**Java**

easy level

**1. What is the correct way to declare a variable in Java?**

A. int a = 5;  
B. int a; 5;  
C. int a = "5";  
D. int 5 = a;  
**Answer:** A

**2. Which keyword is used to create a class in Java?**

A. object  
B. class  
C. interface  
D. struct  
**Answer:** B

**3. What is the default value of a boolean variable in Java?**

A. false  
B. true  
C. 0  
D. null  
**Answer:** A

**4. Which of the following is used to get the length of an array in Java?**

A. length  
B. size()  
C. length()  
D. getSize()  
**Answer:** A

**5. What is the method signature of the main method in Java?**

A. public static void main(String[] args)  
B. public void main(String args[])  
C. void main(String args)  
D. public main(String args)  
**Answer:** A

**6. Which operator is used to compare two values in Java?**

A. ==  
B. =  
C. !=  
D. <>  
**Answer:** A

**7. What will be the output of the following code?**

java

CopyEdit

System.out.println(5 + 10);

A. 510  
B. 15  
C. 5  
D. 10  
**Answer:** B

**8. Which of the following is not a Java data type?**

A. int  
B. float  
C. real  
D. char  
**Answer:** C

**9. What is the correct way to declare an array in Java?**

A. int[] arr = new int[10];  
B. int arr[10] = new int[];  
C. int arr = new int(10);  
D. array arr = new int[10];  
**Answer:** A

**10. Which method is used to start a thread in Java?**

A. run()  
B. start()  
C. begin()  
D. execute()  
**Answer:** B

**11. What is the output of the following code?**

java

CopyEdit

int a = 10;

int b = 5;

System.out.println(a > b);

A. false  
B. true  
C. 10  
D. 5  
**Answer:** B

**12. Which of the following is not a valid variable name in Java?**

A. myVar  
B. int  
C. my\_var  
D. int2  
**Answer:** B

**13. Which keyword is used to prevent a class from being inherited in Java?**

A. final  
B. static  
C. private  
D. protected  
**Answer:** A

**14. What is the default value of an integer variable in Java?**

A. 0  
B. 1  
C. null  
D. undefined  
**Answer:** A

**15. Which method is used to find the length of a string in Java?**

A. getLength()  
B. length()  
C. size()  
D. lengthof()  
**Answer:** B

**16. Which of the following statements is correct in Java?**

A. public class MyClass  
B. MyClass class public  
C. class public MyClass  
D. class MyClass public  
**Answer:** A

**17. Which of the following is not an access modifier in Java?**

A. public  
B. private  
C. protected  
D. final  
**Answer:** D

**18. Which of the following is a Java wrapper class for the primitive type int?**

A. Integer  
B. IntWrapper  
C. IntClass  
D. IntegerWrapper  
**Answer:** A

**19. What is the output of the following code?**

java

CopyEdit

String str = "Hello";

str = str + " World";

System.out.println(str);

A. Hello World  
B. Hello  
C. World  
D. Error  
**Answer:** A

**20. Which of the following collections is ordered in Java?**

A. HashSet  
B. HashMap  
C. TreeSet  
D. ArrayList  
**Answer:** D

**21. What will be the output of the following code?**

java

CopyEdit

int x = 10;

if (x == 10) {

System.out.println("Hello");

}

A. Hello  
B. Error  
C. Nothing  
D. false  
**Answer:** A

**22. What will be the output of the following code?**

java

CopyEdit

for (int i = 0; i < 5; i++) {

System.out.println(i);

}

A. 0 1 2 3 4  
B. 1 2 3 4 5  
C. 0 1 2 3  
D. Nothing  
**Answer:** A

**23. Which of the following is used to handle exceptions in Java?**

A. throw  
B. throws  
C. catch  
D. try  
**Answer:** C

**24. Which of the following statements about the static keyword is correct?**

A. It makes the variable accessible from any instance of the class.  
B. It makes a class accessible from anywhere in the program.  
C. It indicates that the method can be overridden.  
D. It makes an object non-abstract.  
**Answer:** A

**25. Which of the following is the base class for all exceptions in Java?**

A. Throwable  
B. Error  
C. Exception  
D. RuntimeException  
**Answer:** A

Medium level

**1. Which of the following is true about the final keyword in Java?**

A. It makes a method final and cannot be overridden  
B. It makes a variable constant  
C. It can be used to prevent inheritance  
D. All of the above  
**Answer:** D

**2. What is the output of the following code?**

java

CopyEdit

String str = "Java";

str = str.concat(" Programming");

System.out.println(str);

A. Java Programming  
B. Java  
C. Programming  
D. Error  
**Answer:** A

**3. Which of the following is used to make a class thread-safe in Java?**

A. synchronized  
B. volatile  
C. transient  
D. abstract  
**Answer:** A

**4. Which of the following methods can be used to convert a string to a number in Java?**

A. Integer.parseInt()  
B. String.toInteger()  
C. Number.parseInt()  
D. String.toNumber()  
**Answer:** A

**5. Which of the following is true about the ArrayList class in Java?**

A. It is a type of List that allows dynamic arrays  
B. It is synchronized  
C. It stores elements in key-value pairs  
D. It has a fixed size  
**Answer:** A

**6. What does the super() keyword refer to in Java?**

A. The parent class constructor  
B. The current class constructor  
C. The current object  
D. The superclass instance variable  
**Answer:** A

**7. What is the purpose of the transient keyword in Java?**

A. To prevent a field from being serialized  
B. To make a method visible only in the current package  
C. To make a class abstract  
D. To ensure a variable is thread-safe  
**Answer:** A

**8. Which of the following methods can be used to add an element to the beginning of an ArrayList in Java?**

A. addFirst()  
B. add()  
C. insert()  
D. add(0, element)  
**Answer:** D

**9. What is the output of the following code?**

java

CopyEdit

int a = 5;

int b = 10;

System.out.println(a == b);

A. true  
B. false  
C. 0  
D. Error  
**Answer:** B

**10. Which of the following is a method of the Thread class in Java?**

A. startThread()  
B. begin()  
C. run()  
D. execute()  
**Answer:** C

**11. Which class is used to create a GUI window in Java?**

A. JFrame  
B. JWindow  
C. Dialog  
D. Frame  
**Answer:** A

**12. Which of the following is true about the finally block in Java?**

A. It is executed only when an exception is thrown  
B. It can be used without a try block  
C. It is always executed after the try block, regardless of whether an exception is thrown  
D. It is optional and can be skipped  
**Answer:** C

**13. What is the difference between == and equals() in Java?**

A. == checks for reference equality, and equals() checks for value equality  
B. == checks for value equality, and equals() checks for reference equality  
C. Both check for reference equality  
D. Both check for value equality  
**Answer:** A

**14. Which of the following collection classes allows duplicate elements in Java?**

A. HashSet  
B. TreeSet  
C. ArrayList  
D. HashMap  
**Answer:** C

**15. Which of the following is used to handle checked exceptions in Java?**

A. try-catch  
B. throw  
C. throws  
D. Both A and C  
**Answer:** D

**16. Which method is used to start a thread in Java?**

A. startThread()  
B. begin()  
C. start()  
D. run()  
**Answer:** C

**17. What is the use of the clone() method in Java?**

A. To create a copy of an object  
B. To compare two objects  
C. To convert an object to a string  
D. To make an object immutable  
**Answer:** A

**18. Which of the following is used to prevent a class from being subclassed in Java?**

A. final  
B. static  
C. abstract  
D. private  
**Answer:** A

**19. What is the output of the following code?**

java

CopyEdit

String str1 = "hello";

String str2 = "world";

str1 = str1 + str2;

System.out.println(str1);

A. helloworld  
B. hello world  
C. worldhello  
D. hello worldhello  
**Answer:** A

**20. Which of the following methods is used to get a specific character from a string in Java?**

A. getCharAt()  
B. charAt()  
C. substring()  
D. getCharacter()  
**Answer:** B

**21. Which of the following is not a primitive data type in Java?**

A. int  
B. char  
C. float  
D. String  
**Answer:** D

**22. Which of the following is true about the HashMap class in Java?**

A. It allows duplicate keys  
B. It stores elements in sorted order  
C. It stores elements in key-value pairs  
D. It allows null values but not null keys  
**Answer:** C

**23. What is the output of the following code?**

java

CopyEdit

String str = "123";

int num = Integer.parseInt(str);

System.out.println(num);

A. 123  
B. Error  
C. null  
D. 123.0  
**Answer:** A

**24. Which of the following is the correct way to define a constructor in Java?**

A. public class MyClass() {}  
B. public MyClass() {}  
C. void MyClass() {}  
D. class MyClass() {}  
**Answer:** B

**25. Which of the following is the correct syntax for using a switch statement in Java?**

A. switch(value) { case x: statement; break; }  
B. switch value { case x: statement; break; }  
C. switch(value) { case x: statement break; }  
D. switch(value): case x; statement; break;  
**Answer:** A

difficult

**1. What is the output of the following code?**

java

CopyEdit

String str = "Java";

str = str.substring(1, 3);

System.out.println(str);

A. Ja  
B. ava  
C. Jav  
D. Error  
**Answer:** A

**2. What is the time complexity of accessing an element from an ArrayList in Java?**

A. O(1)  
B. O(n)  
C. O(log n)  
D. O(n^2)  
**Answer:** A

**3. Which of the following statements about the synchronized keyword in Java is true?**

A. It is used to prevent a thread from being executed  
B. It is used to allow only one thread to access a resource at a time  
C. It is used to terminate a thread  
D. It is used to make methods thread-safe in general  
**Answer:** B

**4. What is the difference between HashMap and TreeMap in Java?**

A. HashMap stores elements in sorted order, while TreeMap does not  
B. TreeMap allows null values, while HashMap does not  
C. HashMap does not guarantee any order of elements, while TreeMap stores elements in sorted order  
D. TreeMap allows duplicate keys, while HashMap does not  
**Answer:** C

**5. Which of the following methods can be used to create an immutable class in Java?**

A. Declare all fields as final  
B. Declare the class as final  
C. Make all setter methods private  
D. All of the above  
**Answer:** D

**6. What is the default initial capacity of a HashMap in Java?**

A. 8  
B. 10  
C. 16  
D. 32  
**Answer:** C

**7. What is the output of the following code?**

java

CopyEdit

Integer a = 10;

Integer b = 10;

System.out.println(a == b);

A. true  
B. false  
C. Error  
D. null  
**Answer:** A

**8. What does the volatile keyword do in Java?**

A. It marks a field as not thread-safe  
B. It ensures that a field is visible to all threads  
C. It prevents a variable from being serialized  
D. It makes the field immutable  
**Answer:** B

**9. What is the purpose of the transient keyword in Java?**

A. To prevent the field from being synchronized  
B. To ensure the field is not serialized  
C. To prevent inheritance  
D. To mark a method as abstract  
**Answer:** B

**10. Which of the following collections is thread-safe in Java?**

A. ArrayList  
B. HashMap  
C. Vector  
D. HashSet  
**Answer:** C

**11. Which of the following is a feature of the Java ExecutorService?**

A. It allows you to submit a task for execution and manage its execution  
B. It provides a way to create threads manually  
C. It allows only one thread to execute at a time  
D. It only works with single-threaded applications  
**Answer:** A

**12. What is the difference between == and equals() in Java?**

A. == compares references, and equals() compares values  
B. == compares values, and equals() compares references  
C. Both == and equals() compare values  
D. Both == and equals() compare references  
**Answer:** A

**13. Which of the following methods is used to get a specific character from a string in Java?**

A. charAt()  
B. getCharAt()  
C. substring()  
D. getCharacter()  
**Answer:** A

**14. What will be the output of the following code?**

java

CopyEdit

int x = 5;

int y = 0;

try {

System.out.println(x / y);

} catch (ArithmeticException e) {

System.out.println("Caught Exception");

} finally {

System.out.println("Finally Block");

}

A. Caught Exception  
B. Finally Block  
C. Caught Exception Finally Block  
D. Error  
**Answer:** C

**15. Which of the following methods will throw a NullPointerException in Java?**

A. System.out.println(null.toString());  
B. String str = null; str.length();  
C. Integer.parseInt(null);  
D. All of the above  
**Answer:** D

**16. Which of the following best describes a weak reference in Java?**

A. A reference that can be reclaimed by garbage collection if there are no strong references  
B. A reference that cannot be reclaimed by garbage collection  
C. A reference that always points to the last element in the heap  
D. A reference that is always volatile  
**Answer:** A

**17. Which of the following is used to invoke a method in a parent class in Java?**

A. super()  
B. this()  
C. parent()  
D. invoke()  
**Answer:** A

**18. What is the result of the following code?**

java

CopyEdit

String s1 = new String("hello");

String s2 = new String("hello");

System.out.println(s1 == s2);

A. true  
B. false  
C. null  
D. Error  
**Answer:** B

**19. Which of the following methods is used to stop a thread in Java?**

A. stop()  
B. interrupt()  
C. end()  
D. kill()  
**Answer:** B

**20. Which of the following methods is used to convert a string to a number in Java?**

A. Integer.parseInt()  
B. String.toInteger()  
C. parseString()  
D. String.toNumber()  
**Answer:** A

**21. What is the purpose of the clone() method in Java?**

A. To compare two objects  
B. To create a copy of an object  
C. To make an object immutable  
D. To convert an object to a string  
**Answer:** B

**22. Which of the following methods can be used to read data from a file in Java?**

A. FileReader  
B. BufferedReader  
C. FileInputStream  
D. All of the above  
**Answer:** D

**23. What is the time complexity of inserting an element at the beginning of an ArrayList?**

A. O(1)  
B. O(n)  
C. O(log n)  
D. O(n^2)  
**Answer:** B

**24. Which of the following is a feature of Java’s garbage collection mechanism?**

A. It frees up memory automatically when no references to an object exist  
B. It only works with objects that implement Serializable  
C. It has to be explicitly invoked by the developer  
D. It can be disabled  
**Answer:** A

**25. Which of the following is not a valid Java access modifier?**

A. public  
B. private  
C. protected  
D. package  
**Answer:** D

Most difficult

**1. What is the difference between final, finally, and finalize() in Java?**

* a) final is used for constant values, finally is used for exception handling, and finalize() is used for garbage collection.
* b) final prevents method overriding, finally is for exception handling, and finalize() is used for constructor execution.
* c) final is used for constants, finally is for exception handling, and finalize() is used to prevent memory leaks.
* d) None of the above.

**Answer:** a) final is used for constant values, finally is used for exception handling, and finalize() is used for garbage collection.

**2. What is the difference between Thread.sleep() and Object.wait() in Java?**

* a) Thread.sleep() pauses the current thread and releases the monitor lock, while Object.wait() does not.
* b) Thread.sleep() does not release the monitor lock, while Object.wait() releases the monitor lock.
* c) Both release the monitor lock.
* d) Both are used to pause threads but have no impact on the monitor lock.

**Answer:** b) Thread.sleep() does not release the monitor lock, while Object.wait() releases the monitor lock.

**3. What is the purpose of the volatile keyword in Java?**

* a) It guarantees atomicity of variables.
* b) It ensures visibility of variables across threads.
* c) It ensures variables are only accessed by one thread at a time.
* d) It synchronizes the access to the variable.

**Answer:** b) It ensures visibility of variables across threads.

**4. What will be the output of the following code?**

java

CopyEdit

String s1 = "abc";

String s2 = "abc";

String s3 = new String("abc");

System.out.println(s1 == s2);

System.out.println(s1 == s3);

System.out.println(s1.equals(s3));

* a) true true true
* b) true false true
* c) false false true
* d) true false false

**Answer:** b) true false true

**5. What is Object Pooling in Java?**

* a) A design pattern for storing objects in a queue.
* b) A design pattern to maintain a pool of reusable objects for performance optimization.
* c) A method to prevent memory leaks by reusing objects.
* d) None of the above.

**Answer:** b) A design pattern to maintain a pool of reusable objects for performance optimization.

**6. What is the purpose of the transient keyword in Java?**

* a) It marks a variable to not be serialized.
* b) It ensures the variable is always serialized.
* c) It prevents an object from being garbage collected.
* d) None of the above.

**Answer:** a) It marks a variable to not be serialized.

**7. What is the difference between HashMap and ConcurrentHashMap in Java?**

* a) HashMap is thread-safe, while ConcurrentHashMap is not.
* b) HashMap allows null keys and values, while ConcurrentHashMap does not.
* c) ConcurrentHashMap is thread-safe, while HashMap is not.
* d) Both HashMap and ConcurrentHashMap are thread-safe.

**Answer:** c) ConcurrentHashMap is thread-safe, while HashMap is not.

**8. What is the time complexity of adding an element to a HashSet in Java?**

* a) O(n)
* b) O(log n)
* c) O(1)
* d) O(n^2)

**Answer:** c) O(1)

**9. How does Java handle memory management and garbage collection?**

* a) Java uses manual memory management with explicit memory release commands.
* b) Java uses automatic memory management with garbage collection.
* c) Java manages memory with manual memory pools.
* d) Java uses garbage collection but does not manage heap memory.

**Answer:** b) Java uses automatic memory management with garbage collection.

**10. What is the Java Memory Model (JMM)?**

* a) It governs how memory is allocated in the JVM.
* b) It defines how threads interact with memory and ensures consistency.
* c) It is used to optimize memory usage in the JVM.
* d) None of the above.

**Answer:** b) It defines how threads interact with memory and ensures consistency.

**11. What is the difference between Runnable and Callable in Java?**

* a) Runnable returns a result, while Callable does not.
* b) Runnable can throw exceptions, while Callable cannot.
* c) Runnable does not return a result, while Callable returns a result.
* d) Both Runnable and Callable are the same.

**Answer:** c) Runnable does not return a result, while Callable returns a result.

**12. What is the difference between synchronized block and synchronized method in Java?**

* a) A synchronized block locks the entire method, while a synchronized method locks a specific block of code.
* b) A synchronized block locks a specific section of code, while a synchronized method locks the entire method.
* c) Both synchronized block and method work the same way.
* d) None of the above.

**Answer:** b) A synchronized block locks a specific section of code, while a synchronized method locks the entire method.

**13. What happens if two threads try to access the same synchronized block in Java?**

* a) Both threads will execute the synchronized block simultaneously.
* b) The first thread will execute, and the second will be blocked until the lock is released.
* c) Both threads will be blocked forever.
* d) The second thread will execute after the first thread finishes execution.

**Answer:** b) The first thread will execute, and the second will be blocked until the lock is released.

**14. What is the difference between Stack and Queue in Java?**

* a) A Stack follows FIFO order, while a Queue follows LIFO order.
* b) A Stack follows LIFO order, while a Queue follows FIFO order.
* c) Both follow LIFO order.
* d) Both follow FIFO order.

**Answer:** b) A Stack follows LIFO order, while a Queue follows FIFO order.

**15. How does HashMap handle hash collisions in Java?**

* a) It uses open addressing.
* b) It uses linked lists or red-black trees to handle collisions.
* c) It overwrites the value in case of a collision.
* d) It discards the new entry if a collision occurs.

**Answer:** b) It uses linked lists or red-black trees to handle collisions.

**16. What is the purpose of the compareTo() method in Java?**

* a) To compare two primitive types.
* b) To compare two objects for equality.
* c) To compare two objects for ordering.
* d) To compare two strings.

**Answer:** c) To compare two objects for ordering.

**17. What is the output of the following code?**

java

CopyEdit

Integer i1 = 1000;

Integer i2 = 1000;

System.out.println(i1 == i2);

* a) true
* b) false
* c) NullPointerException
* d) Compilation error

**Answer:** b) false

**18. What is Deadlock in Java?**

* a) A situation where threads run infinitely.
* b) A situation where multiple threads are blocked forever, waiting for each other to release resources.
* c) A situation where only one thread can execute at a time.
* d) A situation where all threads finish execution at the same time.

**Answer:** b) A situation where multiple threads are blocked forever, waiting for each other to release resources.

**19. What is the @FunctionalInterface annotation used for in Java?**

* a) To define a method as a functional interface.
* b) To mark an interface that can have more than one abstract method.
* c) To ensure the interface has only one abstract method.
* d) None of the above.

**Answer:** c) To ensure the interface has only one abstract method.

**20. What is Reflection in Java?**

* a) A mechanism to inspect and modify classes, methods, and fields during runtime.
* b) A mechanism to call methods dynamically.
* c) A mechanism for exception handling.
* d) None of the above.

**Answer:** a) A mechanism to inspect and modify classes, methods, and fields during runtime.

**21. How does String.intern() work in Java?**

* a) It ensures that only one instance of a string exists in memory.
* b) It concatenates two strings.
* c) It checks if a string is valid.
* d) It compares strings for equality.

**Answer:** a) It ensures that only one instance of a string exists in memory.

**22. What is the purpose of NIO (New I/O) in Java?**

* a) It provides a more scalable way of performing I/O operations.
* b) It offers object serialization features.
* c) It is a network communication library.
* d) It simplifies memory management.

**Answer:** a) It provides a more scalable way of performing I/O operations.

**23. What is the significance of this and super in Java constructors?**

* a) this is used to call the constructor of the superclass, and super is used for calling the current class constructor.
* b) this is used for the current class constructor, and super is used for the superclass constructor.
* c) Both this and super call the same constructor.
* d) this and super are used interchangeably.

**Answer:** b) this is used for the current class constructor, and super is used for the superclass constructor.

**24. What happens if a finally block throws an exception in Java?**

* a) It prevents the exception from being thrown.
* b) It overrides any exception thrown in the try or catch block.
* c) It causes a RuntimeException.
* d) The program will exit immediately.

**Answer:** b) It overrides any exception thrown in the try or catch block.

**25. What is the use of Lambda Expressions in Java?**

* a) To pass behavior as parameters to methods.
* b) To define a method that can be executed without creating a new object.
* c) To define an anonymous class.
* d) All of the above.

**Answer:** d) All of the above.