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# Chapter 1 Check Point Questions

## Section 1.2

**▼1.2.1**

What are hardware and software?

A computer is an electronic device that stores and processes data. A computer includes both hardware and software. In general, hardware is the physical aspect of the computer that can be seen, and software is the invisible instructions that control the hardware and make it work. The hardware of a computer consists of a CPU, cache, memory, hard disk, floppy disk, monitor, printer, and communication devices.

Hide Answer Read Answer

**▼1.2.2**

List five major hardware components of a computer.

Five major hardware components: CPU, Memory, Storage Devices, Input/Out Devices, and Communication Devices.

Hide Answer Read Answer

**▼1.2.3**

What does the acronym CPU stand for? What unit is used to measure CPU speed?

CPU stands for Central Processing Unit.
It is the brain of the computer. The unit of measurement of clock speed is the hertz (Hz), with 1 hertz equaling 1 pulse per second. The clock speed of a computer is usually stated in megahertz (MHz) (1 MHz is 1 million Hz).

Hide Answer Read Answer

**▼1.2.4**

What is a bit? What is a byte?

A bit is a binary digit 0 or 1. A byte is a sequence of 8 bits.

Hide Answer Read Answer

**▼1.2.5**

What is memory for? What does RAM stand for? Why is memory called RAM?

Memory is like a work area for programs. Before a program is executed, it is brought into the memory. RAM stands for random-access memory. It is called RAM because a memory cell can be accessed directly.

Hide Answer Read Answer

**▼1.2.6**

What unit is used to measure memory size? What unit is used to measure disk size?

Memory size is measured in bytes.
Disk size is measured in bytes.

Hide Answer Read Answer

### ▼1.2.7

What is the primary difference between memory and a storage device?

Memory is volatile, because information is lost when the power is turned off. Programs and data are permanently stored on storage devices and are moved, when the computer actually uses them, to memory, which is much faster than storage devices.

Hide Answer Read Answer

## Section 1.3

### ▼1.3.1

What language does the CPU understand?

The machine language is a set of primitive instructions built into every computer. This is the language understood by a computer and executed by a computer.

Hide Answer Read Answer

### ▼1.3.2

What is an assembly language? What is an assembler?

Assembly language is a low-level programming language in which a mnemonic is used to represent each of the machine language instructions.
Assembler is a software that translates assembly language into machine language.

Hide Answer Read Answer

### ▼1.3.3

What is a high-level programming language? What is a source program?

The high-level languages are English-like and easy to learn and program.
The program written in a programming language is called a source program.

Hide Answer Read Answer

### ▼1.3.4

What is an interpreter? What is a compiler?

An interpreter is a software that reads one statement from the source code, translates it to the machine code or virtual machine code, and then executes it right away.
A compiler is a software that translates a program in high-level language into machine language code.

Hide Answer Read Answer

### ▼1.3.5

What is the difference between an interpreted language and a compiled language?

An interpreter reads one statement from the source code, and translates it to the machine code or virtual machine code, and then executes it right away. A compiler translates the entire source code into a machine code file, and the machine code file is then executed.

Hide Answer Read Answer

## Section 1.4

### ▼1.4.1

What is an operating system? List some popular operating systems.

The operating system (OS) is a program that manages and controls a computer's activities. The examples of OS are Windows 98, NT, 2000, XP, or ME. Windows. Application programs such as an Internet browser and a word processor run on top of an operating system.

Hide Answer Read Answer

### ▼1.4.2

What are the major responsibilities of an operating system?

Major responsibilities:
a. Controlling and monitoring system activities
b. Allocating and assigning system resources
c. Scheduling operations

Hide Answer Read Answer

### ▼1.4.3

What are multiprogramming, multithreading, and multiprocessing?

Multiprogramming allows multiple programs to run simultaneously by sharing the CPU. Multithreading allows concurrency within a program, so that its subtasks can run at the same time. Multiprocessing, or parallel processing, uses two or more processors together to perform a task.

Hide Answer Read Answer

## Section 1.5

### ▼1.5.1

Who invented Java? Which company owns Java now?

Java was invented by a team led by James Gosling at Sun Microsystems in 1991. Originally called Oak, it became Java in 1995 when it was redesigned for developing Internet applications. Oracle bought Sun and Oracle now owns Java.

Hide Answer Read Answer

### ▼1.5.2

What is a Java applet?

Java applet is a special program that runs from a Web browser. Due to security reasons, applets are no longer allowed to run from Web browsers.

Hide Answer Read Answer

### ▼1.5.3

What programming language does Android use?

Android uses the Java programming language.

Hide Answer Read Answer

## Section 1.6

### ▼1.6.1

What is the Java language specification?

The Java language specification specifies the syntax for the Java language.

Hide Answer Read Answer

### ▼1.6.2

What does JDK stand for? What does JRE stand for?

JDK stands for Java Development Toolkit. JRE stands for Java Runtime Environment.

Hide Answer Read Answer

### ▼1.6.3

What does IDE stand for?

IDE stands integrated development environment.

Hide Answer Read Answer

### ▼1.6.4

Are tools like NetBeans and Eclipse different languages from Java, or are they dialects or extensions of Java?

NetBeans and Eclipse are not programming languages, nor dialects, nor extensions of Java. They are Java development tools.

Hide Answer Read Answer

## Section 1.7

### ▼1.7.1

What is a keyword? List some Java keywords.

Keywords have specific meaning to the compiler and cannot be used for other purposes in the program such as variables or method names. Examples of keywords are class, static, and void.

Hide Answer Read Answer

### ▼1.7.2

Is Java case sensitive? What is the case for Java keywords?

Java source code is case sensitive. Java keywords are always in lowercase.

Hide Answer Read Answer

### ▼1.7.3

What is a comment? Is the comment ignored by the compiler? How do you denote a comment line and a comment paragraph?

Comments are used to document what a program is for and how a program is constructed. Comments help the programmers or users to communicate and understand the program. Comments are not programming statements and are ignored by the compiler. In Java,

comments are preceded by two forward slashes (//) in a line or enclosed between /* and */ in multiple lines. When the compiler sees //, it ignores all text after // in the same line. When it sees /*, it scans for the next */ and ignores any text between /* and */.

Hide Answer Read Answer

**▼1.7.4**

What is the statement to display a string on the console?

System.out.println(string);

Hide Answer Read Answer

**▼1.7.5**

Show the output of the following code:

```
public class Test {
  public static void main(String[] args) {
    System.out.println("3.5 * 4 / 2 - 2.5 is ");
    System.out.println(3.5 * 4 / 2 - 2.5);
  }
}
```

Output is

```
3.5 * 4 / 2 - 2.5 is
4.5
```

Hide Answer Read Answer

## Section 1.8

**▼1.8.1**

What is the Java source filename extension, and what is the Java bytecode filename extension?

The source file extension is .java and the bytecode file extension is .class.

Hide Answer Read Answer

**▼1.8.2**

What are the input and output of a Java compiler?

The input of a Java compiler is a Java source code file and the output is a Java class file.

Hide Answer Read Answer

**▼1.8.3**

What is the command to compile a Java program?

javac is the JDK command to compile a program.

Hide Answer Read Answer

**▼1.8.4**

What is the command to run a Java program?

java is the JDK command to run a program.

Hide Answer Read Answer

▼ **1.8.5**

What is the JVM?

JVM is the Java virtual machine that runs a Java program.

Hide Answer Read Answer

▼ **1.8.6**

Can Java run on any machine? What is needed to run Java on a computer?

Java can run on any machine with a JVM.

Hide Answer Read Answer

▼ **1.8.7**

If a NoClassDefFoundError occurs when you run a program, what is the cause of the error?

Java interpreter cannot find the .class file. Make sure you placed the file in the right place, and invoked java command with appropriate package name.

Hide Answer Read Answer

▼ **1.8.8**

If a NoSuchMethodError occurs when you run a program, what is the cause of the error?

The class does not have a main method, or the signature of the main method is incorrect.

Hide Answer Read Answer

## Section 1.9

▼ **1.9.1**

Reformat the following program according to the programming style and documentation guidelines. Use the end-of-line brace style.

```
public class Test
{
  // Main method
  public static void main(String[] args) {
  /** Display output */
  System.out.println("Welcome to Java");
  }
}
```

```
public class Test {
  // Main method
  public static void main(String[] args) {
    /** Display outpput */
    System.out.println("Welcome to Java");
  }
}
```

Hide Answer Read Answer

Section 1.10

### ▼1.10.1

What are syntax errors (compile errors), runtime errors, and logic errors?

Syntax errors are detected by compilers. Runtime errors occur during execution of the program. Logic errors results in incorrect results.

Hide Answer Read Answer

### ▼1.10.2

Give examples of syntax errors, runtime errors, and logic errors.

See the text.

Hide Answer Read Answer

### ▼1.10.3

If you forget to put a closing quotation mark on a string, what kind error will be raised?

Syntax error.

Hide Answer Read Answer

### ▼1.10.4

If your program needs to read integers, but the user entered strings, an error would occur when running this program. What kind of error is this?

Runtime error.

Hide Answer Read Answer

### ▼1.10.5

Suppose you write a program for computing the perimeter of a rectangle and you mistakenly write your program so that it computes the area of a rectangle. What kind of error is this?

Logic error.

Hide Answer Read Answer

### ▼1.10.6

Identify and fix the errors in the following code:

```
1  public class Welcome {
2    public void Main(String[] args) {
3      System.out.println('Welcome to Java!');
4    }
5  )
```

Line 2. Main should be main.
Line 2. static is missing.
Line 3: Welcome to Java! should be enclosed inside double quotation marks.
Line 5: The last ) should be }.

Hide Answer Read Answer