FREQUENTLY ASKED JAVA QUESTIONS

1.what  is a transient variable?

A transient variable is a variable that may not be serialized.

2.which containers use a border Layout as their default layout?

The window, Frame and Dialog classes use a border layout as their default layout.

3.Why do threads block on I/O?

Threads block on i/o (that is enters the waiting state) so that other threads

may execute while the i/o

Operation is performed.

4. How are Observer and Observable used?

Objects that subclass the Observable class maintain a list of observers. When an Observable object is updated it invokes the update() method of each of its observers to notify the observers that it has changed state. The Observer interface is implemented by objects that observe Observable objects.

5. What is synchronization and why is it important?

With respect to multithreading, synchronization is the capability to control the access of multiple threads to shared resources. Without synchronization, it is possible for one thread to modify a shared object while another thread is in the process of using or updating that object’s value. This often leads to significant errors.

6. Can a lock be acquired on a class?

Yes, a lock can be acquired on a class. This lock is acquired on the class’s Class object.

7. What’s new with the stop(), suspend() and resume() methods in JDK 1.2?

The stop(), suspend() and resume() methods have been deprecated in JDK 1.2.

8. Is null a keyword?

The null value is not a keyword.

9. What is the preferred size of a component?

The preferred size of a component is the minimum component size that will allow the component to display normally.

10. What method is used to specify a container’s layout?

The setLayout() method is used to specify a container’s layout.

11. Which containers use a FlowLayout as their default layout?

The Panel and Applet classes use the FlowLayout as their default layout.

12. What state does a thread enter when it terminates its processing?

When a thread terminates its processing, it enters the dead state.

13. What is the Collections API?

The Collections API is a set of classes and interfaces that support operations on collections of objects.

14. Which characters may be used as the second character of an identifier,but not as the first character of an identifier?

The digits 0 through 9 may not be used as the first character of an identifier but they may be used after the first character of an identifier.

15. What is the List interface?

The List interface provides support for ordered collections of objects.

16. How does Java handle integer overflows and underflows?

It uses those low order bytes of the result that can fit into the size of the type allowed by the operation.

17. What is the Vector class?

The Vector class provides the capability to implement a growable array of

objects

18. What modifiers may be used with an inner class that is a member of an outerclass?

A (non-local) inner class may be declared as public, protected, private, static, final, or abstract.

19. What is an Iterator interface?

The Iterator interface is used to step through the elements of a Collection.

20. What is the difference between the >> and >>> operators?

The >> operator carries the sign bit when shifting right. The >>> zero-fills bits that have been shifted out.

21. Which method of the Component class is used to set the position andsize of a component?

setBounds()

22. How many bits are used to represent Unicode, ASCII, UTF-16, and UTF-8characters?

Unicode requires 16 bits and ASCII require 7 bits. Although the ASCII character set uses only 7 bits, it is usually represented as 8 bits. UTF-8 represents characters using 8, 16, and 18 bit patterns. UTF-16 uses 16-bit and larger bit patterns.

23What is the difference between yielding and sleeping?

When a task invokes its yield() method, it returns to the ready state. When a task invokes its sleep() method, it returns to the waiting state.

24. Which java.util classes and interfaces support event handling?

The EventObject class and the EventListener interface support event processing.

25. Is sizeof a keyword?

The sizeof operator is not a keyword.

26. What are wrapped classes?

Wrapped classes are classes that allow primitive types to be accessed as objects.

27. Does garbage collection guarantee that a program will not run out ofmemory?

Garbage collection does not guarantee that a program will not run out ofmemory. It is possible for programs to use up memory resources faster than they are garbage collected. It is also possible for programs to create objects that are not subject to garbage collection

28. What restrictions are placed on the location of a package statement within a source code file?

A package statement must appear as the first line in a source code file (excluding blank lines and comments).

29. Can an object’s finalize() method be invoked while it is reachable?

An object’s finalize() method cannot be invoked by the garbage collector while the object is still reachable. However, an object’s finalize() method may be invoked by other objects.

30. What is the immediate superclass of the Applet class?

Panel

31. What is the difference between preemptive scheduling and time slicing?

Under preemptive scheduling, the highest priority task executes until it enters the waiting or dead states or a higher priority task comes into existence.Under time slicing, a task executes for a predefined slice of time and thenreenters the pool of ready tasks. The scheduler then determines which task should execute next, based on priority and other factors.

32. Name three Component subclasses that support painting.

The Canvas, Frame, Panel, and Applet classes support painting.

33. What value does readLine() return when it has reached the end of a file?

The readLine() method returns null when it has reached the end of a file.

34. What is the immediate superclass of the Dialog class?

Window

35. What is clipping?

Clipping is the process of confining paint operations to a limited area or shape.

36. What is a native method?

A native method is a method that is implemented in a language other than Java.

37. Can a for statement loop indefinitely?

Yes, a for statement can loop indefinitely. For example, consider the following: for(;;) ;

38. What are order of precedence and associativity, and how are they used?

Order of precedence determines the order in which operators are evaluated inexpressions. Associatity determines whether an expression is evaluatedleft-to-right or right-to-left

39. When a thread blocks on I/O, what state does it enter?

A thread enters the waiting state when it blocks on I/O.

40. To what value is a variable of the String type automatically initialized?

The default value of an String type is null.

41. What is the catch or declare rule for method declarations?

If a checked exception may be thrown within the body of a method, the method must either catch the exception or declare it in its throws clause.

42. What is the difference between a MenuItem and a CheckboxMenuItem?

The CheckboxMenuItem class extends the MenuItem class to support a menu item that may be checked or unchecked.

43. What is a task’s priority and how is it used in scheduling?

A task’s priority is an integer value that identifies the relative order in which it should be executed with respect to other tasks. The scheduler attempts to schedule higher priority tasks before lower priority tasks.

44. What class is the top of the AWT event hierarchy?

The java.awt.AWTEvent class is the highest-level class in the AWT event-class hierarchy.

45. When a thread is created and started, what is its initial state?

A thread is in the ready state after it has been created and started.

46. Can an anonymous class be declared as implementing an interface and extending a class?

An anonymous class may implement an interface or extend a superclass, but may not be declared to do both.

47. What is the range of the short type?

The range of the short type is -(2^15) to 2^15 - 1.

48. What is the range of the char type?

The range of the char type is 0 to 2^16 - 1.

49. In which package are most of the AWT events that support theevent-delegation model defined?

Most of the AWT-related events of the event-delegation model are defined in the java.awt.event package. The AWTEvent class is defined in the java.awt package.

50. What is the immediate superclass of Menu?

MenuItem

51. What is the purpose of finalization?

The purpose of finalization is to give an unreachable object the opportunity to perform any cleanup processing before the object is garbage collected.

52. Which class is the immediate superclass of the MenuComponent class.

Object

53. What invokes a thread’s run() method?

After a thread is started, via its start() method or that of the Thread class, the JVM invokes the thread’s run() method when the thread is initially executed.

54. What is the difference between the Boolean & operator and the && operator?

If an expression involving the Boolean & operator is evaluated, both operands are evaluated. Then the & operator is applied to the operand. When an expression involving the && operator is evaluated, the first operand is evaluated. If the first operand returns a value of true then the second operand is evaluated. The && operator is then applied to the first and second operands.  If the first operand evaluates to false, the evaluation of the second operand is skipped.

55. Name three subclasses of the Component class.

Box.Filler, Button, Canvas, Checkbox, Choice, Container, Label, List,Scrollbar, or TextComponent

56. What is the GregorianCalendar class?

The GregorianCalendar provides support for traditional Western calendars.

57. Which Container method is used to cause a container to be laid out and redisplayed?

validate()

58. What is the purpose of the Runtime class?

The purpose of the Runtime class is to provide access to the Java runtime system.

59. How many times may an object’s finalize() method be invoked by the garbage collector?

An object’s finalize() method may only be invoked once by the garbage collector.

60. What is the purpose of the finally clause of a try-catch-finally statement?

The finally clause is used to provide the capability to execute code no matter whether or not an exception is thrown or caught.

61. What is the argument type of a program’s main() method?

A program’s main() method takes an argument of the String[] type.

62. Which Java operator is right associative?

The = operator is right associative.

63. What is the Locale class?

The Locale class is used to tailor program output to the conventions of a particular geographic, political, or cultural region.

64. Can a double value be cast to a byte?

Yes, a double value can be cast to a byte.

65. What is the difference between a break statement and a continue statement?

A break statement results in the termination of the statement to which it applies (switch, for, do, or while). A continue statement is used to end the current loop iteration and return control to the loop statement.

66. What must a class do to implement an interface?

It must provide all of the methods in the interface and identify the interface in its implements clause.

67. What method is invoked to cause an object to begin executing as a separate thread?

The start() method of the Thread class is invoked to cause an object to begin executing as a separate thread.

68. Name two subclasses of the TextComponent class.

TextField and TextArea

69. What is the advantage of the event-delegation model over the earlier event-inheritance model?

The event-delegation model has two advantages over the event-inheritance model.First, it enables event handling to be handled by objects other than the ones that generate the events (or their containers). This allows a clean separation between a component’s design and its use. The other advantage of the event-delegation model is that it performs much better in applications where many events are generated. This performance improvement is due to the fact that the event-delegation model does not have to repeatedly process unhandled events, as is the case of the event-inheritance model.

70. Which containers may have a MenuBar?

Frame

71. How are commas used in the intialization and iteration  parts of a for statement?

Commas are used to separate multiple statements within the initialization and iteration parts of a for statement.

72. What is the purpose of the wait(), notify(), and notifyAll() methods?

The wait(),notify(), and notifyAll() methods are used to provide an efficient way for threads to wait for a shared resource. When a thread executes an object’s wait() method, it enters the waiting state. It only enters the ready state after another thread invokes the object’s notify() or notifyAll() methods.

73. What is an abstract method?

An abstract method is a method whose implementation is deferred to a subclass.

74. How are Java source code files named?

A Java source code file takes the name of a public class or interface that isdefined within the file. A source code file may contain at most one public class or interface. If a public class or interface is defined within a source code file, then the source code file must take the name of the public class or interface. If no public class or interface is defined within a source code file, then the file must take on a name that is different than its classes and interfaces. Source code files use the .java extension.

75. What is the relationship between the Canvas class and the Graphics class?

A Canvas object provides access to a Graphics object via its paint() method.

76. What are the high-level thread states?

The high-level thread states are ready, running, waiting, and dead.

77. What value does read() return when it has reached the end of a file?

The read() method returns -1 when it has reached the end of a file.

78. Can a Byte object be cast to a double value?

No, an object cannot be cast to a primitive value.

79. What is the difference between a static and a non-static inner class?

A non-static inner class may have object instances that are associated with instances of the class’s outer class. A static inner class does not have any object instances.

80. What is the difference between the String and StringBuffer classes?

String objects are constants. StringBuffer objects are not.

81. If a variable is declared as private, where may the variable be accessed?

A private variable may only be accessed within the class in which it is declared.

82. What is an object’s lock and which object’s have locks?

An object’s lock is a mechanism that is used by multiple threads to obtain synchronized access to the object. A thread may execute a synchronized method of an object only after it has acquired the object’s lock. All objects and classes have locks. A class’s lock is acquired on the class’s Class object.

83. What is the Dictionary class?

The Dictionary class provides the capability to store key-value pairs.

84. How are the elements of a BorderLayout organized?

The elements of a BorderLayout are organized at the borders (North, South, East, and West) and the center of a container.

85. What is the % operator?

It is referred to as the modulo or remainder operator. It returns the remainder of dividing the first operand by the second operand.

86. When can an object reference be cast to an interface reference?

An object reference be cast to an interface reference when the object implements the referenced interface.

87. What is the difference between a Window and a Frame?

The Frame class extends Window to define a main application window that can have a menu bar.

88. Which class is extended by all other classes?

The Object class is extended by all other classes.

89. Can an object be garbage collected while it is still reachable?

A reachable object cannot be garbage collected. Only unreachable objects may be garbage collected..

90. Is the ternary operator written x : y ? z or x ? y : z ?

It is written x ? y : z.

91. What is the difference between the Font and FontMetrics classes?

The FontMetrics class is used to define implementation-specific properties, such as ascent and descent, of a Font object.

92. How is rounding performed under integer division?

The fractional part of the result is truncated. This is known as rounding toward zero.

93. What happens when a thread cannot acquire a lock on an object?

If a thread attempts to execute a synchronized method or synchronized statement and is unable to acquire an object’s lock, it enters the waiting state until the lock becomes available.

94. What is the difference between the Reader/Writer class hierarchy and the

InputStream/OutputStream class hierarchy?

The Reader/Writer class hierarchy is character-oriented, and the InputStream/OutputStream class hierarchy is byte-oriented.

95. What classes of exceptions may be caught by a catch clause?

A catch clause can catch any exception that may be assigned to the Throwable type. This includes the Error and Exception types.

96. If a class is declared without any access modifiers, where may the class be accessed?

A class that is declared without any access modifiers is said to have package access. This means that the class can only be accessed by other classes and interfaces that are defined within the same package.

97. What is the SimpleTimeZone class?

The SimpleTimeZone class provides support for a Gregorian calendar.

98. What is the Map interface?

The Map interface replaces the JDK 1.1 Dictionary class and is used associate keys with values.

99. Does a class inherit the constructors of its superclass?

A class does not inherit constructors from any of its superclasses.

100. For which statements does it make sense to use a label?

The only statements for which it makes sense to use a label are those statements that can enclose a break or continue statement.

101. What is the purpose of the System class?

The purpose of the System class is to provide access to system resources.

102. Which TextComponent method is used to set a TextComponent to the read-only state?

setEditable()

103. How are the elements of a CardLayout organized?

The elements of a CardLayout are stacked, one on top of the other, like a deck of cards.

104. Is &&= a valid Java operator?

No, it is not.

105. Name the eight primitive Java types.

The eight primitive types are byte, char, short, int, long, float, double, and boolean.

106. Which class should you use to obtain design information about an object?

The Class class is used to obtain information about an object’s design.

107. What is the relationship between clipping and repainting?

When a window is repainted by the AWT painting thread, it sets the clipping regions to the area of the window that requires repainting.

108. Is “abc” a primitive value?

The String literal “abc” is not a primitive value. It is a String object.

109. What is the relationship between an event-listener interface and an event-adapter class?

An event-listener interface defines the methods that must be implemented by an event handler for a particular kind of event. An event adapter provides a default implementation of an event-listener interface.

110. What restrictions are placed on the values of each case of a switch statement?

During compilation, the values of each case of a switch statement must evaluate to a value that can be promoted to an int value.

111. What modifiers may be used with an interface declaration?

An interface may be declared as public or abstract.

112. Is a class a subclass of itself?

A class is a subclass of itself.

113. What is the highest-level event class of the event-delegation model?

The java.util.EventObject class is the highest-level class in the event-delegation class hierarchy.

114. What event results from the clicking of a button?

The ActionEvent event is generated as the result of the clicking of a button.

115. How can a GUI component handle its own events?

A component can handle its own events by implementing the required event-listener interface and adding itself as its own event listener.

116. What is the difference between a while statement and a do  statement?

A while statement checks at the beginning of a loop to see whether the next loop iteration should occur. A do statement checks at the end of a loop to see whether the next iteration of a loop should occur. The do statement will always execute the body of a loop at least once.

117. How are the elements of a GridBagLayout organized?

The elements of a GridBagLayout are organized according to a grid. However, the elements are of different sizes and may occupy more than one row or column of the grid. In addition, the rows and columns may have different sizes.

118. What advantage do Java’s layout managers provide over traditional windowing systems?

Java uses layout managers to lay out components in a consistent manner across all windowing platforms. Since Java’s layout managers aren’t tied to absolute sizing and positioning, they are able to accomodate platform-specific differences among windowing systems.

119. What is the Collection interface?

The Collection interface provides support for the implementation of a mathematical bag - an unordered collection of objects that may contain duplicates.

120. What modifiers can be used with a local inner class?

A local inner class may be final or abstract.

121. What is the difference between static and non-static variables?

A static variable is associated with the class as a whole rather than with specific instances of a class. Non-static variables take on unique values with each object instance.

122. What is the difference between the paint() and repaint() methods?

The paint() method supports painting via a Graphics object. The repaint() method is used to cause paint() to be invoked by the AWT painting thread.

123. What is the purpose of the File class?

The File class is used to create objects that provide access to the files and directories of a local file system.

124. Can an exception be rethrown?

Yes, an exception can be rethrown.

125. Which Math method is used to calculate the absolute value of a number?

The abs() method is used to calculate absolute values.

126. How does multithreading take place on a computer with a single CPU?

The operating system’s task scheduler allocates execution time to multiple tasks. By quickly switching between executing tasks, it creates the impression that tasks execute sequentially.

127. When does the compiler supply a default constructor for a class?

The compiler supplies a default constructor for a class if no other constructors are provided.

128. When is the finally clause of a try-catch-finally statement executed?

The finally clause of the try-catch-finally statement is always executed unless the thread of execution terminates or an exception occurs within the execution of the finally clause.

129. Which class is the immediate superclass of the Container class?

Component

130. If a method is declared as protected, where may the method be accessed?

A protected method may only be accessed by classes or interfaces of the same package or by subclasses of the class in which it is declared.

131. How can the Checkbox class be used to create a radio button?

By associating Checkbox objects with a CheckboxGroup.

132. Which non-Unicode letter characters may be used as the first character of an identifier?

The non-Unicode letter characters $ and \_ may appear as the first character of an identifier

133. What restrictions are placed on method overloading?

Two methods may not have the same name and argument list but different return types.

134. What happens when you invoke a thread’s interrupt method while it is sleeping or waiting?

When a task’s interrupt() method is executed, the task enters the ready state.  The next time the task enters the running state, an InterruptedException is thrown.

135. What is casting?

There are two types of casting, casting between primitive numeric types and casting between object references. Casting between numeric types is used to convert larger values, such as double values, to smaller values, such as byte values. Casting between object references is used to refer to an object by a compatible class, interface, or array type reference.

136. What is the return type of a program’s main() method?

A program’s main() method has a void return type.

137. Name four Container classes.

Window, Frame, Dialog, FileDialog, Panel, Applet, or ScrollPane

138. What is the difference between a Choice and a List?

A Choice is displayed in a compact form that requires you to pull it down to see the list of available choices. Only one item may be selected from a Choice.  A List may be displayed in such a way that several List items are visible. A List supports the selection of one or more List items.

139. What class of exceptions are generated by the Java run-time system?

The Java runtime system generates RuntimeException and Error exceptions.

140. What class allows you to read objects directly from a stream?

The ObjectInputStream class supports the reading of objects from input streams.

141. What is the difference between a field variable and a local variable?

A field variable is a variable that is declared as a member of a class. A local variable is a variable that is declared local to a method.

142. Under what conditions is an object’s finalize() method invoked by the garbage collector?

The garbage collector invokes an object’s finalize() method when it detects that the object has become unreachable.

143. How are this() and super() used with constructors?

this() is used to invoke a constructor of the same class. super() is used to invoke a superclass constructor.

144. What is the relationship between a method’s throws clause and the exceptions that can be thrown during the method’s execution?

A method’s throws clause must declare any checked exceptions that are not caught within the body of the method.

145. What is the difference between the JDK 1.02 event model and the event-delegation model introduced with JDK 1.1?

The JDK 1.02 event model uses an event inheritance or bubbling approach. In this model, components are required to handle their own events. If they do not handle a particular event, the event is inherited by (or bubbled up to) the component’s container. The container then either handles the event or it is bubbled up to its container and so on, until the highest-level container has been tried.

In the event-delegation model, specific objects are designated as event handlers for GUI components. These objects implement event-listener interfaces.The event-delegation model is more efficient than the event-inheritance model because it eliminates the processing required to support the bubbling of unhandled events.

146. How is it possible for two String objects with identical values not to be equal under the == operator?

The == operator compares two objects to determine if they are the same object in memory. It is possible for two String objects to have the same value, but located indifferent areas of memory.

147. Why are the methods of the Math class static?

So they can be invoked as if they are a mathematical code library.

148. What Checkbox method allows you to tell if a Checkbox is checked?

getState()

149. What state is a thread in when it is executing?

An executing thread is in the running state.

150. What are the legal operands of the instanceof operator?

The left operand is an object reference or null value and the right operand is a class, interface, or array type.

151. How are the elements of a GridLayout organized?

The elements of a GridBad layout are of equal size and are laid out using the squares of a grid.

152. What an I/O filter?

An I/O filter is an object that reads from one stream and writes to another, usually altering the data in some way as it is passed from one stream to another.

153. If an object is garbage collected, can it become reachable again?

Once an object is garbage collected, it ceases to exist.  It can no longer become reachable again.

154. What is the Set interface?

The Set interface provides methods for accessing the elements of a finite mathematical set. Sets do not allow duplicate elements.

155. What classes of exceptions may be thrown by a throw statement?

A throw statement may throw any expression that may be assigned to the Throwable type.

156. What are E and PI?

E is the base of the natural logarithm and PI is mathematical value pi.

157. Are true and false keywords?

The values true and false are not keywords.

158. What is a void return type?

A void return type indicates that a method does not return a value.

159. What is the purpose of the enableEvents() method?

The enableEvents() method is used to enable an event for a particular object.  Normally, an event is enabled when a listener is added to an object for a particular event. The enableEvents() method is used by objects that handle events by overriding their event-dispatch methods.

160. What is the difference between the File and RandomAccessFile classes?

The File class encapsulates the files and directories of the local file system.  The RandomAccessFile class provides the methods needed to directly access data contained in any part of a file.

161. What happens when you add a double value to a String?

The result is a String object.

162. What is your platform’s default character encoding?

If you are running Java on English Windows platforms, it is probably Cp1252. If you are running Java on English Solaris platforms, it is most likely 8859\_1..

163. Which package is always imported by default?

The java.lang package is always imported by default.

164. What interface must an object implement before it can be written to a

stream as an object?

An object must implement the Serializable or Externalizable interface before it can be written to a stream as an object.

165. How are this and super used?

this is used to refer to the current object instance. super is used to refer to the variables and methods of the superclass of the current object instance.

166. What is the purpose of garbage collection?

The purpose of garbage collection is to identify and discard objects that are no longer needed by a program so that their resources may be reclaimed and reused.

167. What is a compilation unit?

A compilation unit is a Java source code file.

168. What interface is extended by AWT event listeners?

All AWT event listeners extend the java.util.EventListener interface.

169. What restrictions are placed on method overriding?

Overridden methods must have the same name, argument list, and return type.The overriding method may not limit the access of the method it overrides.The overriding method may not throw any exceptions that may not be thrown by the overridden method.

170. How can a dead thread be restarted?

A dead thread cannot be restarted.

171. What happens if an exception is not caught?

An uncaught exception results in the uncaughtException() method of the thread’s ThreadGroup being invoked, which eventually results in the termination of the program in which it is thrown.

172. What is a layout manager?

A layout manager is an object that is used to organize components in a container.

173. Which arithmetic operations can result in the throwing of an ArithmeticException?

Integer / and % can result in the throwing of an ArithmeticException.

174. What are three ways in which a thread can enter the waiting state?

A thread can enter the waiting state by invoking its sleep() method, by blocking on I/O, by unsuccessfully attempting to acquire an object’s lock, or by invoking an object’s wait() method. It can also enter the waiting state by invoking its (deprecated) suspend() method.

175. Can an abstract class be final?

An abstract class may not be declared as final.

176. What is the ResourceBundle class?

The ResourceBundle class is used to store locale-specific resources that can be loaded by a program to tailor the program’s appearance to the particular locale in which it is being run.

177. What happens if a try-catch-finally statement does not have a catch clause to handle an exception that is thrown within the body of the try statement?

The exception propagates up to the next higher level try-catch statement (if any) or results in the program’s termination.

178. What is numeric promotion?

Numeric promotion is the conversion of a smaller numeric type to a larger numeric type, so that integer and floating-point operations may take place. In numerical promotion, byte, char, and short values are converted to int values. The int values are also converted to long values, if necessary. The long and float values are converted to double values, as required.

179. What is the difference between a Scrollbar and a ScrollPane?

A Scrollbar is a Component, but not a Container. A ScrollPane is a Container. A ScrollPane handles its own events and performs its own scrolling.

180. What is the difference between a public and a non-public class?

A public class may be accessed outside of its package. A non-public class may not be accessed outside of its package.

181. To what value is a variable of the boolean type automatically initialized?

The default value of the boolean type is false.

182. Can try statements be nested?

Try statements may be tested.

183. What is the difference between the prefix and postfix forms of the ++operator?

The prefix form performs the increment operation and returns the value of  the increment operation. The postfix form returns the current value all of the expression and then performs the increment operation on that value.

184. What is the purpose of a statement block?

A statement block is used to organize a sequence of statements as a single statement group.

185. What is a Java package and how is it used?

A Java package is a naming context for classes and interfaces. A package is used to create a separate name space for groups of classes and interfaces.  Packages are also used to organize related classes and interfaces into a single API unit and to control accessibility to these classes and interfaces.

186. What modifiers may be used with a top-level class?

A top-level class may be public, abstract, or final.

187. What are the Object and Class classes used for?

The Object class is the highest-level class in the Java class hierarchy. The Class class is used to represent the classes and interfaces that are loaded by a Java program.

188. How does a try statement determine which catch clause should be usedto handle an exception?

When an exception is thrown within the body of a try statement, the catch clauses of the try statement are examined in the order in which they appear.  The first catch clause that is capable of handling the exception is executed.The remaining catch clauses are ignored.

189. Can an unreachable object become reachable again?

An unreachable object may become reachable again. This can happen when the object’s finalize() method is invoked and the object performs an operation which causes it to become accessible to reachable objects.

190. When is an object subject to garbage collection?

An object is subject to garbage collection when it becomes unreachable to the program in which it is used.

191. What method must be implemented by all threads?

All tasks must implement the run() method, whether they are a subclass of Thread or implement the Runnable interface.

192. What methods are used to get and set the text label displayed by a Buttonobject?

getLabel() and setLabel()

193. Which Component subclass is used for drawing and painting?

Canvas

194. What are synchronized methods and synchronized statements?

Synchronized methods are methods that are used to control access to an object.  A thread only executes a synchronized method after it has acquired the lock for the method’s object or class. Synchronized statements are similar to synchronized methods. A synchronized statement can only be executed after a thread has acquired the lock for the object or class referenced in the synchronized statement.

195. What are the two basic ways in which classes that can be run as threads may be defined?

A thread class may be declared as a subclass of Thread, or it may implement the Runnable interface.

196. What are the problems faced by Java programmers who don’t use layout managers?

Without layout managers, Java programmers are faced with determining how their GUI will be displayed across multiple windowing systems and finding a common sizing  and positioning that will work within the constraints imposed by each windowing system.

197. What is the difference between an if statement and a switch statement?

The if statement is used to select among two alternatives. It uses a boolean expression to decide which alternative should be executed. The switch statement is used to select among multiple alternatives. It uses an int expression to determine which alternative should be executed.

198. What happens when you add a double value to a String?

The result is a String object.

199. What is the List interface?

The List interface provides support for ordered collections of objects.

**1)What is OOPs?**

**Ans: Object oriented programming organizes a program around its data,i.e.,objects and a set of well**

**defined interfaces to that data.An object-oriented program can be characterized as data controlling access to code.**

**2)what is the difference between Procedural and OOPs?**

**Ans: a) In procedural program, programming logic follows certain procedures and the instructions are executed one after another.**

**In OOPs program, unit of program is object, which is nothing but combination of data and code.**

**b) In procedural program,data is exposed to the whole program whereas in OOPs program,it is accessible with in the object and which in turn assures the security of the code.**

**3)What are Encapsulation, Inheritance and Polymorphism?**

**Ans: Encapsulation is the mechanism that binds together code and data it manipulates and keeps both safe from outside interference and misuse.**

**Inheritance is the process by which one object acquires the properties of another object.**

**Polymorphism is the feature that allows one interface to be used for general class actions.**

**4)What is the difference between Assignment and Initialization?**

**Ans: Assignment can be done as many times as desired whereas initialization can be done only once.**

**5)What are Class, Constructor and Primitive data types?**

**Ans: Class is a template for multiple objects with similar features and it is a blue print for objects.**

**It defines a type of object according to the data the object can hold and the operations the object can**

**perform.**

**Constructor is a special kind of method that determines how an object is initialized when created.**

**Primitive data types are 8 types and they are:**

**byte, short, int, long**

**float, double**

**boolean**

**char**

**6)What is an Object and how do you allocate memory to it?**

**Ans: Object is an instance of a class and it is a software unit that combines a structured set of data with**

**a set of  operations for inspecting and manipulating that data. When an object is created using**

**new operator, memory is allocated to it.**

**7)What is the difference between constructor and method?**

**Ans: Constructor will be automatically invoked when an object is created**

**whereas method has to be called explicitly.**

**8)What are methods and how are they defined?**

**Ans: Methods are functions that operate on instances of classes in which they are defined.**

**Objects can communicate with each other using methods and can call methods in other classes.**

**Method definition has four parts. They are name of the method, type of object or primitive type the method**

**returns, a list of parameters and the body of the method. A method's signature is a combination of the first**

**three parts mentioned above.**

**9)What is the use of bin and lib in JDK?**

**Ans: Bin contains all tools such as javac, appletviewer, awt tool, etc., whereas lib contains API and all packages.**

**10)What is casting?**

**Ans: Casting is used to convert the value of one type to another.**

**11)How many ways can an argument be passed to a subroutine and explain them?**

**Ans: An argument can be passed in two ways. They are passing by value and passing by reference.**

**Passing by value: This method copies the value of an argument into the formal parameter of the subroutine.**

**Passing by reference: In this method, a reference to an argument (not the value of the argument) is passed to the parameter.**

**12)What is the difference between an argument and a parameter?**

**Ans: While defining method, variables passed in the method are called parameters. While using those methods, values passed to those variables are called arguments.**

**13)What are different types of access modifiers?**

**Ans: public:  Any thing declared as public can be accessed from anywhere.**

**private: Any thing declared as private can't be seen outside of its               class.**

**protected: Any thing declared as protected can be accessed by classes in                 the same package and subclasses in the other packages.**

**Default modifier : Can be accessed only to classes in the same package.**

**14)What is final, finalize() and finally?**

**Ans: final : final keyword can be used for class, method and variables.**

**A final class cannot be subclassed and it prevents other programmers from subclassing a secure class to invoke insecure methods.**

**A final method can' t be overridden**

**A final variable can't change from its initialized value.**

**finalize( ) : finalize( ) method is used just before an object is destroyed and can be called just prior to garbage collecollection**

**finally : finally, a key word used in exception handling, creates a block of code that will be**

**executed after a try/catch block has completed and before the code following the try/catch block. The finally**

**block will execute whether or not an exception is thrown.**

**For example, if a method opens a file upon exit, then you will not want the code that closes the file**

**to be bypassed by the exception-handling mechanism. This finally keyword is designed to address this**

**contingency.**

**15)What is UNICODE?**

**Ans: Unicode is used for internal representation of characters and strings and it uses 16 bits to represent each other.**

**16)What is Garbage Collection and how to call it explicitly?**

**Ans: When an object is no longer referred to by any variable, java automatically reclaims memory used by that object. This is known as garbage collection.**

**System.gc() method may be used to call it explicitly.**

**17)What is  finalize() method ?**

**Ans: finalize () method is used just before an object is destroyed and can be called just prior to garbage collection.**

**18)What are Transient and Volatile Modifiers?**

**Ans: Transient: The transient modifier applies to variables only and it is not stored as part of its object's**

**Persistent state. Transient variables are not serialized.**

**Volatile: Volatile modifier applies to variables only and it tells the compiler that the variable**

**modified by volatile can be changed unexpectedly by other parts of the program.**

**19)What is method overloading and method overriding?**

**Ans: Method overloading: When a method in a class having the same method name with different arguments is said to be method overloading.**

**Method overriding : When a method in a class having the same method name with same arguments is said to be method overriding.**

**20)What is difference between overloading and overriding?**

**Ans: a) In overloading, there is a relationship between methods available in the same class whereas in**

**overriding, there is relationship between a superclass method and subclass method.**

**b) Overloading does not block inheritance from the superclass whereas overriding blocks inheritance from the superclass.**

**c) In overloading, separate methods share the same name whereas in overriding,subclass method replaces the superclass.**

**d) Overloading must have different method signatures whereas overriding  must have same signature.**

**21) What is meant by Inheritance and what are its advantages?**

**Ans: Inheritance is the process of inheriting all the features from a class. The advantages of inheritance are reusability of code and accessibility of variables and methods of the super class by subclasses.**

**22)What is the difference between this() and super()?**

**Ans: this() can be used to invoke a constructor of the same class whereas      super() can be used to invoke a super class constructor.**

**23)What is the difference between superclass and subclass?**

**Ans: A super class is a class that is inherited whereas sub class is a class**

**that does the inheriting.**

**24) What modifiers may be used with top-level class?**

**Ans: public, abstract and final can be used for top-level class.**

**25)What are inner class and anonymous class?**

**Ans: Inner class  : classes defined in other classes, including those defined                      in methods are called inner classes.**

**An inner class can have any accessibility including private.**

**Anonymous class : Anonymous class is a class defined inside a method without a name and is**

**instantiated and declared in the same place and cannot have explicit constructors.**

**26)What is a package?**

**Ans: A package is a collection of classes and interfaces that provides a high-level layer of access protection and name space management.**

**27) What is a reflection package?**

**Ans: java.lang.reflect package has the ability to analyze itself in runtime.**

**28) What is interface and its use?**

**Ans:**

**Interface is similar to a class which may contain method's signature only but not bodies and  it is**

**a formal set of method and constant declarations that must be defined by the class that implements it.**

**Interfaces are useful for:**

**a)Declaring methods that one or more classes are expected to implement**

**b)Capturing similarities between unrelated classes without forcing a class relationship.**

**c)Determining an object's programming interface without revealing the actual body of the class.**

**29) What is an abstract class?**

**Ans: An abstract class is a class designed with implementation gaps for subclasses to fill**

**in and is deliberately incomplete.**

**30) What is the difference between Integer and int?**

**Ans: a) Integer is a class defined in the java.lang package, whereas int is a primitive data type defined**

**in the Java language itself. Java does not automatically convert from one to the other.**

**b) Integer can be used as an argument for a method that requires an object, whereas int can be used for**

**calculations.**

**31) What is a cloneable interface and how many methods does it contain?**

**Ans- It is not having any method because it is a TAGGED or MARKER interface.**

**32) What is the difference between abstract class and interface?**

**Ans: a) All the methods declared inside an interface are abstract whereas abstract class must have at least one abstract method and others may be concrete or abstract.**

**b) In abstract class, key word abstract must be used for the methods**

**whereas interface we need not use that keyword for the methods.**

**c) Abstract class must have subclasses whereas interface can't have subclasses.**

**33) Can you have an inner class inside a method and what variables can you access?**

**Ans: Yes, we can have an inner class inside a method and final variables can be accessed.**

**34) What is the difference between String and String Buffer?**

**Ans: a) String objects are constants and immutable whereas**

**StringBuffer objects are not.**

**b) String class supports constant strings whereas**

**StringBuffer class supports growable and modifiable strings.**

**35) What is the difference between Array and vector?**

**Ans: Array is a set of related data type and static whereas vector**

**is a growable array of objects and dynamic.**

**36) What is the difference between exception and error?**

**Ans: The exception class defines mild error conditions that your program encounters.**

**Ex: Arithmetic Exception, FilenotFound exception**

**Exceptions can occur when try to open the file, which does not exist**

**-- the network connection is disrupted**

**-- operands being manipulated are out of prescribed ranges**

**-- the class file you are interested in loading is missing**

**The error class defines serious error conditions that you should not  attempt to recover from.**

**In most cases it is advisable to let the program terminate when such an error is encountered.**

**Ex: Running out of memory error, Stack overflow error.**

**37) What is the difference between process and thread?**

**Ans: Process is a program in execution whereas thread is a separate path of execution in a program.**

**38) What is multithreading and what are the methods for inter-thread communication and what is the class in which these methods are defined?**

**Ans: Multithreading is the mechanism in which more than one thread run independent of each other within**

**the process.**

**wait (), notify () and notifyAll() methods can be used for inter-thread communication and**

**these methods are in Object class.**

**wait( ) : When a thread executes a call to wait( ) method, it surrenders the object lock and enters**

**into a waiting state.**

**notify( ) or notifyAll( ) : To remove a thread from the waiting state, some other thread must make**

**a call to  notify( ) or notifyAll( ) method on the same object.**

**39) What is the class and interface in java to create thread and which is the most advantageous method?**

**Ans: Thread class and Runnable interface can be used to create threads and using Runnable interface is**

**the most advantageous method to create threads because we need not extend thread class here.**

**40) What are the states associated in the thread?**

**Ans: Thread contains ready, running, waiting and dead states.**

**41) What is synchronization?**

**Ans: Synchronization is the mechanism that ensures that only one thread is accessed the**

**resources at a time.**

**42) When you will synchronize a piece of your code?**

**Ans: When you expect your code will be accessed by different threads and these threads may change**

**a particular data causing data corruption.**

**43) What is deadlock?**

**Ans: When two threads are waiting each other and can't precede the program is said to be deadlock.**

**44) What is daemon thread and which method is used to create the daemon thread?**

**Ans: Daemon thread is a low priority thread which runs intermittently in the back ground doing the**

**garbage collection operation for the java runtime system. setDaemon method is used to create a daemon thread.**

**45) Are there any global variables in Java, which can be accessed by other part of your program?**

**Ans: No, it is not the main method in which you define variables. Global variables is not possible**

**because concept of encapsulation is eliminated here.**

**46)What is an applet?**

**Ans: Applet is a dynamic and interactive program that runs inside a web page displayed by a java capable browser.**

**47)What is the difference between applications and applets?**

**Ans: a)Application must be run on local machine whereas applet needs no explicit installation on local machine.**

**b)Application must be run explicitly within a java-compatible virtual machine whereas applet loads and runs itself automatically in a java-enabled browser.**

**d)Application starts execution with its main method whereas applet starts execution with its init method.**

**e)Application can run with or without graphical user interface whereas applet must run within a graphical user interface.**

**48)How does applet recognize the height and  width?**

**Ans:Using getParameters()  method.**

**49)When do you use codebase in applet?**

**Ans:When the applet class file is not in the same directory, codebase is used.**

**50)What is the lifecycle of an applet?**

**Ans:init( ) method        -  Can be called when an applet is first loaded**

**start( ) method      -  Can be called each time an applet is started**

**paint( ) method     -  Can be called when the applet is minimized or maximized**

**stop( ) method      -  Can be used when the browser moves off the applet's page**

**destroy( ) method -  Can be called when the browser is finished with the applet**

**51)How do you set security in applets?**

**Ans: using  setSecurityManager() method**

**52) What is an event and what are the models available for event handling?**

**Ans: An event is an event object that describes a state of change in a source. In other words, event occurs when an**

**action is generated, like pressing button, clicking mouse, selecting a list, etc.**

**There are two types of models for handling events and they are:**

**a) event-inheritance model and b) event-delegation model**

**53) What are the advantages of the model over the event-inheritance model?**

**Ans: The event-delegation model has two advantages over the event-inheritance model. They are:**

**a)It enables event handling by objects other than the ones that generate the events. This allows a clean separation between a component's design and its use.**

**b)It performs much better in applications where many events are generated. This performance improvement is due to the fact that the event-delegation model does not have to be repeatedly process unhandled events as is the case of the event-inheritance.**

**54)What is source and listener ?**

**Ans: source : A source is an object that generates an event. This occurs when the internal state of that object**

**changes in some way.**

**listener : A listener is an object that is notified when an event occurs. It has two major requirements. First, it**

**must have been registered with one or more sources to receive notifications about specific types of events.**

**Second, it must implement methods to receive and process these notifications.**

**55) What is adapter class?**

**Ans: An adapter class provides an empty implementation of all methods in an event listener interface. Adapter**

**classes are useful when you want to receive and process only some of the events that are handled by a**

**particular event listener interface. You can define a new class to act listener by extending one of the adapter**

**classes and implementing only those events in which you are interested.**

**For example, the MouseMotionAdapter class has two methods, mouseDragged( )and mouseMoved(). The**

**signatures of these empty are exactly as defined in the  MouseMotionListener interface. If you are interested**

**in only mouse drag events, then you could simply extend MouseMotionAdapter and implement**

**mouseDragged( ) .**

**56)What is meant by controls and what are different types of controls in AWT?**

**Ans: Controls are components that allow a user to interact with your application and the AWT supports the**

**following types of controls:**

**Labels, Push Buttons, Check Boxes, Choice Lists, Lists, Scrollbars, Text Components.**

**These controls are subclasses of Component.**

**57) What is the difference between choice and list?**

**Ans: A Choice is displayed in a compact form that requires you to pull it down to see the list of available choices**

**and only one item may be selected from a choice.**

**A List may be displayed in such a way that several list items are visible and it supports the selection of one**

**or more list items.**

**58) What is the difference between scrollbar and scrollpane?**

**Ans: A Scrollbar is a Component, but not a Container whereas Scrollpane is a Conatiner and handles its own**

**events and perform its own scrolling.**

**59) What is a layout manager and what are different types of layout managers available in java.awt?**

**Ans: A layout manager is an object that is used to organize components in a container. The different layouts are**

**available are FlowLayout, BorderLayout, CardLayout, GridLayout and GridBagLayout.**

**60) How are the elements of different layouts organized?**

**Ans: FlowLayout: The elements of a FlowLayout are organized in a top to bottom, left to right fashion.**

**BorderLayout: The elements of a BorderLayout are organized at the borders (North, South, East and West)**

**and the center of a container.**

**CardLayout: The elements of a CardLayout are stacked, on top of the other, like a deck of cards.**

**GridLayout: The elements of a GridLayout are of equal size and are laid out using the square of a grid.**

**GridBagLayout: The elements of a GridBagLayout are organized according to a grid.**

**However, the elements are of different size and may occupy more than one row or column of the grid. In**

**addition, the rows and columns may have different sizes.**

**61) Which containers use a Border layout as their default layout?**

**Ans: Window, Frame and Dialog classes use a BorderLayout as their layout.**

**62) Which containers use a Flow layout as their default layout?**

**Ans: Panel and Applet classes use the FlowLayout as their default layout.**

**63) What are wrapper classes?**

**Ans: Wrapper classes are classes that allow primitive types to be accessed as objects.**

**64) What are Vector, Hashtable, LinkedList and Enumeration?**

**Ans: Vector : The Vector class provides the capability to implement a growable array of objects.**

**Hashtable : The Hashtable class implements a Hashtable data structure. A Hashtable indexes and stores**

**objects in a dictionary using hash codes as the object's keys. Hash codes are integer values that identify**

**objects.**

**LinkedList: Removing or inserting elements in the middle of an array can be done using LinkedList. A**

**LinkedList stores each object in a separate link whereas an array stores object references in consecutive**

**locations.**

**Enumeration: An object that implements the Enumeration interface generates a series of elements, one at a time. It**

**has two methods, namely hasMoreElements( ) and nextElement( ). hasMoreElemnts( ) tests if this enumeration has**

**more elements and nextElement method returns successive elements of the series.**

**65) What is the difference between set and list?**

**Ans: Set stores elements in an unordered way but does not contain duplicate elements, whereas list stores**

**elements in an ordered way but may contain duplicate elements.**

**66) What is a stream and what are the types of Streams and classes of the Streams?**

**Ans: A Stream is an abstraction that either produces or consumes information. There are two types of Streams**

**and they are:**

**Byte Streams: Provide a convenient means for handling input and output of bytes.**

**Character  Streams:  Provide a convenient means for handling input & output of characters.**

**Byte Streams classes: Are defined by using two abstract classes, namely InputStream and OutputStream.**

**Character Streams classes: Are defined by using two abstract classes, namely Reader and Writer.**

**67) What is the difference between Reader/Writer and InputStream/Output Stream?**

**Ans: The Reader/Writer class is character-oriented and the InputStream/OutputStream class is byte-oriented.**

**68) What is an I/O filter?**

**Ans: An I/O filter is an object that reads from one stream and writes to another, usually altering the data in some**

**way as it is passed from one stream to another.**

**69) What is serialization and deserialization?**

**Ans: Serialization is the process of writing the state of an object to a byte stream.**

**Deserialization is the process of restoring these objects.**