

***Introduction to Java Programming and Data
Structures 13th edition Liang Test Bank***

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Introduction to Java Programming and Data Structures, 13e (Liang)
Chapter 1 Introduction to Computers, Programs, and Java

Section 1.2 What Is a Computer?

- 1) _____ is the physical aspect of the computer that can be seen.
- A) Hardware
 - B) Software
 - C) Operating system
 - D) Application program

Answer: A

Explanation: See the first paragraph in Section 1.2.

Section: 1.2 What Is a Computer?

Section 1.2.1 Central Processing Unit

- 1) _____ is the brain of a computer.
- A) Hardware
 - B) CPU
 - C) Memory
 - D) Disk

Answer: B

Explanation: See the first paragraph in Section 1.2.1.

Section: 1.2.1 Central Processing Unit

- 2) The speed of the CPU may be measured in _____. Please select all that apply.
- A) megabytes
 - B) gigabytes
 - C) megahertz
 - D) gigahertz

Answer: C, D

Explanation: See the third paragraph in Section 1.2.1. 1 megahertz equals 1 million pulses per second and 1 gigahertz is 1000 megahertz.

Section: 1.2.1 Central Processing Unit

Section 1.2.2 Bits and Bytes

- 1) Why do computers use zeros and ones?
- A) Because combinations of zeros and ones can represent any numbers and characters.
 - B) Because digital devices have two stable states and it is natural to use one state for 0 and the other for 1.
 - C) Because binary numbers are simplest.
 - D) Because binary numbers are the bases upon which all other number systems are built.

Answer: B

Explanation: See the second paragraph in Section 1.2.2.

Section: 1.2.2 Bits and Bytes

2) One byte has _____ bits.

- A) 4
- B) 8
- C) 12
- D) 16

Answer: B

Explanation: See the third paragraph in Section 1.2.2.

Section: 1.2.2 Bits and Bytes

3) One gigabyte is approximately _____ bytes.

- A) 1 million
- B) 10 million
- C) 1 billion
- D) 1 trillion

Answer: C

Explanation: See the fifth paragraph in Section 1.2.2.

Section: 1.2.2 Bits and Bytes

Section 1.2.3 Memory

1) A program and its data must be moved into the computer's _____ before they can be executed by the CPU.

- A) memory
- B) hard disk
- C) CPU
- D) CD-ROM

Answer: A

Explanation: See the first paragraph in Section 1.2.3.

Section: 1.2.3 Memory

Section 1.2.4 Storage Devices

1) A computer's _____ is volatile; that is, any information stored in it is lost when the system's power is turned off.

- A) memory
- B) hard disk
- C) flash stick
- D) CD-ROM

Answer: A

Explanation: See the first paragraph in Section 1.2.4.

Section: 1.2.4 Storage Devices

2) Which of the following are storage devices? Please select all that apply.

- A) portable disk
- B) hard disk
- C) flash stick
- D) CD-ROM

Answer: A, B, C, D

Explanation: See the second paragraph in Section 1.2.4.

Section: 1.2.4 Storage Devices

Section 1.2.5 Input and Output Devices

1) The _____ specifies the number of pixels in horizontal and vertical dimensions of the display device.

- A) screen resolution
- B) pixel
- C) dot pitch
- D) monitor

Answer: A

Explanation: See the third last paragraph in Section 1.2.5.

Section: 1.2.5 Input and Output Devices

Section 1.2.6 Communications Devices

1) _____ is a device to connect a computer to a local area network (LAN).

- A) Regular modem
- B) DSL
- C) Cable modem
- D) NIC

Answer: D

Explanation: See the bullet items in Section 1.2.6.

Section: 1.2.6 Communications Devices

Section 1.3 Programming Languages

1) _____ are instructions to the computer. Please select all that apply.

- A) Hardware
- B) Software
- C) Programs
- D) Keyboards

Answer: B, C

Explanation: See the Key Point in Section 1.3.

Section: 1.3 Programming Languages

2) Computer can execute the code in _____.

- A) machine language
- B) assembly language
- C) high-level language
- D) none of the above

Answer: A

Explanation: See the first paragraph in Section 1.3.1.

Section: 1.3 Programming Languages

3) _____ translates high-level language program into machine language program.

- A) An assembler
- B) A compiler
- C) CPU
- D) The operating system

Answer: B

Explanation: See the first paragraph after Table 1.1 in Section 1.3.3.

Section: 1.3 Programming Languages

Section 1.4 Operating Systems

1) _____ is an operating system.

- A) Java
- B) C++
- C) Windows
- D) Visual Basic
- E) Ada

Answer: C

Explanation: See the first paragraph in Section 1.4.

Section: 1.4 Operating Systems

2) _____ is a program that runs on a computer to manage and control a computer's activities.

- A) Operating system
- B) Java
- C) Modem
- D) Interpreter
- E) Compiler

Answer: A

Explanation: See the first paragraph in Section 1.4.

Section: 1.4 Operating Systems

Section 1.5 Java, the World Wide Web, and Beyond

1) Due to security reasons, Java _____ cannot run from a Web browser in the new version of Java.

- A) applications
- B) applets
- C) servlets
- D) Micro Edition programs

Answer: B

Explanation: See the last paragraph in Section 1.5.

Section: 1.5 Java, the World Wide Web, and Beyond

2) _____ is not an object-oriented programming language.

- A) Java
- B) C++
- C) C
- D) C#
- E) Python

Answer: C

Explanation: See Table 1.1 in Section 1.3.1.

Section: 1.5 Java, the World Wide Web, and Beyond

3) _____ is interpreted.

- A) Java
- B) C++
- C) C
- D) Ada
- E) Pascal

Answer: A

Explanation: See the second paragraph in Section 1.5.

Section: 1.5 Java, the World Wide Web, and Beyond

4) _____ is architecture-neutral.

- A) Java
- B) C++
- C) C
- D) Ada
- E) Pascal

Answer: A

Explanation: See the second paragraph in Section 1.5.

Section: 1.5 Java, the World Wide Web, and Beyond

Section 1.6 The Java Language Specification, API, JDK, JRE, and IDE

1) _____ is a technical definition of the language that includes the syntax and semantics of the Java programming language.

- A) Java language specification
- B) Java API
- C) Java JDK
- D) Java IDE

Answer: A

Explanation: See the last paragraph in Section 1.6.

Section: 1.6 The Java Language Specification, API, JDK, JRE, and IDE

2) _____ contains predefined classes and interfaces for developing Java programs.

- A) Java language specification
- B) Java API
- C) Java JDK
- D) Java IDE

Answer: B

Explanation: See the last paragraph in Section 1.6.

Section: 1.6 The Java Language Specification, API, JDK, JRE, and IDE

3) _____ consists of a set of separate programs for developing and testing Java programs, each of which is invoked from a command line.

- A) Java language specification
- B) Java API
- C) Java JDK
- D) Java IDE

Answer: C

Explanation: See the last paragraph in Section 1.6.

Section: 1.6 The Java Language Specification, API, JDK, JRE, and IDE

4) _____ provides an integrated development environment (IDE) for rapidly developing Java programs. Editing, compiling, building, debugging, and online help are integrated in one graphical user interface.

- A) Java language specification
- B) Java API
- C) Java JDK
- D) Java IDE

Answer: D

Explanation: See the last paragraph in Section 1.6.

Section: 1.6 The Java Language Specification, API, JDK, JRE, and IDE

Section 1.7 A Simple Java Program

1) The main method header is written as _____.

- A) `public static void main(string[] args)`
- B) `public static void Main(String[] args)`
- C) `public static void main(String[] args)`
- D) `public static main(String[] args)`
- E) `public void main(String[] args)`

Answer: C

Explanation: In A, string should be spelled String with S in uppercase. In B, Main should be spelled main in lowercase. In D, the keyword void is missing. In E, the keyword static is missing. C is correct.

Section: 1.7 A Simple Java Program

2) Which of the following statements is correct?

- A) Every line in a program must end with a semicolon.
- B) Every statement in a program must end with a semicolon.
- C) Every comment line must end with a semicolon.
- D) Every method must end with a semicolon.
- E) Every class must end with a semicolon.

Answer: B

Explanation: Only statements need to end with a semicolon.

Section: 1.7 A Simple Java Program

3) Which of the following statements is correct to display Welcome to Java on the console?

- A) `System.out.println('Welcome to Java');`
- B) `System.out.println("Welcome to Java");`
- C) `System.println('Welcome to Java');`
- D) `System.out.println('Welcome to Java');`
- E) `System.out.println("Welcome to Java');`

Answer: B

Explanation: In A, a string must be enclosed in double quotation marks. In C, a string must be enclosed in double quotation marks and also the .out is missing. In D, a string must be enclosed in double quotation marks on both sides. In E, a string must be enclosed in double quotation marks. B is correct.

Section: 1.7 A Simple Java Program

4) What is the output of the following code?

```
System.out.println("1 + 2 + 3");
```

```
System.out.println(1 + 2 + 3);
```

- A) 1 + 2 + 3 followed by 6
- B) "6" followed by 6
- C) 1 + 2 + 3 followed by 1 + 2 + 3
- D) 6 followed by 6

Answer: A

Explanation: "1 + 2 + 3" is a string. 1 + 2 + 3 is an expression, which evaluates to 6. So, the answer is A.

Section: 1.7 A Simple Java Program

Section 1.8 Creating, Compiling, and Executing a Java Program

1) The JDK command to just compile a class (not run) in the file Test.java is _____.

- A) java Test
- B) java Test.java
- C) javac Test.java
- D) javac Test
- E) JAVAC Test.java

Answer: C

Explanation: In A, java is the command to run a program. In B, java is the command to run a program. In D, java is the command to run a program. In E, The command is case sensitive. C is correct.

Section: 1.8 Creating, Compiling, and Executing a Java Program

2) Which JDK command is correct to run a Java application in ByteCode.class?

- A) java ByteCode
- B) java ByteCode.class
- C) javac ByteCode.java
- D) javac ByteCode
- E) JAVAC ByteCode

Answer: A

Explanation: A is correct. In B, to compile, use only the class name, not including the extension. In C, javac is the command to compile a class, not to run a class. In D, javac is the command to compile a class, not to run a class. In E, the command is case sensitive and javac is the command to compile a class, not to run a class.

Section: 1.8 Creating, Compiling, and Executing a Java Program

3) Java compiler translates Java source code into _____.

- A) Java bytecode
- B) machine code
- C) assembly code
- D) another high-level language code

Answer: A

Explanation: Java bytecode is the end result of compiling a Java source file. Java bytecode is machine-independent and can be run on any platform.

Section: 1.8 Creating, Compiling, and Executing a Java Program

4) _____ is a software that interprets Java bytecode.

- A) Java virtual machine
- B) Java compiler
- C) Java debugger
- D) Java API

Answer: A

Explanation: Java virtual machine is a software that runs Java bytecode. Java compiler compiles Java source code into Java bytecode.

Section: 1.8 Creating, Compiling, and Executing a Java Program

5) Suppose you define a Java class as follows, the source code should be stored in a file named _____.

```
public class Test {  
  
}
```

- A) Test.class
- B) Test.doc
- C) Test.txt
- D) Test.java
- E) Any name with extension .java

Answer: D

Explanation: You have to name the class as ClassName.java. Here the class name is Test.

Section: 1.8 Creating, Compiling, and Executing a Java Program

6) The extension name of a Java bytecode file is _____.

- A) .java
- B) .obj
- C) .class
- D) .exe

Answer: C

Explanation: .java is the Java source code file name and .class is the Java bytecode file name.

Section: 1.8 Creating, Compiling, and Executing a Java Program

7) The extension name of a Java source code file is _____.

- A) .java
- B) .obj
- C) .class
- D) .exe

Answer: A

Explanation: .java is the Java source code file name and .class is the Java bytecode file name.

Section: 1.8 Creating, Compiling, and Executing a Java Program

8) Which of the following lines is not a Java comment? Please select all that apply.

- A) `/** comments */`
- B) `// comments`
- C) `-- comments`
- D) `/* comments */`
- E) `** comments **`

Answer: C, E

Explanation: The text that begins with `//` in a line is known as a line comment and the text that is enclosed between `/*` and `*/` is known as a paragraph comment.

Section: 1.8 Creating, Compiling, and Executing a Java Program

9) Which of the following are the reserved words? Please select all that apply.

- A) `public`
- B) `static`
- C) `void`
- D) `class`

Answer: A, B, C, D

Explanation: These are all reserved words with specific meaning to the compiler.

Section: 1.8 Creating, Compiling, and Executing a Java Program

10) Every statement in Java ends with _____.

- A) a semicolon (`;`)
- B) a comma (`,`)
- C) a period (`.`)
- D) an asterisk (`*`)

Answer: A

Explanation: You have to tell the compiler where a statement ends using a semicolon.

Section: 1.8 Creating, Compiling, and Executing a Java Program

11) A block is enclosed inside _____.

- A) parentheses
- B) braces
- C) brackets
- D) quotes

Answer: B

Explanation: A block is enclosed inside a pair of opening and closing braces.

Section: 1.8 Creating, Compiling, and Executing a Java Program

Section 1.9 Programming Style and Documentation

1) Programming style is important, because _____. Please select all that apply.

- A) a program may not compile if it has a bad style
- B) good programming style can make a program run faster
- C) good programming style makes a program more readable
- D) good programming style helps reduce programming errors

Answer: C, D

Explanation: Bad style is a readability issue. The code will still compile. Programming style is a readability issue and it does not effect the performance of the code. D and C are correct.

Bad style is a readability issue. The code will still compile. Programming style is a readability issue and it does not effect the performance of the code. D and C are correct.

Section: 1.9 Programming Style and Documentation

2) Analyze the following code.

I:

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println("Welcome to Java!");  
    }  
}
```

II:

```
public class Test { public static void main(String[] args) {  
System.out.println("Welcome to Java!"); } }
```

- A) Both I and II can compile and run and display Welcome to Java, but the code in II has a better style than I.
- B) Only the code in I can compile and run and display Welcome to Java.
- C) Only the code in II can compile and run and display Welcome to Java.
- D) Both I and II can compile and run and display Welcome to Java, but the code in I has a better style than II.

Answer: D

Explanation: Both I and II are the same except the format is different. Format is a readability issue only.

Section: 1.9 Programming Style and Documentation

3) Which of the following code has the best style?

I:

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println("Welcome to Java!");  
    }  
}
```

II:

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println("Welcome to Java!");  
    }  
}
```

III:

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println("Welcome to Java!");  
    }  
}
```

IV:

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println("Welcome to Java!");  
    }  
}
```

A) I

B) II

C) III

D) IV

Answer: D

Explanation: All the code will run fine, but not all of them are formatted correctly. Only the code in IV is formatted correctly.

Section: 1.9 Programming Style and Documentation

Section 1.10 Programming Errors

1) If a program compiles fine, but it produces incorrect result, then the program suffers _____.

- A) a compile error
- B) a runtime error
- C) a logic error

Answer: C

Explanation: If a program has a compile error, it will not run. When a program has a runtime error, it terminates abnormally. C is correct.

Section: 1.10 Programming Errors

2) The following code has _____.

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println(&#34;Welcome to Java!);  
    }  
}
```

- A) a compile error
- B) a runtime error
- C) a logic error

Answer: A

Explanation: The closing quotation mark is missing in Welcome to Java!, which is a syntax error. The compiler reports the error that the quotation is not closed.

Section: 1.10 Programming Errors

3) The following code has _____.

```
public class Test {  
    public static void main(string[] args) {  
        System.out.println("Welcome to Java!");  
    }  
}
```

- A) a compile error
- B) a runtime error
- C) a logic error

Answer: A

Explanation: string should be spelled String with S in capital in line 2 "main(string[] args)". The compiler reports an error that string is not recognized.

Section: 1.10 Programming Errors