

CS6501 - Internet programming
Unit- I

Part - A

1 Define Java.

Java is a programming language expressly designed for use in the distributed environment of the Internet. It was designed to have the "look and feel" of the C++ language, but it is simpler to use than C++ and enforces an object oriented programming model.

2. What is a Class?

Class is a template for a set of objects that share a common structure and a common behaviour.

3. What is an Object?

Object is an instance of a class. It has state, behaviour and identity. It is also called as an instance of a class.

4. What is an Instance?

An instance has state, behaviour and identity. The structure and behaviour of similar classes are defined in their common class. An instance is also called as an object.

5. What are different types of access modifiers (Access specifiers)?

Access specifiers are keywords that determine the type of access to the member of a class. These keywords are for allowing privileges to parts of a program such as functions and variables. These are: *public*: Anything declared as public can be accessed from anywhere.

private: Anything declared as private can't be seen outside of its class.

protected: Anything declared as protected can be accessed by classes in the same package and subclasses in the there packages.

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

6. What is method overloading and method overriding?

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.

7. List the access specifier used in JAVA?

Java provides a number of access modifiers to set access levels for classes, variables, methods and constructors.

The four access levels are:

- Visible to the package. the default. No modifiers are needed.
- Visible to the class only (**private**).
- Visible to the world (**public**).
- Visible to the package and all subclasses (**protected**).

8. What is the difference between Array and vector?

Array is a set of related data type and static whereas vector is a growable array of objects and dynamic

9. What is a package?

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

10. What is meant by Inheritance?

Inheritance is a relationship among classes, wherein one class shares the structure or behaviour defined in another class. This is called Single Inheritance. If a class shares the structure or behaviour from multiple classes, then it is called Multiple Inheritance. Inheritance defines "is-a" hierarchy among classes in which one subclass inherits from one or more generalised superclasses.

11. What is an Abstract Class?

Abstract class is a class that has no instances. An abstract class is written with the expectation that its concrete subclasses will add to its structure and behaviour, typically by implementing its abstract operations.

12. What is the difference between abstract class and interface?

- 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.

13. What is an exception?

An exception is an event, which occurs during the execution of a program, that disrupts the normal flow of the program's instructions.

14. What is meant by JAVA package?(Nov/Dec 2014)

Package represents a collection of classes, methods and interface. The name of the package must be written as the first statement in the java source program. The syntax of specifying the package in the java program is: package name_of_package

15. What are the types of Exceptions in Java?

There are two types of exceptions in Java, unchecked exceptions and checked exceptions.

Checked exceptions: A checked exception is some subclass of Exception (or Exception itself), excluding class RuntimeException and its subclasses. Each method must either handle all checked exceptions by supplying a catch clause or list each unhandled checked exception as a thrown exception.

Unchecked exceptions: All Exceptions that extend the RuntimeException class are unchecked exceptions. Class Error and its subclasses also are unchecked.

16. What are the different ways to handle exceptions?

There are two ways to handle exceptions:

- Wrapping the desired code in a try block followed by a catch block to catch the exceptions.
- List the desired exceptions in the throws clause of the method and let the caller of the method handle those exceptions.

17. How to create custom exceptions? By Extending the Exception class or one of its subclasses.

```
class MyException extends Exception {  
public MyException() { super(); }  
public MyException(String s) { super(s); }  
}
```

18. Write the properties of Threads.(Nov/Dec 2014).

- Thread Priority
- Deamon Thread
- Thread group

19. What is immutable string in java?

In java, **string objects are immutable**. Immutable simply means unmodifiable or unchangeable. Once string object is created its data or state can't be changed but a new string object is created.

Eg:

```
class Testimmutablestring{  
public static void main(String args[]){  
String s="Sachin";  
s.concat(" Tendulkar");//concat() method appends the string at the end  
System.out.println(s);//will print Sachin because strings are immutable objects  
}
```

20. Define assert .

Java assertion feature allows developer to put "assert" statements in Java source code to help unit testing and debugging.

An "assert" statement has the following format: *assert boolean_expression : string_expression;*

When this statement is executed:

If *boolean_expression* evaluates to true, the statement will pass normally.

If *boolean_expression* evaluates to false, the statement will fail with an "AssertionError" exception.

21. Define Applet.

An applet is a small Internet-based program written in Java, a programming language for the Web, which can be downloaded by any computer. The applet is also able to run in HTML. The applet is usually embedded in an HTML page on a Web site and can be executed from within a browser.

22. Define transient and volatile Modifiers.

Java defines two interesting type modifiers: transient and volatile. These modifiers are used to handle somewhat specialized situations. When an instance variable is declared as transient, then its value need not persist when an object is stored. For example:

```
class T {  
    transient int a; // will not persist  
    int b; // will persist  
}
```

Here, if an object of type T is written to a persistent storage area, the contents of a would not be saved, but the contents of b would.

23. What is use of the run-time operator instanceof.

The instanceof operator has this general form:

objref instanceof type

Here, *objref* is a reference to an instance of a class, and *type* is a class type. If *objref* is of the specified type or can be cast into the specified type, then the instanceof operator evaluates to true. Otherwise, its result is false. Thus, instanceof is the means by which your program can obtain run-time type information about an object

24. List the name of methods for modifying string.

- substring()
- concat()
- replace()
- trim()

Unit I PART – B

1. Describe the concepts of OOP.(5)

Object Oriented Programming is a paradigm that provides many concepts such as inheritance, data binding, polymorphism etc. Object-Oriented Programming is a methodology or paradigm to design a program using classes and objects. It simplifies the software development and maintenance by providing some concepts:

- Object
- Class
- Inheritance
- Polymorphism
- Abstraction
- Encapsulation

2. What is meant by overriding method? Give example.(5)

Usage of Java Method Overriding

Rules for Java Method Overriding

3. Write a JAVA program to reverse the given number.(6)

```
// Method to return the reverse of a number
public int reverse(int num) {
int revNum = 0;
while (num > 0) {
int rem = num % 10;
revNum = (revNum * 10) + rem;
num = num / 10;
}
```

4. What is meant by package? How it is created and implemented in JAVA.(8)

Creating a package:

Example program:

The import Keyword:

The Directory Structure of Packages:

5. Write a JAVA program to find the smallest number in the given list. (8)

```
temp = value[0];
for(i=0; i < 5; i++)
{
if(temp < value[i])
continue;
else
temp = value[i];
}
```

6. What is meant by interface? How it is declared and implemented in JAVA. Give example.(12)

Declaring Interfaces:

Interfaces have the following properties:

Implementing Interfaces:

Extending Interfaces:

Extending Multiple Interfaces:

7. Write note on final keyword.(4)

Final can be:

- i) variable
- ii) method
- iii) class

8. Explain in details the concepts of inner classes.

Java inner class

Syntax of Inner class

Advantage of java inner classes

difference between nested class and inner class in Java

Types of Nested classes

9. Explain in details the concepts of applets.

Advantage of Applet
Drawback of Applet.
Lifecycle of Java Applet
Lifecycle methods for Applet:
java.applet.Applet class
java.awt.Component class
How to run an Applet?
Simple example of Applet by html file:
Simple example of Applet by appletviewer tool:

10. What is Exception handling in java? Why it is used? Write a java code to simulate the way a stack mechanisms works with exception handling, throwing and dealing with exceptions such as stack is full(if you want to add more elements into the stack)or Stack is empty(you want to pop elements from the stack).

Checked exceptions:
Runtime exceptions:
Errors:

11. Discuss the concept of synchronization in thread and develop a JAVA code for reader/writer problem.

Multithreading example with Synchronization:

12. Describe the concept of I/O with example.(8)

Stream
OutputStream
InputStream
OutputStream class
Commonly used methods of OutputStream class
InputStream class
Commonly used methods of InputStream class

13. Explain the detail about string handling.(8).

String Literal
By new keyword
Java String Example

14. What is meant by constructors? Describe the type of constructors supported by java with example.

Rules for creating java constructor
Types of java constructors
Java Default Constructor
Java parameterized constructor
Constructor Overloading in Java
Java Copy Constructor

15. Define inheritances. Explain in details types of inheritances supported by JAVA with example program.

use inheritance in java
Syntax of Java Inheritance

Types of inheritance in java

Why multiple inheritance is not supported in java?

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