

Descriptive Question

Descriptive Question Advanced Java

1. What do you mean by Generic?

J2SE 5.0 provides *compile-time* type safety with the Java Collections framework through *generics*. This allows us to specify, at compile-time, the types of objects we want to store in a Collection. So we don't need to cast anything.

2. What is a Thread?

A *thread* is the flow of execution of a single set of program statements. The *Thread Class* allows *multitasking* (ie running several tasks at the same time) by instantiating (ie creating) many threaded objects, each with their own run time characteristics.

3. What are the two ways of creating thread?

Ans) There are two ways to create a new thread.

a) **Extend the Thread**

b) **Implements the Runnable interface** e.g.

4. What is the difference between wait() and sleep()?

Ans) 1) wait() is a method of Object class. sleep() is a method of Thread class.

2) sleep() allows the thread to go to sleep state for x milliseconds. When a thread goes into sleep state it doesn't release the lock. wait() allows thread to release the lock and goes to suspended state. The thread is only active when a notify() or notifyAll() method is called for the same object.

5. What is the use of synchronized keyword?

Ans) synchronized keyword can be applied to static/non-static methods or a block of code. Only one thread at a time can access synchronized methods and if there are multiple threads trying to access the same method then other threads have to wait for the execution of method by one thread.

6. What is deadlock?

When two threads are waiting for each other and can't proceed until the first thread obtains a lock on the other thread or vice versa, the program is said to be in a deadlock.

7. What is difference between ArrayList and vector?

Ans:)

1) Synchronization - ArrayList is not thread-safe whereas Vector is thread-safe. In Vector class each method like add(), get(int i) is surrounded with a synchronized block and thus making Vector class thread-safe.

2) Data growth - Internally, both the ArrayList and Vector hold onto their contents using an Array. When an element is inserted into an ArrayList or a Vector, the object will need to expand its internal array if it runs out of room. A Vector defaults to doubling the size of its array, while the ArrayList increases its array size by 50 percent.

8. Difference between Comparable and Comparator Interface?

Comparable	Comparator
Comparable is a member of java.lang package.	Comparator is a member of java.util.package.
Sorts the objects in natural order.	Sorts the objects in custom order.
Its method is compareTo(object)	Its method is compare(object1, object2)

9. What is stream?

A stream is a flow of data from a source to a sink.

Sources and sinks are also called input streams and output streams.

Java technology supports two types of data in stream: raw bytes or Unicode character.

10. What is an event handler?

An event handler is a part of a computer program created to tell the program how to act in response to a specific event.

Three Steps of Event Handling

- | | |
|------------------------------|---------------------------------------|
| 1 Prepare to accept events | import package java.awt.event |
| 2 Start listening for events | include appropriate methods |
| 3 Respond to events | implement appropriate abstract method |

11. What is adapter class?

Same as question 30

12. What is stream? How you classify them?

A stream is a sequence of data flowing from a source to a destination. IO streams can be connected to a wide variety of data sources and destinations. The connection between a program and a data source or destination is called a **stream**.

The java.io package contains the Java I/O stream classes. These classes are classified as follows

- Character and Byte Streams
 - Character vs. Byte
- Input and Output Streams
 - Based on source or destination
- Node and Filter Streams
 - Whether the data on a stream is manipulated or transformed or not

13. What is Serialization and deserialization?

Serialization is the process of transforming an in-memory object to a byte stream.

Deserialization is the inverse process of reconstructing an object from a byte stream to the same state in which the object was previously serialized.

14. Write the lifecycle method of a thread

void start()

- Creates a new thread and makes it runnable
- This method can be called only once

void run()

- The new thread begins its life inside this method

void stop()

- The thread is being terminated

The **wait()**

wait() causes the current thread to wait until another thread invokes the **notify()** method or the **notifyAll()** method for this object

notify() wakes up the first thread that called **wait()** on the same object.

notifyAll() wakes up all the threads that called **wait()** on the same object. The highest priority thread will run first

15. What do you mean by MVC?

MVC stands for Model-View-Controller. It's a way of designing an application that separates data access, business logic and the graphical user interface. The goal is to make the application more maintainable. The Model refers to the data and how it is handled, the View presents the data to the user and the Controller interprets the user's interactions with the View into changes to the Model. In practice the Java implementation of this design focuses on separating the data access and business logic from the GUI.

16. What is look and Feel? Write the look default class the look and feel

"Look" refers to the appearance of GUI widgets (more formally, JComponents) and "feel" refers to the way the widgets behave.

Look and feel is a term used in respect of a graphical user interface and comprises aspects of its design, including elements such as colors, shapes, layout, and typefaces (the "look"), as well as the behavior of dynamic elements such as buttons, boxes, and menus (the "feel").

Default look and feel class is `javax.swing.plaf.metal.MetalLookAndFeel`

17. What are the types of Events?

There are twelve types of event are used in Java AWT. These are as follows:

1. `ActionEvent`
2. `AdjustmentEvent`
3. `ComponentEvent`
4. `ContainerEvent`
5. `FocusEvent`
6. `InputEvent`
7. `ItemEvent`
8. `KeyEvent`
9. `MouseEvent`
10. `PaintEvent`
11. `TextEvent`
12. `WindowEvent`

18. What are the Event Listeners?

Event Listeners are generally interfaces. Every **listener interface** has at least one event type. Moreover, it also contains a method for each type of event the event class incorporates. For example, the **KeyListener** has three methods, one for each type of event that the **KeyEvent** has: **keyTyped()**, **keyPressed()**, and **keyReleased()**.

19. What are the daemon threads?

Ans) Daemon threads are service provider threads that run in the background; these are not used to run the application code generally. When all user threads (non-daemon threads) complete their execution, the JVM exits the application whatever may be the state of the daemon threads. The JVM does not wait for the daemon threads to complete their execution if all user threads have completed their execution.

Example of the daemon thread is the Garbage Collector run by the JVM to reclaim the unused memory by the application.

20. What are the differences between Swing and AWT?

AWT is heavy-weight components, but Swing is light-weight components. AWT is OS dependent because it uses native components, but Swing components are OS independent. We can change the look and feel in Swing which is not possible in AWT. Swing takes less memory compared to AWT. For drawing AWT uses screen rendering where Swing uses double buffering.

21. What is the difference between yield() and sleep()?

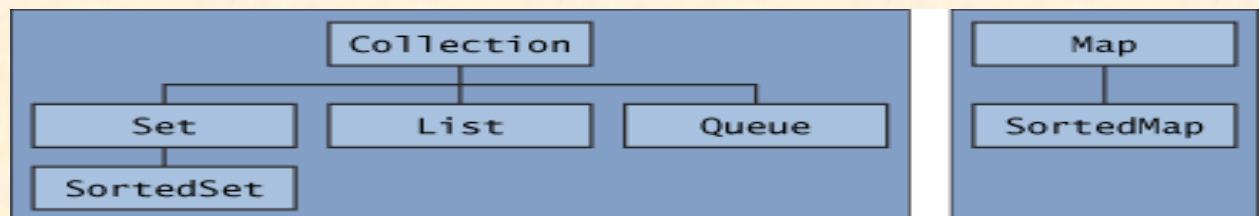
Ans) yield() allows the current thread to release its lock from the object and the scheduler gives the lock of the object to the other thread with same priority.

sleep() allows the thread to go to sleep state for x milliseconds. When a thread goes into sleep state it doesn't release the lock.

22. What is collection? Write the type of collection?

A collection is a container that groups similar elements into an entity. In Java, Collection is an interface that represents different types of collections, such as sets, lists, and maps. These interfaces form the basis of the framework.

The core Collection interface encapsulates different types of collections.

**23. What is buffer Stream? Why do you use?**

- An unbuffered I/O means each read or write request is handled directly by the underlying OS— This can make a program much less efficient, since each such request often triggers disk access, network activity, or some other operation that is relatively expensive. To reduce this kind of overhead, the Java platform implements buffered I/O streams

- Buffered input streams read data from a memory area known as a buffer; the native input API is called only when the buffer is empty

- Similarly, buffered output streams write data to a buffer, and the native output API is called only when the buffer is full.

24. What is different between JFrame and JWindow?

JFrame:

A resizable, movable window with title bar and close button. Usually it contains JPanels. The entire application is usually a JFrame.

JWindow:

A window without a title bar or move controls. The program can move and resize it, but the user cannot. It has no border at all. It optionally has a parent JFrame

25. What is layout manager?

A layout manager is an object that implements the LayoutManager interface and determines the size and position of the components within a container. Although components can provide size and alignment hints, a container's layout manager has the final say on the size and position of the components within the container.

The different layouts available are FlowLayout, BorderLayout, CardLayout, GridLayout, GridBagLayout, BoxLayout and SpringLayout

26. What is command line Argument?

Command line arguments allow the user to specify the configuration information for the application. These arguments are strings.

When a java technology program is launched from a terminal window, we can provide the program with zero or more command-line arguments.

```
public class Echo {  
    public static void main (String[] args) {  
        for (String s: args) {  
            System.out.println(s);  
        }  
    }  
}  
command prompt> Echo.java Drink Hot Java
```

27. What is thread scheduler?

Sharing the processor resource among threads is known as *thread scheduling*. That portion of the JVM or operating system that performs thread scheduling is a *thread scheduler*. The Java thread scheduler is very simple. All threads have a priority value which can be changed dynamically by calls to the threads setPriority() method.

28. Write down the basic features of Swing?

Lightweight. Not built on native window-system windows.

Much bigger set of built-in controls. Trees, image buttons, tabbed panes, sliders, toolbars, color choosers, tables, text areas to display HTML or RTF, etc.

Much more customizable. Can change border, text alignment, or add image to almost any control. Can customize how minor features are drawn. Can separate internal representation from visual appearance.

"Pluggable" look and feel. Can change look and feel at runtime, or design own look and feel.

Many miscellaneous new features. Double-buffering built in, tool tips, dockable tool bars, keyboard accelerators, custom cursors, etc.

29. What do you know about Container and Component?

Container: These are the basis on which all the other windows are built. They manage the child Components and LayoutManager. Derived from Component

Component: It is an abstract class underlying JPanel, JFrame etc. Derived from Object

30. What is the advantage of adapter class? Write down three adapter class.

Java Language rule are such that we must implement all the methods of an interface even if we put them into empty braces.i.e. we must override all the methods declared in the interface.

But we can create our classes as subclasses of one of the adapter classes, then we need to override only some of the methods we need. i.e, An adapter classes provide empty implementation of all methods declared in an ActionListener interface.

List of some Adapter class:

- ☐ MouseAdapter
- ☐ MouseMotionAdapter
- ☐ WindowAdapter

31. Difference between wait and sleep?

Let's see the important differences between wait and sleep methods.

wait()	sleep()
1. wait() method releases the lock	1. sleep() method doesn't release the lock.
2. is the method of Object class	2. is the method of Thread class
3. is the non-static method	3. is the static method
4. should be notified by notify() or notifyAll() methods	4. After the specified amount of time, sleep is completed.