```
package cargame;

import java.awt.geom.*;
import javax.swing.*;

public class CarGame {

	public static void main(String[] args) {
		JFrame frame = new JFrame("Car game");

	frame.setDefaultCloseOperation(WindowConstants.EXIT_ON_CLOSE);
		GameSurface s = new GameSurface();
		AnimationSystem a = new AnimationSystem(s);

		Car myCar = new Car();
		myCar.setPosition(new Point2D.Float(250, 250));
		myCar.setOrientation(174.0f);
		myCar.setSpeed(20.0f);

		Car myCar2 = new Car();
		myCar2.setPosition(new Point2D.Float(250, 250));
		myCar2.setOrientation(0.0f);
		myCar2.setSpeed(40.0f);

		s.getVehicles().add(myCar);
		s.getVehicles().add(myCar2);

		frame.setContentPane(s);
		frame.setSize(500, 500);
		frame.setVisible(true);

		Thread t = new Thread(a);
		t.start();
	}
}
```

```
package cargame;

import java.awt.*;
import java.awt.geom.*;

public abstract class Vehicle {
	protected Point2D.Float position;
	protected float orientation;
	protected float speed;

	Point2D.Float getPosition() { return position; }
	void setPosition(Point2D.Float p) { position = p; }

	float getOrientation() { return orientation; }
	void setOrientation(float angle) { orientation = angle; }

	float getSpeed() { return speed; }
	void setSpeed(float mps) { speed = mps; }

	public abstract void draw(Graphics2D g2);
	public abstract void update(float dt);
}
```

```
package cargame;

import java.awt.*;
import java.awt.event.*;
import java.awt.geom.*;
import javax.swing.*;

public class Car extends Vehicle {
      public void draw(Graphics2D g2) {
            AffineTransform saveXform = g2.getTransform();

            g2.translate(position.x, position.y);
            g2.rotate(Math.toRadians(orientation));
            g2.setPaint(Color.red);
            g2.fillRect(-10, -20, 40, 20);

            g2.setTransform(saveXform);
      }

      public void update(float dt) {
            position.x += dt * speed *
                          Math.cos(Math.toRadians(orientation));
            position.y += dt * speed *
                          Math.sin(Math.toRadians(orientation));
      }
}
```

```
package cargame;

import java.util.*;
import java.awt.*;
import java.awt.event.*;
import java.awt.geom.*;
import javax.swing.*;

public class GameSurface extends JPanel {
      protected ArrayList vehicles;

      public GameSurface() {
            vehicles = new ArrayList(10);
      }

      public void paint(Graphics g) {
            Graphics2D g2 = (Graphics2D) g;
            Dimension d = getSize();
            g2.setPaint(Color.green);
            g2.fillRect(0, 0, d.width, d.height);

            for (int i = 0; i < vehicles.size(); i++) {
                  Vehicle v = (Vehicle)vehicles.get(i);
                  v.draw(g2);
            }
      }

      ArrayList getVehicles() {
            return vehicles;
      }
}
```

```
package cargame;

import java.util.*;


public class AnimationSystem implements Runnable {
      protected GameSurface game;

      public AnimationSystem(GameSurface gameSurface) {
            game = gameSurface;
      }

      public void run() {
            long time = System.currentTimeMillis();
            for (;;) {
                  ArrayList vehicles = game.getVehicles();
                  long t = System.currentTimeMillis();
                  long dt = t - time;
                  float secs = (float)dt / 1000.0f;
                  for (int i = 0; i < vehicles.size(); i++) {
                        Vehicle v = (Vehicle)vehicles.get(i);
                        v.update(secs);
                  }
                  time = System.currentTimeMillis();
                  game.repaint();
            }
      }
}
```