet implements ActionListener {
    Button b1 = new Button("赤");
    Button b2 = new Button("青");
    Button b3 = new Button("黄");
    Object btn;
    public void init() {
        add(b1);
        add(b2);
        add(b3);
        b1.addActionListener(this);
        b2.addActionListener(this);
        b3.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        btn = e.getSource();
        repaint();
    }
    public void paint(Graphics g) {
        g.setColor(Color.white);
        if(btn == b1)
            g.setColor(Color.red);
        else if(btn == b2)
            g.setColor(Color.blue);
        else if(btn == b3)
            g.setColor(Color.yellow);
        g.fillOval(100, 100, 100, 100);
    }
}
```

```
/*
<applet code="Kadai52.class" width="350" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai52 extends Applet implements ActionListener {
    Button b1 = new Button("料金");
    Checkbox cb1 = new Checkbox("フライドチキン");
    Checkbox cb2 = new Checkbox("ハンバーガー");
    Checkbox cb3 = new Checkbox("フライドポテト");
    int total;
    String s;
    public void init() {
        add(cb1);
        add(cb2);
        add(cb3);
        add(b1);
        b1.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        total = 0;
        if(cb1.getState())
            total += 300;
        if(cb2.getState())
            total += 250;
        if(cb3.getState())
            total += 100;
        repaint();
    }
    public void paint(Graphics g) {
        s = Integer.toString(total) + "円";
        g.setFont(new Font("MS ゴシック", Font.PLAIN, 72));
        g.drawString(s, 80, 150);
    }
}
```

```

/*
<applet code="Kadai53.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai53 extends Applet implements ItemListener {
    CheckboxGroup cbg = new CheckboxGroup();
    Checkbox cb1 = new Checkbox("赤", cbg, true);
    Checkbox cb2 = new Checkbox("青", cbg, false);
    Checkbox cb3 = new Checkbox("黄", cbg, false);
    Checkbox cb4 = new Checkbox("緑", cbg, false);
    String color;
    public void init() {
        add(cb1);
        add(cb2);
        add(cb3);
        add(cb4);
        cb1.addItemListener(this);
        cb2.addItemListener(this);
        cb3.addItemListener(this);
        cb4.addItemListener(this);
    }
    public void itemStateChanged(ItemEvent e) {
        repaint();
    }
    public void paint(Graphics g) {
        if(cb1.getState())
            g.setColor(Color.red);
        else if(cb2.getState())
            g.setColor(Color.blue);
        else if(cb3.getState())
            g.setColor(Color.yellow);
        else if(cb4.getState())
            g.setColor(Color.green);
        g.setFont(new Font("MS ゴシック", Font.ITALIC, 72));
        g.drawString("カラー", 30, 150);
    }
}

```

```

/*
<applet code="Kadai55.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai55 extends Applet implements ActionListener {
    TextField txf = new TextField(6);
    Button btn = new Button("  計 算  ");
    Label lbl1 = new Label("1 から");
    Label lbl2 = new Label("までの総和");
    int sum = 0;
    public void init() {
        add(lbl1);
        add(txf);
        add(lbl2);
        add(btn);
        btn.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        int n = Integer.parseInt(txf.getText());
        for(int i = 1; i <= n; i++)
            sum += i;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(sum);
        g.setFont(new Font("Times New Roman", Font.BOLD, 72));
        g.drawString(s,50,200);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai56 extends Frame {
    Kadai56() {
        this.setSize(400,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai56");
    }
    public void paint(Graphics g) {
        g.drawLine(100, 250, 300, 250);
        g.drawLine(300, 250, 200, 77);
        g.drawLine(200, 77, 100, 250);
    }
    public static void main(String[] args) {
        Kadai56 k = new Kadai56();
        k.setVisible(true);
    }
}

```



```

import java.awt.*;
import java.awt.event.*;
public class Kadai57 extends Frame {
    Kadai57() {
        this.setSize(400,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai57");
    }
    public void paint(Graphics g) {
        g.drawOval(200,50,100,100);
        g.drawOval(130,120,100,100);
    }
    public static void main(String[] args) {
        Kadai57 k = new Kadai57();
        k.setVisible(true);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai58 extends Frame {
    Kadai58() {
        this.setSize(600,400);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai58");
    }
    public void paint(Graphics g) {
        Image photo = Toolkit.getDefaultToolkit().getImage("photo.jpg");
        g.drawImage(photo, 100, 50, this);
    }
    public static void main(String[] args) {
        Kadai58 k = new Kadai58();
        k.setVisible(true);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai59 extends Frame {
    Kadai59() {
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai59");
    }
    public void paint(Graphics g) {
        setBackground(Color.lightGray);
        g.setColor(Color.white);
        g.fillRect(75,50,150,100);
        g.setColor(Color.red);
        g.fillOval(120,70,60,60);
    }
    public static void main(String[] args) {
        Kadai59 k = new Kadai59();
        k.setVisible(true);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai60 extends Frame {
    Kadai60() {
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai60");
    }
    public void paint(Graphics g) {
        int x, y, radius;
        int R, G, B;
        g.setFont(new Font("MS ゴシック",Font.BOLD,12));
        g.drawString("ランダムな円", 0,12);
        for(int n = 1; n < 100; n++) {
            x = (int) (300 * Math.random());
            y = (int) (300 * Math.random());
            radius = (int) (50 * Math.random());
            R = (int) (255 * Math.random());
            G = (int) (255 * Math.random());
            B = (int) (255 * Math.random());
            g.setColor(new Color(R, G, B));
            g.drawOval(x, y, radius, radius);
        }
    }
    public static void main(String[] args) {
        Kadai60 k = new Kadai60();
        k.setVisible(true);
    }
}

```

```
import java.awt.*;
import java.awt.event.*;
public class Kadai61 extends Frame implements ActionListener {
    Button b1 = new Button("Up");
    int count = 0;
    Kadai61() {
        this.setLayout(new FlowLayout());
        add(b1);
        b1.addActionListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai61");
    }
    public void actionPerformed(ActionEvent e) {
        count++;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(count);
        g.setFont(new Font("Times New Roman", Font.PLAIN, 72));
        g.drawString(s,125,150);
    }
    public static void main(String[] args) {
        Kadai61 k = new Kadai61();
        k.setVisible(true);
    }
}
```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai62 extends Frame implements ActionListener {
    Button b1 = new Button("Up");
    Button b2 = new Button("Clear");
    int count = 0;
    Kadai62() {
        this.setLayout(new FlowLayout());
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai62");
    }
    public void actionPerformed(ActionEvent e) {
        if(e.getSource() == b1)
            count++;
        else
            count = 0;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(count);
        g.setFont(new Font("Times New Roman", Font.PLAIN, 72));
        g.drawString(s,125,150);
    }

    public static void main(String[] args) {
        Kadai62 k = new Kadai62();
        k.setVisible(true);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai63 extends Frame implements ActionListener {
    Button b1 = new Button("Up");
    Button b2 = new Button("Clear");
    Button b3 = new Button("Down");
    int count = 0;
    Kadai63() {
        this.setLayout(new FlowLayout());
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
        add(b3);
        b3.addActionListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai63");
    }
    public void actionPerformed(ActionEvent e) {
        if(e.getSource() == b1)
            count++;
        else if(e.getSource() == b3)
            count--;
        else
            count = 0;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(count);
        g.setFont(new Font("Times New Roman", Font.PLAIN, 72));
        g.drawString(s,125,150);
    }
    public static void main(String[] args) {
        Kadai63 k = new Kadai63();
        k.setVisible(true);
    }
}

```

```
import java.awt.*;
import java.awt.event.*;
public class Kadai64 extends Frame implements ActionListener {
    Button b1 = new Button("正方形");
    Button b2 = new Button(" 円 ");
    Object btn;
    Kadai64() {
        this.setLayout(new FlowLayout());
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai64");
    }
    public void actionPerformed(ActionEvent e) {
        btn = e.getSource();
        repaint();
    }
    public void paint(Graphics g) {
        if(btn == b1)
            g.drawRect(100,100,100,100);
        else if(btn == b2)
            g.drawOval(100,100,100,100);
    }
    public static void main(String[] args) {
        Kadai64 k = new Kadai64();
        k.setVisible(true);
    }
}
```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai65 extends Frame implements ActionListener {
    Button b1 = new Button("正方形");
    Button b2 = new Button(" 円 ");
    Button b3 = new Button("クリア");
    Object btn;
    Kadai65() {
        this.setLayout(new FlowLayout());
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
        add(b3);
        b3.addActionListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai65");
    }
    public void actionPerformed(ActionEvent e) {
        btn = e.getSource();
        repaint();
    }
    public void paint(Graphics g) {
        if(btn == b1)
            g.drawRect(100,100,100,100);
        else if(btn == b2)
            g.drawOval(100,100,100,100);
        else
            g.clearRect(0,0,300,300);
    }
    public static void main(String[] args) {
        Kadai65 k = new Kadai65();
        k.setVisible(true);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai66 extends Frame implements ActionListener {
    Button b1 = new Button("赤");
    Button b2 = new Button("青");
    Button b3 = new Button("黄");
    Object btn;
    Kadai66() {
        this.setLayout(new FlowLayout());
        add(b1);
        b1.addActionListener(this);
        add(b2);
        b2.addActionListener(this);
        add(b3);
        b3.addActionListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai66");
    }
    public void actionPerformed(ActionEvent e) {
        btn = e.getSource();
        repaint();
    }
    public void paint(Graphics g) {
        g.setColor(Color.white);
        if(btn == b1)
            g.setColor(Color.red);
        else if(btn == b2)
            g.setColor(Color.blue);
        else if(btn == b3)
            g.setColor(Color.yellow);
        g.fillOval(100, 100, 100, 100);
    }
    public static void main(String[] args) {
        Kadai66 k = new Kadai66();
        k.setVisible(true);
    }
}

```



```

import java.awt.*;
import java.awt.event.*;
public class Kadai67 extends Frame implements ActionListener {
    Button b1 = new Button("料金");
    Checkbox cb1 = new Checkbox("フライドチキン");
    Checkbox cb2 = new Checkbox("ハンバーガー");
    Checkbox cb3 = new Checkbox("フライドポテト");
    int total;
    String s;
    Kadai67() {
        this.setLayout(new FlowLayout());
        add(cb1);
        add(cb2);
        add(cb3);
        add(b1);
        b1.addActionListener(this);
        this.setSize(350,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai67");
    }
    public void actionPerformed(ActionEvent e) {
        total = 0;
        if(cb1.getState())
            total += 300;
        if(cb2.getState())
            total += 250;
        if(cb3.getState())
            total += 100;
        repaint();
    }
    public void paint(Graphics g) {
        s = Integer.toString(total) + "円";
        g.setFont(new Font("MS ゴシック", Font.PLAIN, 72));
        g.drawString(s,80,150);
    }
    public static void main(String[] args) {
        Kadai67 k = new Kadai67();
        k.setVisible(true);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai68 extends Frame implements ItemListener {
    CheckboxGroup cbg = new CheckboxGroup();
    Checkbox cb1 = new Checkbox("赤", cbg, true);
    Checkbox cb2 = new Checkbox("青", cbg, false);
    Checkbox cb3 = new Checkbox("黄", cbg, false);
    Checkbox cb4 = new Checkbox("緑", cbg, false);
    String color;
    Kadai68() {
        this.setLayout(new FlowLayout());
        add(cb1);
        add(cb2);
        add(cb3);
        add(cb4);
        cb1.addItemListener(this);
        cb2.addItemListener(this);
        cb3.addItemListener(this);
        cb4.addItemListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai68");
    }
    public void itemStateChanged(ItemEvent e) {
        repaint();
    }
    public void paint(Graphics g) {
        if(cb1.getState())
            g.setColor(Color.red);
        else if(cb2.getState())
            g.setColor(Color.blue);
        else if(cb3.getState())
            g.setColor(Color.yellow);
        else if(cb4.getState())
            g.setColor(Color.green);
        g.setFont(new Font("MS ゴシック", Font.ITALIC, 72));
        g.drawString("カラー", 30,150);
    }
    public static void main(String[] args) {
        Kadai68 k = new Kadai68();
        k.setVisible(true);
    }
}

```

```

/*
<applet code="Kadai54.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
import java.awt.event.*;
public class Kadai54 extends Applet implements ItemListener {
    Choice ch = new Choice();
    Object week;
    public void init() {
        ch.add("曜日");
        ch.add("日曜");
        ch.add("月曜");
        ch.add("火曜");
        ch.add("水曜");
        ch.add("木曜");
        ch.add("金曜");
        ch.add("土曜");
        add(ch);
        ch.addItemListener(this);
    }
    public void itemStateChanged(ItemEvent e) {
        week = ch.getSelectedItem();
        repaint();
    }
    public void paint(Graphics g) {
        g.setFont(new Font("Courier New", Font.PLAIN, 48));
        if(week == "日曜")
            g.drawString("Sunday",10,150);
        else if(week == "月曜")
            g.drawString("Monday",10,150);
        else if(week == "火曜")
            g.drawString("Tuesday",10,150);
        else if(week == "水曜")
            g.drawString("Wednesday",10,150);
        else if(week == "木曜")
            g.drawString("Thursday",10,150);
        else if(week == "金曜")
            g.drawString("Friday",10,150);
        else if(week == "土曜")
            g.drawString("Saturday",10,150);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai69 extends Frame implements ItemListener {
    Choice ch = new Choice();
    Object week;
    Kadai69() {
        this.setLayout(new FlowLayout());
        ch.add("曜日");
        ch.add("日曜");
        ch.add("月曜");
        ch.add("火曜");
        ch.add("水曜");
        ch.add("木曜");
        ch.add("金曜");
        ch.add("土曜");
        add(ch);
        ch.addItemListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai69");
    }
    public void itemStateChanged(ItemEvent e) {
        week = ch.getSelectedItem();
        repaint();
    }
    public void paint(Graphics g) {
        g.setFont(new Font("Courier New", Font.PLAIN, 48));
        if(week == "日曜")
            g.drawString("Sunday",10,150);
        else if(week == "月曜")
            g.drawString("Monday",10,150);
        else if(week == "火曜")
            g.drawString("Tuesday",10,150);
        else if(week == "水曜")
            g.drawString("Wednesday",10,150);
        else if(week == "木曜")
            g.drawString("Thursday",10,150);
        else if(week == "金曜")
            g.drawString("Friday",10,150);
        else if(week == "土曜")
            g.drawString("Saturday",10,150);
    }
    public static void main(String[] args) {
        Kadai69 k = new Kadai69();
        k.setVisible(true);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
public class Kadai70 extends Frame implements ActionListener {
    TextField txf = new TextField(6);
    Button btn = new Button("  計 算  ");
    Label lbl1 = new Label("1 から");
    Label lbl2 = new Label("までの総和");
    int sum = 0;
    Kadai70() {
        this.setLayout(new FlowLayout());
        add(lbl1);
        add(txf);
        add(lbl2);
        add(btn);
        btn.addActionListener(this);
        this.setSize(300,300);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Kadai70");
    }
    public void actionPerformed(ActionEvent e) {
        int n = Integer.parseInt(txf.getText());
        for(int i = 1; i <= n; i++)
            sum += i;
        repaint();
    }
    public void paint(Graphics g) {
        String s = Integer.toString(sum);
        g.setFont(new Font("Times New Roman", Font.BOLD, 72));
        g.drawString(s,50,200);
    }
    public static void main(String[] args) {
        Kadai70 k = new Kadai70();
        k.setVisible(true);
    }
}

```

```

/*
<applet code="Digital.class" width="300" height="100">
</applet>
*/
import java.applet.*;
import java.awt.*;
import java.util.*;
public class Digital extends Applet implements Runnable {
    public void init() {
        setBackground(Color.black);
        Thread th = new Thread(this);
        th.start();
    }
    public void run() {
        try {
            while(true) {
                Thread.sleep(1000);
                repaint();
            }
        }
        catch (InterruptedException e) {
        }
    }
    public void paint(Graphics g) {
        Calendar cal = Calendar.getInstance();
        int hour = cal.get(Calendar.HOUR_OF_DAY) % 24;
        int minute = cal.get(Calendar.MINUTE);
        int second = cal.get(Calendar.SECOND);
        String hh = Integer.toString(hour);
        String mm = Integer.toString(minute);
        String ss = Integer.toString(second);
        String now;
        if(hour < 10)
            hh = "0" + hh;
        if(minute < 10)
            mm = "0" + mm;
        if(second < 10)
            ss = "0" + ss;
        now = hh + ":" + mm + ":" + ss;
        g.setFont(new Font("Courier New", Font.BOLD, 48));
        g.setColor(Color.white);
        g.drawString(now, 25, 55);
    }
}

```

```

import java.awt.*;
import java.awt.event.*;
import java.util.*;
public class DigitalWin extends Frame implements Runnable {
    DigitalWin() {
        this.setSize(300, 100);
        setBackground(Color.black);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("Disital 時計");
        Thread th = new Thread(this);
        th.start();
    }
    public void run() {
        try {
            while(true) {
                Thread.sleep(1000);
                repaint();
            }
        }
        catch (InterruptedException e) {
        }
    }
    public void paint(Graphics g) {
        Calendar cal = Calendar.getInstance();
        int hour = cal.get(Calendar.HOUR_OF_DAY) % 24;
        int minute = cal.get(Calendar.MINUTE);
        int second = cal.get(Calendar.SECOND);
        String hh = Integer.toString(hour);
        String mm = Integer.toString(minute);
        String ss = Integer.toString(second);
        String now;
        if(hour < 10)
            hh = "0" + hh;
        if(minute < 10)
            mm = "0" + mm;
        if(second < 10)
            ss = "0" + ss;
        now = hh + ":" + mm + ":" + ss;
        g.setFont(new Font("Courier New", Font.BOLD, 48));
        g.setColor(Color.white);
        g.drawString(now, 25, 75);
    }
    public static void main(String[] args) {
        DigitalWin d = new DigitalWin();
        d.setVisible(true);
    }
}

```

```
/*
<applet code="Ball.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
public class Ball extends Applet implements Runnable {
    int x = 0, y = 0;
    int dx = 3, dy = 4;
    public void init() {
        setBackground(Color.black);
        Thread th = new Thread(this);
        th.start();
    }
    public void run() {
        while(true) {
            x = x + dx;
            y = y + dy;
            repaint();
            try {
                Thread.sleep(10);
            }
            catch(InterruptedException e) {}
            if(x < 0 || x > 270) dx = -dx;
            if(y < 0 || y > 270) dy = -dy;
        }
    }
    public void paint(Graphics g) {
        g.setColor(Color.yellow);
        g.fillOval(x,y,30,30);
    }
}
```



```

import java.awt.*;
import java.awt.event.*;
public class BallWin extends Frame implements Runnable {
    int x = 0, y = 0;
    int dx = 3, dy = 4;
    BallWin() {
        this.setSize(300, 300);
        setBackground(Color.black);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("ボール");
        Thread th = new Thread(this);
        th.start();
    }
    public void run() {
        while(true) {
            x = x + dx;
            y = y + dy;
            repaint();
            try {
                Thread.sleep(10);
            }
            catch(InterruptedException e) {}
            if(x < 0 || x > 270) dx = -dx;
            if(y < 0 || y > 270) dy = -dy;
        }
    }
    public void paint(Graphics g) {
        g.setColor(Color.yellow);
        g.fillOval(x,y,30,30);
    }
    public static void main(String[] args) {
        BallWin b = new BallWin();
        b.setVisible(true);
    }
}

```

```
/*
<applet code="Bound.class" width="300" height="300">
</applet>
*/
import java.applet.Applet;
import java.awt.*;
public class Bound extends Applet implements Runnable {
    int x1 = 0, y1 = 0, dx1 = 3, dy1 = 4;
    int x2 = 150, y2 = 100, dx2 = -3, dy2 = 3;
    int x3 = 100, y3 = 50, dx3 = 2, dy3 = 3;
    Thread th1, th2, th3;
    public void init() {
        setBackground(Color.black);
        th1 = new Thread(this);
        th1.start();
        th2 = new Thread(this);
        th2.start();
        th3 = new Thread(this);
        th3.start();
    }
}
```

```

Public void run() {
    while(true) {
        x1 = x1 + dx1;
        y1 = y1 + dy1;
        x2 = x2 + dx2;
        y2 = y2 + dy2;
        x3 = x3 + dx3;
        y3 = y3 + dy3;
        repaint();
        try {
            Thread.sleep(20);
        }
        catch(InterruptedException e) {}
        if(x1 < 0 || x1 > 270)
            dx1 = -dx1;
        if(y1 < 0 || y1 > 270)
            dy1 = -dy1;
        if(x2 < 0 || x2 > 270)
            dx2 = -dx2;
        if(y2 < 0 || y2 > 270)
            dy2 = -dy2;
        if(x3 < 0 || x3 > 270)
            dx3 = -dx3;
        if(y3 < 0 || y3 > 270)
            dy3 = -dy3;
        if(Math.abs(x1-x2)<30 && Math.abs(y1-y2)<30) {
            dx1 = -dx1;
            dy1 = dy1;
            dx2 = -dx2;
            dy2 = dy2;
        }
        if(Math.abs(x1-x3)<30 && Math.abs(y1-y3)<30) {
            dx1 = -dx1;
            dy1 = dy1;
            dx3 = -dx3;
            dy3 = dy3;
        }
        if(Math.abs(x2-x3)<30 && Math.abs(y2-y3)<30) {
            dx2 = -dx2;
            dy2 = dy2;
            dx3 = -dx3;
            dy3 = dy3;
        }
    }
}

public void paint(Graphics g) {
    g.setColor(Color.yellow);
    g.fillOval(x1,y1,30,30);
    g.setColor(Color.blue);
    g.fillOval(x2,y2,30,30);
    g.setColor(Color.red);
    g.fillOval(x3,y3,30,30);
}
}

```

```
import java.awt.*;
import java.awt.event.*;
public class BoundWin extends Frame implements Runnable {
    int x1 = 0, y1 = 0, dx1 = 3, dy1 = 4;
    int x2 = 150, y2 = 100, dx2 = -3, dy2 = 3;
    int x3 = 100, y3 = 50, dx3 = 2, dy3 = 3;
    Thread th1, th2, th3;
    BoundWin() {
        this.setSize(300, 300);
        setBackground(Color.black);
        this.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent e) {
                System.exit(0);
            }
        });
        this.setTitle("バウンド");
        th1 = new Thread(this);
        th1.start();
        th2 = new Thread(this);
        th2.start();
        th3 = new Thread(this);
        th3.start();
    }
}
```

```

Public void run() {
    while(true) {
        x1 = x1 + dx1;
        y1 = y1 + dy1;
        x2 = x2 + dx2;
        y2 = y2 + dy2;
        x3 = x3 + dx3;
        y3 = y3 + dy3;
        repaint();
        try {
            Thread.sleep(20);
        }
        catch(InterruptedException e) {}
        if(x1 < 0 || x1 > 270)
            dx1 = -dx1;
        if(y1 < 0 || y1 > 270)
            dy1 = -dy1;
        if(x2 < 0 || x2 > 270)
            dx2 = -dx2;
        if(y2 < 0 || y2 > 270)
            dy2 = -dy2;
        if(x3 < 0 || x3 > 270)
            dx3 = -dx3;
        if(y3 < 0 || y3 > 270)
            dy3 = -dy3;
        if(Math.abs(x1-x2)<30 && Math.abs(y1-y2)<30) {
            dx1 = -dx1;
            dy1 = dy1;
            dx2 = -dx2;
            dy2 = dy2;
        }
        if(Math.abs(x1-x3)<30 && Math.abs(y1-y3)<30) {
            dx1 = -dx1;
            dy1 = dy1;
            dx3 = -dx3;
            dy3 = dy3;
        }
        if(Math.abs(x2-x3)<30 && Math.abs(y2-y3)<30) {
            dx2 = -dx2;
            dy2 = dy2;
            dx3 = -dx3;
            dy3 = dy3;
        }
    }
}

public void paint(Graphics g) {
    g.setColor(Color.yellow);
    g.fillOval(x1,y1,30,30);
    g.setColor(Color.blue);
    g.fillOval(x2,y2,30,30);
    g.setColor(Color.red);
    g.fillOval(x3,y3,30,30);
}

public static void main(String[] args) {
    BoundWin b = new BoundWin();
    b.setVisible(true);
}
}

```