

《Java 语言程序设计（基础篇）》（第 10 版梁勇著）第三章
练习题答案

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第三章练习题答案

3.1

```
public class Exercise03_01 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter a, b, c: ");
        double a = input.nextDouble();
        double b = input.nextDouble();
        double c = input.nextDouble();
        double discriminant = b * b - 4 * a * c;
        if (discriminant < 0) {
            System.out.println("The equation has no real roots");
        }
        else if (discriminant == 0) {
            double r1 = -b / (2 * a);
            System.out.println("The equation has one root " + r1);
        }
        else { // (discriminant > 0)
            double r1 = (-b + Math.pow(discriminant, 0.5)) / (2 * a);
            double r2 = (-b - Math.pow(discriminant, 0.5)) / (2 * a);
            System.out.println("The equation has two roots " + r1 + " and
" + r2);
        }
    }
}
```

3.1 附加

```
public class Exercise03_01Extra {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter a numerator: ");
        int numerator = input.nextInt();
        System.out.print("Enter a denominator: ");
        int denominator = input.nextInt();
        if (numerator < denominator) {

            System.out.println(numerator + " / " + denominator + " is a
proper fraction");
        }
        else if (numerator % denominator == 0) {
            System.out.print(numerator + " / " + denominator + " is an
improper fraction ");
            System.out.println("and it can be reduced to " + numerator /
denominator);
        }
        else {
            System.out.print(numerator + " / " + denominator + " is an
improper fraction ");
            System.out.println("and its mixed fraction is " + numerator /
denominator + " + " +
            numerator % denominator + " / " + denominator);
        }
    }
}
```

3.2

```
public class Exercise03_02 {
```

```

public static void main(String[] args) {
Scanner input = new Scanner(System.in);
int number1 = (int) (System.currentTimeMillis() % 10);
int number2 = (int) (System.currentTimeMillis() * 7 % 10);
int number3 = (int) (System.currentTimeMillis() * 3 % 10);
System.out.print("What is " + number1 + " + " + number2 +
" + " +
number3 + "? ");
int answer = input.nextInt();
System.out.println(number1 + " + " + number2 + " + " + " +
number3 +
" = " + answer + " is " +
(number1 + number2 + number3 == answer));
}
}

```

3.2 附加

```

public class Exercise03_02Extra {
public static void main(String args[]) {
Scanner input = new Scanner(System.in);
System.out.print("Enter the coordinates for two points: ");
double x1 = input.nextDouble();
double y1 = input.nextDouble();
double x2 = input.nextDouble();
double y2 = input.nextDouble();
double m = (y2 - y1) / (x2 - x1);
double b = y1 - m * x1;
System.out.print("The line equation for two points (" + x1 +
", " + y1 + ") and (" + x2 + ", " + y2 + ") is " + "y = ");
if (m == -1)
System.out.print("-x");

```

```

else if (m == 1)
System.out.print("x");
else
System.out.print(m + "x");
if (b > 0)
System.out.println(" + " + b);
else if (b < 0)
System.out.println(" - " + (-1 * b));
else// b is 0
System.out.println();
}
}

```

3.3

```

public class Exercise03_03 {
public static void main(String[] args) {
Scanner input = new Scanner(System.in);
System.out.print("Enter a, b, c, d, e, f: ");
double a = input.nextDouble();
double b = input.nextDouble();
double c = input.nextDouble();
double d = input.nextDouble();
double e = input.nextDouble();
double f = input.nextDouble();
double detA = a * d - b * c;
if (detA == 0) {
System.out.println("The equation has no solution");
}
else {
double x = (e * d - b * f) / detA;
double y = (a * f - e * c) / detA;
}
}
}

```

```
System.out.println("x is " + x + " and y is " + y);
}
}
}
```

3.3 附加

```
public class Exercise03_03Extra {
public static void main(String[] args) {
final double RADIUS = 5;
double angle = Math.random() * 2 * Math.PI;
double x = RADIUS * Math.random() * Math.cos(angle);
double y = RADIUS * Math.sin(angle);
double distance = Math.pow(x * x + y * y, 0.5);
System.out.println("The point is (" + x + ", " + y + ") and its
distance to the center is " + distance);
}
}
```

3.4

```
public class Exercise03_04 {
public static void main(String[] args) {
int number = (int)(Math.random() * 12) + 1;
// or int number = (int)(System.currentTimeMillis() % 12 + 1);
// or int number = (int)(Math.random() * 12) + 1;
if (number == 1)
System.out.println("Month is Januaray");
else if (number == 2)
System.out.println("Month is Feburary");
else if (number == 3)
System.out.println("Month is March");
else if (number == 4)
System.out.println("Month is April");
```

```

else if (number == 5)
System.out.println("Month is May");
else if (number == 6)
System.out.println("Month is June");
else if (number == 7)
System.out.println("Month is July");
else if (number == 8)
System.out.println("Month is August");
else if (number == 9)
System.out.println("Month is September");
else if (number == 10)
System.out.println("Month is October");
else if (number == 11)
System.out.println("Month is November");
else// if (number == 12)
System.out.println("Month is December");
}
}

```

3.5

```

public class Exercise03_05 {
public static void main(String[] args) {
java.util.Scanner input = new java.util.Scanner(System.in);
// Prompt the user to enter an integer for today
System.out.print("Enter today抯 day: ");
int today = input.nextInt();
System.out.print("Enter the number of days elapsed since
today: ");
int elapsedDays = input.nextInt();
String nameForToday;
if (today == 0)

```

```
nameForToday = "Sunday";
else if (today == 1)
nameForToday = "Monday";
else if (today == 2)
nameForToday = "Tuesday";
else if (today == 3)
nameForToday = "Wednesday";
else if (today == 4)
nameForToday = "Thursday";
else if (today == 5)
nameForToday = "Friday";
else// if (today == 6)
nameForToday = "Saturday";
int futureDay = (today + elapsedDays) % 7;
String nameForFutureDay;
if (futureDay == 0)
nameForFutureDay = "Sunday";
else if (futureDay == 1)
nameForFutureDay = "Monday";
else if (futureDay == 2)
nameForFutureDay = "Tuesday";
else if (futureDay == 3)
nameForFutureDay = "Wednesday";
else if (futureDay == 4)
nameForFutureDay = "Thursday";
else if (futureDay == 5)
nameForFutureDay = "Friday";
else// if (futureDay == 6)
nameForFutureDay = "Saturday";
System.out.println("Today is " + nameForToday
```

```
+ " and the future day is " + nameForFutureDay); }  
}
```

3.6

```
public class Exercise03_06 {  
    public static void main(String[] args) {  
        Scanner input = new Scanner(System.in);  
        // Prompt the user to enter weight in pounds  
        System.out.print("Enter weight in pounds: ");  
        double weight = input.nextDouble();  
        // Prompt the user to enter height  
        System.out.print("Enter feet: ");  
        double feet = input.nextDouble();  
        System.out.print("Enter inches: ");  
        double inches = input.nextDouble();  
        double height = feet * 12 + inches;  
        // Compute BMI  
        double bmi = weight * 0.45359237 /  
            ((height * 0.0254) * (height * 0.0254));  
        // Display result  
        System.out.println("BMI is " + bmi);  
        if (bmi < 18.5)  
            System.out.println("Underweight");  
        else if (bmi < 25)  
            System.out.println("Normal");  
        else if (bmi < 30)  
            System.out.println("Overweight");  
        else  
            System.out.println("Obese");  
    }  
}
```


3.7

```
/** Break down an amount into smaller units
 * Display the non-zero denominations only, and display
singular
 * words for single units like 1 dollars, 1 penny, and display
plural * words for more than one unit like 2 dollars, 3 pennies.
 */
public class Exercise03_07 {
// Main method
public static void main(String[] args) {
java.util.Scanner input = new java.util.Scanner(System.in);
// Receive the amount entered from the keyboard
System.out.print(
"Enter an amount in double, for example 11.56: ");
double amount = input.nextDouble();
int remainingAmount = (int)(amount * 100);
// Find the number of one dollars
int numberOfOneDollars = remainingAmount / 100;
remainingAmount = remainingAmount % 100;
// Find the number of quarters in the remaining amount
int numberOfQuarters = remainingAmount / 25;
remainingAmount = remainingAmount % 25;
// Find the number of dimes in the remaining amount
int numberOfDimes = remainingAmount / 10;
remainingAmount = remainingAmount % 10;
// Find the number of nickels in the remaining amount
int numberOfNickels = remainingAmount / 5;
remainingAmount = remainingAmount % 5;
// Find the number of pennies in the remaining amount
int numberOfPennies = remainingAmount;
```

```
// Display results
if (amount < 0) {
System.out.println("Your amount is negative");
System.exit(1);
}
else if (amount <= 0) {
System.out.println("Your amount is zero");
System.exit(2);
}
System.out.println("Your amount " + amount + " consists of
");
if (numberOfOneDollars > 1)
System.out.println(numberOfOneDollars + "\ dollars");
else if (numberOfOneDollars == 1)
System.out.println(numberOfOneDollars + "\ dollar");
if (numberOfQuarters > 1)
System.out.println(numberOfQuarters + "\ quarters");
else if (numberOfQuarters == 1)
System.out.println(numberOfQuarters + "\ quarter");
if (numberOfDimes > 1)
System.out.println(numberOfDimes + "\ dimes");
else if (numberOfDimes == 1)
System.out.println(numberOfDimes + "\ dime");
if (numberOfNickels > 1)
System.out.println(numberOfNickels + "\ nickels");
else if (numberOfNickels == 1)
System.out.println(numberOfNickels + "\ nickel");
if (numberOfPennies > 1)
System.out.println(numberOfPennies + "\ pennies");
else if (numberOfPennies == 1)
```

```
System.out.println(numberOfPennies + "\ penny");
}
}
```

3.8

```
public class Exercise03_08 {
public static void main(String[] args) {
java.util.Scanner input = new java.util.Scanner(System.in);
// Enter three numbers
System.out.print("Enter three integers: ");
int number1 = input.nextInt();
int number2 = input.nextInt();
int number3 = input.nextInt();
if (number1 > number2) {
int temp = number1;
number1 = number2;
number2 = temp;
}
if (number2 > number3) {
int temp = number2;
number2 = number3;
number3 = temp;
}
if (number1 > number2) {
int temp = number1;
number1 = number2;
number2 = temp;
}
System.out.println("The sorted numbers are "
+ number1 + " " + number2 + " " + number3);
}
```

```

}
public class Exercise03_09 {
public static void main(String[] args) {
Scanner input = new Scanner(System.in);
// Prompt the user to enter an integer
System.out.print(
"Enter the first 9 digits of an ISBN as integer: ");
int number = input.nextInt();
// Calculate checksum (You may write a loop to simplify it in
Ch4
int checksum =
((number / 100000000 % 10) * 1 +
(number / 10000000 % 10) * 2 +
(number / 1000000 % 10) * 3 +
(number / 100000 % 10) * 4 +
(number / 10000 % 10) * 5 +
(number / 1000 % 10) * 6 +
(number / 100 % 10) * 7 +
(number / 10 % 10) * 8 +
(number % 10) * 9) % 11;
System.out.print("The ISBN-10 number is ");
// Display leading zeros, improve the solution using loops in
the next chapter
if (number / 100000000 == 0) {
System.out.print("0");
if (number / 10000000 == 0) {
System.out.print("0");
if (number / 1000000 == 0) {
System.out.print("0");
if (number / 100000 == 0) {

```

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