

## History of Java

Features of object – oriented languages

- a. Reusable code
- b. Modular programs
- c. Ability to run on any OS

Features of OOP methodology

- a. Data encapsulation
- b. Inheritance
- c. Polymorphism
- d. Data abstraction

## Why java is important?

Why java is important?

- a. Platform independent and portable language
- b. Supports multithreading
- c. Capable of dynamic linking
- d. Used to create web based applications

Two types of java programs

- a. Application
- b. Applet

Application Programs

- a. Runs standalone programs with the support of virtual machine
- b. Is limited to the potential of the developer

Applet Program

- a. Is designed to be transmitted over the internet and executed by a java compatible web browser
- b. can react to user input and change dynamically

Two fundamental problems faced with applets:

- a. Security
- b. Portability

Bytecode

- a. Java programs are compiled into an intermediate bytecode language. It is then compiled into machine language by a runtime program called Java Virtual machine(JVM).
- b. Bytecodes are the intermediate codes generated by the java compiler.

Byte code is needed for the following reasons

- a. Allows java to solve both security and portability problems

### Features of Java

- a. Simple
- b. Security
- c. Portable
- d. Robust
  - 1. Free from memory and runtime errors
  - 2. Two main reasons for program failure in other language
    - a. Memory management mistakes
    - b. Mishandled exceptional conditions
  - 3. Java virtually eliminates these problems by
    - a. Managing memory allocation and deallocation by providing garbage collection for unused objects
    - b. Creating clumsy and hard to read constructs of exceptional conditions
- e. Multithreaded
- f. Architectural – Neutral
- g. Interpretation and High performance
  - a. It enables the creation of cross platform programs by compiling into an intermediate representation called java bytecode

### Three java doclets

- 1. Standard Doclet
- 2. MIF Doclet
- 3. DocCheck Doclet

### Memory space

- 1. Byte – 8bits
- 2. Short – 16bits
- 3. Int – 32 bits
- 4. Long – 64 bits
- 5. Float – 32 bits
- 6. Double – 64bits
- 7. Char – 16 bit unsigned integer

- 1. All object-oriented languages are platform independent – **False**
- 2. Which one of the following features differentiates Java from C++ - **platform independence**
- 3. Which one of the following programs can run on the web browser – **Applet**
- 4. Which one of the following features is used in memory management – **Garbage collection**
- 5. What is the classpath list delimiter used in windows OS -  **; (semicolon)**
- 6. Which is an executable copy of class – **Object**
- 7. Which one of the following options is used to print line and local variable tables - **-l**
- 8. Which of the following Doclets is used to produce HTML formatted API documents – **Standard Doclets**
- 9. Which one of the following keywords is used in main() method declaration – **to load a class**

10. Which one of the following comes under the keywords in main() method declaration – **static**
11. How many arguments can be accepted by a Java application from the command line – **Any number of arguments**
12. Which is used to convert the java source code into byte code – **Compiler**
13. Which one of the following parsing statement syntaxes is correct – **package Identifier;**
14. What is the result of attempting to compile and run the following program – **Compiler error at line 5**
  - 1) Class Basics1(){
  - 2) Public static void main(String[] args){}
  - 3) }
  - 4) Class Basics2(){
  - 5) Public static void main(String[] args){}
  - 6) }
  - 7) Class Basics3(){
  - 8) Public static void main(String[] args){}
  - 9) }
15. How much memory space does a short integer occupy? – **16bits**
16. Which one of the following data types does double belong to? – **Floating point data type**
17. What type of Unicode character does a data type store – **Single**
18. Which of the following is the correct syntax of casting – **(target-type) value**
19. Which of the following statement is correct – **Array can be multidimensional**
20. Which of the following syntax of if-else statement is correct? – **if(condition) statement1; else statement2;**
21. Which loop statement will execute the statement at least once – **Do – while loop**
22. Which of the following sentences is correct? – **Break statement is used to jump out and terminate a loop; continue is used to move immediately to the next iteration of the loop**
23. What are the values of i and n after the code snippet is executed? – **i = 11; n = 0**

```
int i = 10;
int n = i++%10;
```
24. What is the value of i after the code snippet is executed? – **18**

```
int i = 17;
i++;
```

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## Java oops

1. Which of the following feature comes under inheritance – **Provides a powerful mechanism for organizing programs**
2. The abstract class can be instantiated by java compiler – **False**
3. The keyword used to implement an interface – **implements**
4. The signature of the method in the subclass, must match the super class in overriding – **True**
5. Which will maintain the parameters for each method along with the name in overloading – **Compiler**
6. Which one of the following access modifiers grant access to all projects? – **Public**
7. **Default** modifiers can be accessed by other classes within the **package**

8. Which one of the following can be hidden from direct access through encapsulation – **Data**

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### Exception handling

9. Which one of the following is an exceptional handler – **Catch clause**
  10. Which of the following sentences is correct? – **Unchecked exceptions does not need to provide code to handle it ; checked exception need to provide code to handle it**
  11. Throwable instance must be an object type throwable or a subclass of throwable – **True**
  12. What method declaration must be used if a method is expected to throw any exceptions – **Throws**
  13. A printStackTrace() method prints the stack trace – **true**
  14. The **fillInStackTrace()** method , sets the stack trace information in the exception, based on the current execution context
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### Threading

Important points about Threads:

- a. All threads in an application run in the same address space
- b. Threads share all resources except stack

Threads can be defined in two ways:

- a. An instance of java.lang.Thread
- b. A Thread of execution has its own call stack

A thread is not a program and it cannot run on its own.

There are four states associated with a thread

- a. New
- b. Runnable
- c. Dead
- d. Blocked

Two ways to create thread

- a. Implement the runnable interface
- b. Extend the thread class itself

Techniques involved in multithreading are:

- a. Thread priorities
- b. Synchronization
- c. Interthread communication
- d. Locking and deadlocking an object

Max priority – 10, Min priority - 1, Normal priority - 5

1. All threads in an application run in the different address space – **False**

2. Which one of the following options is an advantage of using thread – **maximum use of CPU time**
  3. Which one of the following methods will restart the suspended thread? – **resume()**
  4. The run() method is similar to the main() method – **True**
  5. Which one of the following is the minimum priority of a thread – **one**
  6. Which one of the following methods wake up all threads waiting on the object? – **Notify all()**
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### Annotations

1. How many spaces can be used as an indent in a java program – **More than 2 and less than 8**
  2. Which one of the following special characters are used to start a block comment – **Single forward slash and asterisk**
  3. Different data types may be declared in the same line – **False**
  4. What is the coding standard for a return statement without any return value? – **return;**
  5. Which of the following methods is the best practice to concatenate strings? – **StringBuffer method**
  6. Strings are not constant, their values can be changed after creation – **False**
  7. Which one of the following operators will concatenate strings to produce a string object? - **+**
  8. You can insert characters in the middle or append characters at the end of stringBuffer – **True**
  9. Which one of the wrapper classes methods returns the value of the object equivalent to its primitive data type? – **typeValue()**
  10. The equals() method returns true if the values of the compared objects are the same – **True**
  11. Which one of the following methods returns true if the invoking object contains an infinite value – **public Boolean isInfinite()**
  12. The inheritance from the object class is explicit – **false**
  13. Java's inheritance mechanism allows a class to extend from only one super class – **true**
  14. Which one of the following object class methods will resume the execution of a thread waiting on the invoking object – **Void notify()**
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### Collections

1. Which one of the following statement is true? – **The set of interface is designed to ensure that the implementing classes have unique members**
  2. Which of the following class comes under collection? – **Collection**
  3. The capacity of an array is fixed – **true**
  4. Which will affect the instance of the HashMap – **Initial capacity & Load factor**
  5. A list iterator can modify an element in the list - **true**
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### JDBC

4 types of JDBC drivers are:

- a. JDBC – ODBC bridge plus ODBC driver
- b. Native-API partly-java driver
- c. JDBC – Net pure java driver
- d. Native – protocol pure java driver

Tier models

- a. 2 tier model
- b. 3 tier model

JDBC architecture is divided into:

- a. JDBC API
- b. JDBC driver types

Three kinds of statement objects:

- a. Statement
- b. preparedStatement: inherits from statement
- c. CallableStatement: Inherits from preparedStatement

1. How many types of JDBC drivers available – **Four**
  2. In which one of the following packages does the DriverManager class exist? – **java.sql**
  3. Select the types of JDBC drivers that are not suitable to large networks – **JDBC-ODBC bridge plus ODBC driver ; native API partly java driver**
  4. Changes made to a database table are made permanent by calling the rollback() method – **False**
  5. Select the type of methods that are inherited by the CallableStatement interface – **Statement method ; prepared statement method**
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## IO

The two classes of java.io package

- a. InputStream
- b. OutputStream

1. Which one of the following classes is linked to a physical device by the java I/O system? – **Stream**
  2. Which one of the following methods returns an integer representation of the next available byte of input from the invoking input stream – **int read()**
  3. How many write() methods does an OutputStream define? – **Three**
  4. Which one of the following subclasses serves as a bridge between the Writer and OutputStream objects – **OutputStreamWriter**
  5. Which one of the following classes provides non sequential access to data in a file? – **RandomAccessFile**
  6. Which one of the following methods implements the default deserialization mechanism in an ObjectInputStream? – **readObject()**
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## Garbage Collection

1. what is the syntax for the method to perform garbage collection? – **System.gc();**
2. What will happen to the counter if a reference to an object goes out of scope in the reference count algorithm? – **Decrement by 1**
3. Which of the following criteria will decide a garbage collector to run in Java program – **Java virtual machine**
4. Which one of the following reference is used to find a reachable object? – **Reachable fragmentation**
5. What is the criteria for an object to be eligible for garbage collection? – **Set to null value**
6. The value for a variable cannot be reassigned to another reference variable – **False**
- 7.