Java TWO marks

1. **What is bytecode?**

Bytecode is a highly optimized set of instructions designed to be executed by the java run-time system. Which is called the java virtual machine (JVM). JVM is an interpreter for bytecode.

2. **What is a Literal? What are the different types of literals?**

A Literal represents a value of a certain type where the type describes the behaviors of the value. The different types of literals are:

- Number literals
- Character literals
- Boolean literals
- String literals

3. **What is a Number literal?**

There are several integer literals like int, long, octal, hexadecimal etc. 10 is an example of a decimal integer literal of type *int*. If a decimal integer literal is larger than the int, it is declared to be of type *long*. A number can be made long by appending L or 1 to it. Negative integers are preceded by the minus sign. These integers can also be expressed as octal or hexadecimal. A leading 0 to the integer indicate that the number is an octal integer. For example, 0987 is an octal integer. A leading 0x to the integer indicate that the number is a hexadecimal integer, example 0xaf94 is a hexadecimal number.

4. **What is a Character literal?**

Character literals are expressed by a single character enclosed within single quotes. Characters are stored as Unicode characters.

Escape	Meaning
\n	Newline
\t	Tab
\b	Backspace
\r	Carriage return
\f	Form feed
\\	Backslash

5. **What is a String literal?**

A string is a combination of characters. string literals are a set of characters that are enclosed within double quotes. As they are real objects, it is possible to concatenate, modify and test them. For example, “This is a test string” represents a string. Strings can contain character constants and Unicode characters.

6. **What are tokens in Java?**

Token means, the smallest individual units of program. In Java the following token are available.

White space
Identifiers
Literals
Comments
Separators
Keywords

7. **What is a variable? How to declare variable in java?**

The variable is the basic unit of storage in a java program. A variable is defined by the combination of an identifier, a type, and an optional initialize. All variables must be declared before they can be used. The basic form of a variable declaration is shown have

Type identifier [= value],[,identifier [=value]]

The type in one of java's atomic types. The identifier is the name of the variable. For example

```
int a,b,c;
int d=3, c=5;
```

8. **What is a variable? What are the different types of variables?**

Variables are locations in the memory that can hold values. Java has three kinds of variable namely,

- Instance variable
- Local variable
- Class variable

Local variables are used inside blocks as counts or in methods as temporary variables. Once the block or the method is executed, the variable ceases to exist. Instance variable are used to define attributes or the state of a particular object. These are used to store information needed by multiple methods in the objects.

9. **Write a note on integer data types in Java.**

Integers are used for storing integer values. There are four kinds of integer types in Java. Each of these can hold a different range of values. The values can either be positive or negative

Type	Size
byte	8 bits
short	16 bits
int	32 bits
long	64 bits

10. **Write a note on float data types in Java.**

Float is used to store numbers with decimal part. There are two floating point data types in Java namely, the float and the double

Type	Size
float	32 bits
double	64 bits

11. **What are the differences between static variable and instance variable?**

The data or variables, defined within a class are called instance variables.
Instance variables declared as static are, essentially, global variables. When objects of its class are declared, no copy of a static variable is made. Also the static variable can be directly invoked in the main(static) method without object.

12. **Define Array. How to declare an array?**

An array is an object that stores a list of items. Each slot in an array holds individual elements. An array should be of a single type, comprising of integers, strings and so on. To create an array, a variable to hold the array is declared, and a new object is created and assigned to it.

13. **Write a note on conditional operator in Java.**

The conditional operator is otherwise known as the ternary operator and is considered to be an alternative to the if else construct. It returns a value and the syntax is:

<test> ? <pass> : <fail>

Where,<test> is the condition to be tested. If the condition returns true then the statement given in <pass> will be executed. Otherwise, the statement given in <fail> will be executed.

14. **List out the operators in Java**

- Arithmetic Operators
- Increment and Decrement Operators
- Bitwise Operators
- Relational Operators
- Logical Operators
- Assignment Operators

15. **What are jump statements in Java?**

In java have three jump statements

- return
- continue
- break

16. **Differentiable between break and continue statements?**

The break keyword halts the execution of the current loop and forces control out of the loop. The term break refers to the act of breaking out of a b lock of code. Continue is similar to break, except that instead of halting the execution of the loop, it starts the next iteration.

17. **What is meant by Garbage Collection?**

In certain languages like C++, dynamically allocated objects must be manually released by use of a delete operator. In Java deallocation happens automatically. The technique that accomplishes this is called garbage collection.

18. **Write the three OOP principles**

- Encapsulation
- Inheritance
- Polymorphism

19. **What is a class? Give an example?**

A class defines the shape and behavior of an object and is a template for multiple objects with similar features.

(OR)

A class is a new data type. Once defined, this new type can be used to create objects of that type. Thus, a class is a template for an object, and an object is an instance of a class

20. **Distinguish between a class and an object?**

A class is a template for an object, and an object is an instance of a class

21. **Define abstract class?**

Abstract classes are classes from which instances are usually not created. It is basically used to contain common characteristics of its derived classes. Abstract classes are generally higher up the hierarchy and act as super classes. Methods can also be declared as abstract. This implies that non-abstract classes must implement these methods

22. **Define Inner Class ?**

An inner class is a nested class whose instance exists within an instance of its enclosing class and has direct access to the instance members of its enclosing instance

23. **What is meant by an innerclass?**

An inner class is a nested class whose instance exists within an instance of its enclosing class and has direct access to the instance members of its enclosing instance

```
class <EnclosingClass>
    {
       class <InnerClass>
            {

             }
    }
```

25. **What are constructors?**

A constructor initializes an object immediately upon creation. It has the same name as the class in which it resides and is syntactically similar to a method. Once defined, the constructor is automatically called immediately after the object is created, before the ***new*** operator completes.

26. **Define method overloading.**

In Java it is possible to define two or more methods within the same class that share the same name, as long as their parameter declarations are different. When this is the case, the methods are said to be *overloaded,* and the process is referred to as *method overloading*.

28. **What are the uses of the keyword 'final'?**

- The class can be declared as final, if instances or subclasses are not to be created.
- The variables are declared as final, value of the variable must be provided at the time of declaration.
- The Method can be declared as final indicating that they cannot be overridden by subclasses.

29. **What are static methods?**

Static methods and variables can be used independently of any object. To do so, you need only specify the name of their class following by the dot operator.

30. **What is inheritance?**

In Object-Oriented programming, inheritance refers to the properties of a class being available to many other classes. A derived class / sub class is one that has been created from an existing class. Inheritance is the process of deriving a class from a super class or a base class. No changes are made to the base class. The derived class has a larger set of properties that its base class. Inheritance has two advantages

a) Reusability of code

b) Data and methods of a super class are physically available to its subclasses

31. **What is a package?**

Packages contain a set of classes in order to ensure that class names are unique. Packages are containers for classes that are used to compartmentalize the class name space. Packages are stored in a hierarchical manner and are explicitly imported into new class definition. A period is used as separator to enable this.

32. **Write a note on import statement?**

Classes external to a program be imported before they can be used. To import a class the *import* keyword should be used as given below

import <classname>

The classes in Java are arranged in hierarchical order. The Java library consists of a number of packages. These packages contain a set of related classes. The whole path of the class must be specified to import a class from the Java library. For instance, to import the Data class from the **util** package use the following code.

import java.util.Date;

It is also possible to import all classes that belong to a package using the * symbol.

Import java.util.*;

33. **Define interface.**

An interface is a collection of abstract behavior that individual classes can implement. It is defined like a class. An interface consists of a set of method definition. Any class implementing it should provide code for all its methods

34. **Define an exception**

An exception is an abnormal condition, which occurs during the execution of a program Exceptions are erroneous events like division by zero, opening of a file that does not exist, etc. A java execution is an object, which describes the error condition that has materialized in the program.

35. **Explain the usage of try and catch clause**

The try and catch clause is used to handle an exception explicitly. The advantages of using the try and catch clause are that, it fixes the error and prevents the program from terminating abruptly.

36. **What is use of 'throw statement' give an example? (or) state the purpose of the throw statement.**

Whenever a program does not want to handle exception using the try block, it can use the throws clause. The throws clause is responsible to handle the different types of exceptions generated by the program. This clause usually contains a list of the various types of exception that are likely to occur in the program.

37. **List some Exceptions in JAVA.**

Exception	Meaning
ArithmeticException	Arithmetic error, such as divide-by-zero
ArrayIndexOutOfBoundsException	Array index is out-of-bounds
IllegalThreadStateException	Requested operation not compatible with current thread state

38. **Define deadlock**

This occurs when two threads have a circular dependency on a pair of synchronized objects. For example, suppose one thread enters the monitor on object X and another thread enters the monitor on object Y. If the thread in X tries to call any synchronized method on Y, it will block as expected. However, if the thread in Y, in turn, tries to call any synchronized method on X, the thread waits forever, because to access X, it would have to release its own lock on Y so that the first thread could complete.

39. **Define multithreading?**

A thread is a line of execution. It is the smallest unit of code that is dispatched by the scheduler. Thus, a process can contain multiple threads to execute its different sections. This is called multithread.

40. **List out the advantages of multithreading.**

The advantages are as follows

- Can be created faster
- Requires less overheads
- Inter-process communication is faster
- Context switching is faster
- Maximum use of CPU time

41. **Define the term thread.**

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42. **List the several states of 'Thread' in Java.**

There are four states associated with a thread namely – new, runnable, dead, blocked

43. **What is synchronization? Briefly explain.**

Two or more threads accessing the same data simultaneously may lead to loss of data integrity. For example, when two people access a savings account, it is possible that one person may overdraw and the cheque may bounce. The importance of updating of the pass book can be well understood in this case.

44. **What is the use of 'Super' Keyword? Give an example.**

Usage of 'super' keyword'

1. The first calls the superclass constructor
2. To access a member of the superclass that has been hidden by a member of a subclass

45. **What are applets?**

An applet is a dynamic and interactive program that runs inside a web page displayed by a Java capable browser. This can also be executed using the appletviewer.

46. **What are Byte Streams in Java?**

The byte stream classes provide a rich environment for handling byte-oriented I/O.

List of Byte Stream classes

- ByteArrayInputStream
- ByteArrayOutputStream
- FilteredByteStreams
- BufferedByteStreams

47. **What are Character Streams in Java?**

The Character Stream classes provide a rich environment for handling character-oriented I/O.

List of Character Stream classes

- FileReader
- FileWriter
- CharArrayReader
- CharArrayWriter

48. **Write a note on char Array Reader**

The CharArrayReader allows the usage of a character array as an InputStream. The usage of CharArrayReader class is similar to ByteArrayInputStream. The constructor is given below:

```
public CharArrayReader(char c[ ])
```

49. **How will you find out the length of a string in java? Give an example?**

length( ) method is used to number of characters is string. For example,

```
String str="Hello";
System.out.println("Length of string is "+str.length( ));
```

50. **Name any three tags used in Java Doc Comment**

Java supports three types of comments. The first two are the // and the /*. The third type is called a documentation comment. It begins with the character sequence /**. It ends with*/.

In Java have javadoc tags

Tag	Meaning

@author	Identifies the author of a class
@deprecated	Specifies that a class or member is deprecated
@param	Documents a method's parameter
@return	Documents a method's return value

51. **What is an internet Address?**

Every computer connected to a network has a unique IP address. An IP address is a 32-bit number which has four numbers separated by periods. It is possible to connect to the Internet either directly or by using Internet Service Provider. By connecting directly to the Internet, the computer is assigned with a permanent IP address. In case connection is made using ISP, it assigns a temporary IP address for each session. A simple IP address is given below

80.0.0.78

53. **What are datagrams?**

Datagram is a type of packet that represents an entire communication. There is no necessity to have connection or disconnection stages when communicating using datagram. This is less reliable than communication using TCP/IP.

54. **Define Proxy Server.**

A proxy server speaks the client side of a protocol to another server. This is often required when clients have certain restrictions on which servers they can connect to. Thus, a client would connect to a proxy server, which did not have such restrictions, and the proxy server would in turn communicate for the client. A proxy server has the additional ability to filter certain requests or cache the results of those requests for future use.

55. **What is the use of URL class in Java? Name any two methods in it.**

URL stands for uniform Resource Locator and it points to resource files on the Internet. The URL has four components – the **protocol**, **IP address** or the **hostname**, **port number** and **actual file path**

Methods

getPort( ) → get the port number
getHost( ) → get the host name specified in URL
getFile( ) → get the file name

56. **List the AWT controls?**

- Label
- Button
- Checkbox
- TextComponent
- Choice
- List
- Scrollbar

57. **Write a note on push Button Control?**

A push button is a component that contains a label and that generates as event when it is pressed. Push buttons are objects of type Button. Button defines these two constructors.

Button( )
Button(String str)

The first version creates an empty button. The second creates a button that contains str as a label.

58. **Write a note on Borderlayout?**

The BorderLayout class implements a common layout style for top-level windows. It has four narrow, fixed-width components at the edges and one large area in the center. The four sides are referred to as north, south, east, and west. The middles area is called the center. Here are the constructors defined by BorderLayout

BorderLayout( )
BorderLayout(int horz, int vert)

59. **Write a note on check box control in Java?**

A check box is a control that is used to turn an option on or off. It consists of a small box that can either contain a check mark or not. There is a label associated with each check box that describes what option the box represents. You change the state of a check box by clicking on it. Check boxes can be used individually or as part of a group. Check boxes are objects of the Checkbox class.

Checkbox( )
Checkbox(String str)
Checkbox(String str, Boolean on)
Checkbox(String str, Boolean on, CheckboxGroup cbGroup)

60. **Distinguish between component and container**

Component is an abstract class that encapsulates all of the attributes of a visual component. All user interface elements that are displayed on the screen and that interact with the user are subclasses of Component.

The container class is a subclass of Component. It has additional methods that allow other Component objects to be nested within it. Other Container objects can be stored inside of a container.