# 代码7

GitHub地址：https://github.com/HuaZhouyang/Course\_JavaProgramming

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## Unit 11:

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### CastingDemo.java:

package Unit\_11;

public class CastingDemo {

public static void main(String[] args) {

Object object1 = new Circle(1);

Object object2 = new Rectangle(1, 1);

displayObject(object1);

displayObject(object2);

}

public static void displayObject(Object object) {

if (object instanceof Circle) {

System.out.println("The circle area is " +

((Circle) object).getArea());

System.out.println("The circle diameter is " +

((Circle) object).getDiameter());

} else if (object instanceof Rectangle) {

System.out.println("The rectangle area is " +

((Rectangle) object).getArea());

}

}

}

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### Circle.java:

package Unit\_11;

public class Circle extends GeometricObject {

private double radius;

public Circle() {

}

public Circle(double radius) {

this.radius = radius;

}

public Circle(double radius, String color, boolean filled) {

this.radius = radius;

setColor(color);

setFilled(filled);

}

public double getRadius() {

return radius;

}

public void setRadius(double radius) {

this.radius = radius;

}

public double getArea() {

return radius \* radius \* Math.PI;

}

public double getDiameter() {

return 2 \* radius;

}

public double getPerimeter() {

return 2 \* radius \* Math.PI;

}

public void printCircle() {

System.out.println("The circle is created " + getDateCreated() +

" and the radius is " + radius);

}

}

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### DistinctNumbers.java:

package Unit\_11;

import java.util.\*;

public class DistinctNumbers {

public static void main(String[] args) {

ArrayList<Integer> list = new ArrayList<>();

Scanner input = new Scanner(System.in);

System.out.println("Enter integers (input ends with 0): ");

int value;

do {

value = input.nextInt();

if (!list.contains(value) && value != 0)

list.add(value);

} while (value != 0);

for (int i = 0; i < list.size(); i++)

System.out.println(list.get(i) + " ");

}

}

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### DynamicBindingDemo.java:

package Unit\_11;

public class DynamicBindingDemo {

public static void main(String[] args) {

m(new GraduateStudent());

m(new Student());

m(new Person());

m(new Object());

}

public static void m(Object x) {

System.out.println(x.toString());

}

}

class GraduateStudent extends Student {

}

class Student extends Person {

@Override

public String toString() {

return "Student";

}

}

class Person extends Object {

@Override

public String toString() {

return "Person";

}

}

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### GeometricObject.java:

package Unit\_11;

public class GeometricObject {

private String color = "white";

private boolean filled;

private java.util.Date dateCreated;

public GeometricObject() {

dateCreated = new java.util.Date();

}

public GeometricObject(String color, boolean filled) {

dateCreated = new java.util.Date();

this.color = color;

this.filled = filled;

}

public String getColor() {

return color;

}

public void setColor(String color) {

this.color = color;

}

public boolean isFilled() {

return filled;

}

public void setFilled(boolean filled) {

this.filled = filled;

}

public java.util.Date getDateCreated() {

return dateCreated;

}

public String toString() {

return "created on" + dateCreated + "\ncolor: " + color +

" and filled: " + filled;

}

}

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### MyStack.java:

package Unit\_11;

import java.util.ArrayList;

public class MyStack {

private ArrayList<Object> list = new ArrayList<>();

public boolean isEmpty() {

return list.isEmpty();

}

public int getSize() {

return list.size();

}

public Object peek() {

return list.get(getSize() - 1);

}

public Object pop() {

Object o = list.get(getSize() - 1);

list.remove(getSize() - 1);

return o;

}

public void push(Object o) {

list.add(o);

}

@Override

public String toString() {

return "stack: " + list.toString();

}

}

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### PolymorphismDemo.java:

package Unit\_11;

public class PolymorphismDemo {

public static void main(String[] args) {

displayObject(new Circle(1, "red", false));

displayObject(new Rectangle(1, 1, "black", true));

}

public static void displayObject(GeometricObject object) {

System.out.println("Created on " + object.getDateCreated() +

". Color is " + object.getColor());

}

}

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### Rectangle.java:

package Unit\_11;

public class Rectangle extends GeometricObject {

private double width;

private double height;

public Rectangle() {

}

public Rectangle(double width, double height) {

this.width = width;

this.height = height;

}

public Rectangle(double width, double height, String color, boolean filled) {

this.width = width;

this.height = height;

setColor(color);

setFilled(filled);

}

public double getWidth() {

return width;

}

public void setWidth(double width) {

this.width = width;

}

public double getHeight() {

return height;

}

public void setHeight(double height) {

this.height = height;

}

public double getArea() {

return width \* height;

}

public double getPerimeter() {

return 2 \* (width + height);

}

}

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### TestArrayList.java:

package Unit\_11;

import java.util.ArrayList;

public class TestArrayList {

public static void main(String[] args) {

ArrayList<String> cityList = new ArrayList<>();

cityList.add("London");

cityList.add("Denver");

cityList.add("Paris");

cityList.add("Miami");

cityList.add("Seoul");

cityList.add("TOkyo");

System.out.println("List size? " + cityList.size());

System.out.println("Is Miami in the list?" +

cityList.contains("Miami"));

System.out.println("The location of Denver in the list?"

+ cityList.indexOf("Denver"));

System.out.println("Is the list empty? " +

cityList.isEmpty());

cityList.add(2, "Xian");

cityList.remove(1);

System.out.println(cityList.toString());

for (int i = cityList.size() - 1; i >= 0; i--)

System.out.println(cityList.get(i) + " ");

System.out.println();

ArrayList<Circle> list = new ArrayList<>();

list.add(new Circle(2));

list.add(new Circle(3));

System.out.println("The area of the circle? " +

list.get(0).getArea());

}

}

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### TestCircleRectangle.java:

package Unit\_11;

public class TestCircleRectangle {

public static void main(String[] args) {

Circle circle = new Circle(1);

System.out.println("A circle" + circle.toString());

System.out.println("The color is " + circle.getColor());

System.out.println("The radius is" + circle.getRadius());

System.out.println("The area is" + circle.getArea());

System.out.println("The diameter is " + circle.getDiameter());

Rectangle rectangle = new Rectangle(2, 4);

System.out.println("\nA rectangle " + rectangle.toString());

System.out.println("The area is " + rectangle.getArea());

System.out.println("The perimeter is " + rectangle.getPerimeter());

}

}