Introduction to Java Programming, Tenth Edition, Y. Daniel Liang

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Chapter 10 Object-Oriented Thinking

Please send suggestions and errata to Dr. Liang at y.daniel.liang@gmail.com. Indicate which book and edition you are using. Thanks!

Section 10.4 Class Relationships

10.1 ___________ is attached to the class of the composing class to denote the aggregation relationship with the composed object.

● A. An empty diamond

○ B. A solid diamond

○ C. An empty oval

○ D. A solid oval

Your answer is correct ✓

10.2 An aggregation relationship is usually represented as __________ in ___________.

● A. a data field/the aggregating class

○ B. a data field/the aggregated class

○ C. a method/the aggregating class

○ D. a method/the aggregated class

Your answer is correct ✓

Section 10.7 Processing Primitive Data Type Values as Objects

10.3 Which of the following statements will convert a string s into i of int type?

☑ A. `i = Integer.parseInt(s);`

☑ B. `i = (new Integer(s)).intValue();`

☑ C. `i = Integer.valueOf(s).intValue();`

☑ D. `i = Integer.valueOf(s);`

☑ E. `i = (int)(Double.parseDouble(s));`

Your answer is correct ✓
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10.4 Which of the following statements will convert a string s into a double value d?

○ A. `d = Double.parseDouble(s);`

○ B. `d = (new Double(s)).doubleValue();`

○ C. `d = Double.valueOf(s).doubleValue();`

● D. All of the above.

Your answer is correct ✓
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10.5 Which of the following statements convert a double value d into a string s?

☑ A. `s = (new Double(d)).toString();`

□ B. `s = d;`

□ C. `s = new Double(d).stringOf();`

□ D. `s = String.stringOf(d);`

☑ E. `s = d + "";`

Your answer is correct ✓

10.6 Which of the following statements is correct?

☐ A. Integer.parseInt("12", 2);

☐ B. Integer.parseInt(100);

☑ C. Integer.parseInt("100");

☐ D. Integer.parseInt(100, 16);

☑ E. Integer.parseInt("345", 8);

Your answer is correct ✓
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10.7 What is the output of Integer.parseInt("10", 2)?

○ A. 1;

● B. 2;

○ C. 10;

○ D. Invalid statement;

Your answer is correct ✓
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Section 10.8 Automatic Conversion Between Primitive Types and Wrapper Class Types

10.8 In JDK 1.5, you may directly assign a primitive data type value to a wrapper object. This is called ______________.

● A. auto boxing

○ B. auto unboxing

○ C. auto conversion

○ D. auto casting

Your answer is correct ✓

10.9 In JDK 1.5, analyze the following code.

```
Line 1: Integer[] intArray = {1, 2, 3};
Line 2: int i = intArray[0] + intArray[1];
Line 3: int j = i + intArray[2];
Line 4: double d = intArray[0];
```

☑ A. It is OK to assign 1, 2, 3 to an array of Integer objects in JDK 1.5.

☑ B. It is OK to automatically convert an Integer object to an int value in Line 2.

☑ C. It is OK to mix an int value with an Integer object in an expression in Line 3.

☑ D. Line 4 is OK. An int value from intArray[0] object is assigned to a double variable d.

Your answer is correct ✓

Section 10.9 The BigInteger and BigDecimal Classes

10.10 To create an instance of BigInteger for 454, use

○ A. BigInteger(454);

○ B. new BigInteger(454);

○ C. BigInteger("454");

● D. new BigInteger("454");

Your answer is correct ✓

10.11 To create an instance of BigDecimal for 454.45, use

○ A. `BigInteger(454.45);`

○ B. `new BigInteger(454.45);`

○ C. `BigInteger("454.45");`

● D. `new BigDecimal("454.45");`

Your answer is correct ✓

10.12 BigInteger and BigDecimal are immutable

● A. true

○ B. false

Your answer is correct ✓

10.13 To add BigInteger b1 to b2, you write _________.

□ A. `b1.add(b2);`

□ B. `b2.add(b1);`

☑ C. `b2 = b1.add(b2);`

☑ D. `b2 = b2.add(b1);`

□ E. `b1 = b2.add(b1);`

Your answer is correct ✓

10.14 What is the output of the following code?

```
public class Test {
  public static void main(String[] args) {
    java.math.BigInteger x = new java.math.BigInteger("3");
    java.math.BigInteger y = new java.math.BigInteger("7");
    x.add(y);
    System.out.println(x);
  }
}
```

● A. 3

○ B. 4

○ C. 10

○ D. 11

Your answer is correct ✓

10.15 To divide BigDecimal b1 by b2 and assign the result to b1, you write _________.

○ A. `b1.divide(b2);`

○ B. `b2.divide(b1);`

● C. `b1 = b1.divide(b2);`

○ D. `b1 = b2.divide(b1);`

○ E. `b2 = b2.divide(b1);`

Your answer is correct ✓

10.16 Which of the following classes are immutable?

☑ A. Integer

☑ B. Double

☑ C. BigInteger

☑ D. BigDecimal

☑ E. String

Your answer is correct ✓

10.17 Which of the following statements are correct?

☑ A. new java.math.BigInteger("343");

☑ B. new java.math.BigDecimal("343.445");

□ C. new java.math.BigInteger(343);

□ D. new java.math.BigDecimal(343.445);

Your answer is correct ✓

Section 10.10 The String Class

10.18 Which of the following statements is preferred to create a string "Welcome to Java"?

● A. String s = "Welcome to Java";

○ B. String s = new String("Welcome to Java");

○ C. String s; s = "Welcome to Java";

○ D. String s; s = new String("Welcome to Java");

Your answer is correct ✓
Click here to show an explanation

10.19 What is the output of the following code?

```
public class Test {
  public static void main(String[] args) {
    String s1 = "Welcome to Java!";
    String s2 = s1;

    if (s1 == s2)
      System.out.println("s1 and s2 reference to the same String object");
    else
      System.out.println("s1 and s2 reference to different String objects");
  }
}
```

● A. s1 and s2 reference to the same String object

○ B. s1 and s2 reference to different String objects

Your answer is correct ✓

10.20 What is the output of the following code?

```
public class Test {
  public static void main(String[] args) {
    String s1 = "Welcome to Java!";
    String s2 = "Welcome to Java!";

    if (s1 == s2)
      System.out.println("s1 and s2 reference to the same String object");
    else
      System.out.println("s1 and s2 reference to different String objects");
  }
}
```

● A. s1 and s2 reference to the same String object

○ B. s1 and s2 reference to different String objects

Your answer is correct ✓
Click here to show an explanation

10.21 What is the output of the following code?

```
public class Test {
  public static void main(String[] args) {
    String s1 = new String("Welcome to Java!");
    String s2 = new String("Welcome to Java!");
    if (s1 == s2)
      System.out.println("s1 and s2 reference to the same String object");
    else
      System.out.println("s1 and s2 reference to different String objects");
  }
}
```

○ A. s1 and s2 reference to the same String object

● B. s1 and s2 reference to different String objects

Your answer is correct ✓

10.22 What is the output of the following code?

```
public class Test {
  public static void main(String[] args) {
    String s1 = new String("Welcome to Java!");
    String s2 = new String("Welcome to Java!");

    if (s1.equals(s2))
      System.out.println("s1 and s2 have the same contents");
    else
      System.out.println("s1 and s2 have different contents");
  }
}
```

● A. s1 and s2 have the same contents

○ B. s1 and s2 have different contents

Your answer is correct ✓

10.23 What is the output of the following code?

```
public class Test {
  public static void main(String[] args) {
    String s1 = new String("Welcome to Java!");
    String s2 = s1.toUpperCase();

    if (s1 == s2)
      System.out.println("s1 and s2 reference to the same String object");
    else if (s1.equals(s2))
      System.out.println("s1 and s2 have the same contents");
    else
      System.out.println("s1 and s2 have different contents");
  }
}
```

○ A. s1 and s2 reference to the same String object

○ B. s1 and s2 have the same contents

● C. s1 and s2 have different contents

Your answer is correct ✓

10.24 What is the output of the following code?

```
public class Test {
  public static void main(String[] args) {
    String s1 = new String("Welcome to Java");
    String s2 = s1;

    s1 += "and Welcome to HTML";

    if (s1 == s2)
      System.out.println("s1 and s2 reference to the same String object");
    else
      System.out.println("s1 and s2 reference to different String objects");
  }
}
```

○ A. s1 and s2 reference to the same String object

● B. s1 and s2 reference to different String objects

Your answer is correct ✓

10.25 Suppose s1 and s2 are two strings. Which of the following statements or expressions are incorrect?

□ A. String s = new String("new string");

□ B. String s3 = s1 + s2

☑ C. s1 >= s2

☑ D. int i = s1.length

☑ E. s1.charAt(0) = '5'

Your answer is correct ✓

10.26 What is the output of the following code?

```
String s = "University";
s.replace("i", "ABC");
System.out.println(s);
```

○ A. UnABCversity

○ B. UnABCversABCty

○ C. UniversABCty

● D. University

Your answer is correct ✓

Click here to show an explanation

10.27 Analyze the following code.

```
class Test {
  public static void main(String[] args) {
    String s;
    System.out.println("s is " + s);
  }
}
```

● A. The program has a compile error because s is not initialized, but it is referenced in the println statement.

○ B. The program has a runtime error because s is not initialized, but it is referenced in the println statement.

○ C. The program has a runtime error because s is null in the println statement.

○ D. The program compiles and runs fine.

Your answer is correct ✓

10.28 Which of the following is the correct statement to return a string from an array a of characters?

○ A. toString(a)

● B. new String(a)

○ C. convertToString(a)

○ D. String.toString(a)

Your answer is correct ✓

10.29 Assume s is " abc ", the method __________ returns a new string "abc".

○ A. s.trim(s)

○ B. trim(s)

○ C. String.trim(s)

● D. s.trim()

Your answer is correct ✓

10.30 Assume s is "ABCABC", the method __________ returns a new string "aBCaBC".

- □ A. s.toLowerCase(s)
- □ B. s.toLowerCase()
- ☑ C. s.replace('A', 'a')
- □ D. s.replace('a', 'A')
- ☑ E. s.replace("ABCABC", "aBCaBC")

Your answer is correct ✓

10.31 Assume s is "ABCABC", the method __________ returns an array of characters.

- ○ A. toChars(s)
- ● B. s.toCharArray()
- ○ C. String.toChars()
- ○ D. String.toCharArray()
- ○ E. s.toChars()

Your answer is correct ✓

10.32 __________ returns a string.

- ☑ A. String.valueOf(123)
- ☑ B. String.valueOf(12.53)
- ☑ C. String.valueOf(false)
- ☑ D. String.valueOf(new char[]{'a', 'b', 'c'})

Your answer is correct ✓

10.33 The following program displays __________.

```
public class Test {
  public static void main(String[] args) {
    String s = "Java";
    StringBuilder buffer = new StringBuilder(s);
    change(s);
    System.out.println(s);
  }

  private static void change(String s) {
    s = s + " and HTML";
  }
}
```

- ● A. Java
- ○ B. Java and HTML
- ○ C. and HTML
- ○ D. nothing is displayed

Your answer is correct ✓

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10.34 What is displayed by the following statement?

```
System.out.println("Java is neat".replaceAll("is", "AAA"));
```

- ○ A. JavaAAAneat
- ○ B. JavaAAA neat
- ● C. Java AAA neat
- ○ D. Java AAAneat

Your answer is correct ✓

10.35 What is displayed by the following code?

```
 public static void main(String[] args) {
   String[] tokens = "Welcome to Java".split("o");
   for (int i = 0; i < tokens.length; i++) {
     System.out.print(tokens[i] + " ");
   }
 }
```

○ A. Welcome to Java

○ B. Welc me to Java

● C. Welc me t Java

○ D. Welcome t Java

Your answer is correct ✓

10.36 What is displayed by the following code?

```
System.out.print("Hi, ABC, good".matches("ABC ") + " ");
System.out.println("Hi, ABC, good".matches(".*ABC.*"));
```

● A. false false

○ B. true false

○ C. true true

○ D. false true

Your answer A is incorrect ✗
Click here to show the correct answer

10.37 What is displayed by the following code?

```
System.out.print("A,B;C".replaceAll(",;", "#") + " ");
System.out.println("A,B;C".replaceAll("[,;]", "#"));
```

○ A. A B C A#B#C

○ B. A#B#C A#B#C

● C. A,B;C A#B#C

○ D. A B C A B C

Your answer is correct ✓

10.38 What is displayed by the following code?

```
String[] tokens = "A,B;C;D".split("[,;]");
for (int i = 0; i < tokens.length; i++)
  System.out.print(tokens[i] + " ");
```

○ A. A,B;C;D

● B. A B C D

○ C. A B C;D

○ D. A B;C;D

Your answer is correct ✓

Section 10.11 The StringBuilder/StringBuffer Class

10.39 Analyze the following code.

```
class Test {
  public static void main(String[] args) {
    StringBuilder strBuf = new StringBuilder(4);
    strBuf.append("ABCDE");
    System.out.println("What's strBuf.charAt(5)? " + strBuf.charAt(5));
  }
}
```

○ A. The program has a compile error because you cannot specify initial capacity in the StringBuilder constructor.

○ B. The program has a runtime error because because the buffer's capacity is 4, but five characters "ABCDE" are appended into the buffer.

● C. The program has a runtime error because the length of the string in the buffer is 5 after "ABCDE" is appended into the buffer. Therefore, strBuf.charAt(5) is out of range.

○ D. The program compiles and runs fine.

Your answer is correct ✓
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10.40 Which of the following is true?

☑ A. You can add characters into a string buffer.

☑ B. You can delete characters into a string buffer.

☑ C. You can reverse the characters in a string buffer.

☑ D. The capacity of a string buffer can be automatically adjusted.

Your answer is correct ✓

10.41 _________ returns the last character in a StringBuilder variable named strBuf?

● A. strBuf.charAt(strBuf.length() - 1)

○ B. strBuf.charAt(strBuf.capacity() - 1)

○ C. StringBuilder.charAt(strBuf.length() - 1)

○ D. StringBuilder.charAt(strBuf.capacity() - 1)

Your answer is correct ✓

10.42 Assume StringBuilder strBuf is "ABCDEFG", after invoking _________, strBuf contains "AEFG".

● A. strBuf.delete(0, 3)

○ B. strBuf.delete(1, 3)

○ C. strBuf.delete(1, 4)

○ D. strBuf.delete(2, 4)

Your answer A is incorrect ✗
Click here to show the correct answer

10.43 Assume StringBuilder strBuf is "ABCDEFG", after invoking _________, strBuf contains "ABCRRRRDEFG".

○ A. strBuf.insert(1, "RRRR")

○ B. strBuf.insert(2, "RRRR")

● C. strBuf.insert(3, "RRRR")

○ D. strBuf.insert(4, "RRRR")

Your answer is correct ✓

10.44 Assume StringBuilder strBuf is "ABCCEFC", after invoking _________, strBuf contains "ABTTEFT".

○ A. strBuf.replace('C', 'T')

○ B. strBuf.replace("C", "T")

○ C. strBuf.replace("CC", "TT")

○ D. strBuf.replace('C', "TT")

● E. strBuf.replace(2, 7, "TTEFT")

Your answer is correct ✓

10.45 The StringBuilder methods _____________ not only change the contents of a string buffer, but also returns a reference to the string buffer.

☑ A. delete

☑ B. append

☑ C. insert

☑ D. reverse

☑ E. replace

Your answer is correct ✓

10.46 The following program displays __________.

```
public class Test {
  public static void main(String[] args) {
    String s = "Java";
    StringBuilder buffer = new StringBuilder(s);
    change(buffer);
    System.out.println(buffer);
  }

  private static void change(StringBuilder buffer) {
    buffer.append(" and HTML");
  }
}
```

○ A. Java

● B. Java and HTML

○ C. and HTML

○ D. nothing is displayed

Your answer is correct ✓

Click here to show an explanation