

Core Java

SYLLABUS



COVERAGE

- Introduction and fundamentals of java programming

- control statement and other

- class and object

- constructor

- this

- static

- Encapsulation

- Inheritance

- final

- polymorphism

- Abstract Classes and Interface

- inner class.

- new feature in java 8,9,10,11

- enum

- package

- Using Predefined Lang package & other Classes

- 1d array and 2d array jagged array vararg and Arrays class

- String Handling

- Wrapper class

- MultThreading

- Collection Framework, classes & interfaces of java.util, generics

- Input and output Stream

- SQL

- JDBC (Java Data Base Connection)

- GUI (applet, awt, swing)

- Java regs

- Jshell

- Project

SYLLABUS IN DETAILS

Introduction and fundamentals of java programming

1. C, C++ vs JAVA
2. Platform independency
3. JDK, JRE, JVM, JIT
4. Features of java
5. Java software download and install
6. Consoles (command prompt)
7. Hello World java program
8. using different editors write java
9. compiling & executing java program
10. Path setting of JDK
11. Name of a java source File
12. using eclipse ide
13. Literal in java
14. Identifies in java
15. Keywords in java
16. Java Primitive Data type
17. Reference (User defined) Data type

18. Variables in java(Primitive ,Reference)

19. Position of declaration of variable

- a. Local variable
- b. Formal variable
- c. Instance Variable
- d. Static variable

20. Final variable

21. blank final variable in java

22. Default value

23. grammar in java

24. Basic Program

25. How to take input from keyboard

Scanner class

26. Operators

27. Types of Comments in java

Control statements and other

28. If , multiple if ,nested if

29. if-else

30. else if

31. switch

32. while loop

33. do while loop

34. for loop

35. break

36. continue

37. nested loop

38. pattern program in java

39. Different number program

40. array

41. for each loop

42. why function(Method)

43. Method declaration ,Method signature

44. What are the different categories of Method in Java Programming?

45. Actual and Formal argument

46. Program in Method

Class and object

47. Java OOPs concept

48. Abstraction,Encapsulation,Inhertiance,Polymorphism

49. Introduction to Classes and Objects

50. Why class required ?

51. What is object

52. Object declaration and Initialization

53. Anonymous Object

54. What is reference variable

55. What is instance/non static data member

56. Access modifier and non-access modifier

57. Private data initialization and access Through method.

Constructor

58. What is Constructor in Java?

59. Types of constructors

60. Constructor return type implicitly

61. Difference between non-parameterized and default constructor?

62. Constructor Overloading

63. Copy constructor

this keyword

64. this can be used to refer current class instance variable.

65. Object reference

66. Call by value and reference

67. Passing and returning Object reference and value

68. this can be used to invoke current class method (implicitly)

69. this() can be used to invoke current class constructor.

70. this can be passed as an argument in the method call.

71. this can be passed as argument in the constructor call.

72. this can be used to return the current class instance from the method.

73. Constructor chaining

static keyword

74. What is Static keyword?

- 75. Static variable/class variable
- 76. Static block
- 77. Why Static method
- 78. factory design pattern
- 79. singleton class
- 80. Non static variable/instance variable
- 81. Instance block
- 82. Why instance method
- 83. real life example about static and non static.

Encapsulation

- 84. How to achieve Encapsulation
- 85. Data hiding
- 86. Tightly encapsulated class
- 87. Getter and setter method in Java(pojo class)
- 88. Naming convention of getter and setter method
- 89. Program

**** Inheritance****

- 90. Is-A Relationship
- 91. Aggregation and Composition(HAS-A)
- 92. Types of inheritance: Single level, Multilevel, Hierarchical, Multiple, and Hybrid inheritance.
- 93. Super keyword
- 94. Calling of superclass instance variable
- 95. Superclass constructor
- 96. Superclass method.
- 97. Instanceof keyword
- 98. Difference between this and super.
- 99. Static and non static in inheritance
- 100. Real life example

101. HAS-A relationship

102. USE has S-A relationship

103. About System.out.println

Final

- 104. Final variable
- 105. blank final variable
- 106. static final variable
- 107. final class
- 108. final method

Polymorphism

- 109. Introduction to Polymorphism
- 110. Types of Polymorphism
- 111. Polymorphic Behavior in Java
- 112. Benefits of Polymorphism
- 113. Overloading Methods
- 114. Overriding Methods
- 115. **Dynamic method dispatch**
- 116. Hiding Methods

Abstract Classes and Interface

- 117. Introduction to Abstract Methods,
- 118. Abstract Classes and Interface
- 119. Interface as a Type
- 120. Interface v/s Abstract Class
- 121. Interface Definition
- 122. Interface Implementation
- 123. Multiple Interfaces' Implementation
- 124. Interfaces' Inheritance
- 125. How to create object of Interface
- 126. **What Is An Adapter-Class**
- 127. **Java 8 Default Method in Interface**
- 128. Java 8 Static Method in Interface
- 129. Java 9 private method in interface
- 130. **What is marker or tagged interface**

Inner Classes

- 131. Nested Inner Class
- 132. Method Local Inner Classes
- 133. Static Nested Classes
- 134. Anonymous Inner Classes

new features in java 8,9,10,11

- 135.Lambda Expressions
- 136.Method interface
- 137.Functional Interfaces
- 138.annotation interface java
- 139.forEach() Method In Iterable Interface
- 140.Optional Class
- 141.Other chapter wise

142. Enum

Package

- 143.Package Creation and Use
- 144.First look into Class path
- 145.Class path Setting
- 146.Class Import
- 147.Package Import
- 148.Role of public, protected, default and private w.r.t package
- 149.Creating and Using the Sub Package
- 150.Create jar file then use
- 151.Create executable jar file
- 152.What is JavaDoc tool and how to use it
- 153.Static import

Using Predefined Lang package & other Classes

- 154.Java.lang Hierarchy
- 155. • Object class and using toString(), equals(), hashCode(), clone(), finalize() etc
- 157. • System Class using gc(), exit(), etc
- 158.Using Runtime Class, Process Class to play
- 159.music, video from Java Program

160.Math class

Exceptions handling

- 161.introduction to Exceptions
- 162.Effects of Exceptions
- 163.Exception Handling Mechanism
- 164.Try,catch,finally blocks
- 165.Rules of Exception Handling
- 166.Exception class Hierarchy, Checked & Unchecked Exception
- 167.Unchecked Exception
- 168.Throw & throws keyword
- 169.Custom Exception Class
- 170.Chained Exception.
- 171.Resource handling & multiple exception

Java Array

- 172.What is Array
- 173.Array Declaration and Instantiation of an Array
- 174.for-each loop, varargs.
- 175.Increasing, Decreasing the Size and Copy of an Array
- 176.Multi-Dimensional Arrays and Jagged Array
- 177.Array of object
- 178.arrays utility class

String Handling

- 179.String class
- 180.String Constant Pool
- 181.Various usage and methods of String
- 182.StringBuffer, StringBuilder Class
- 183.Various usage and methods
- 184.Immutable class creation
- Wrapper class
- 185. Integer,Float,Double,etc
- 186. Boxing and unboxing
- 187.AutoBoxing and AutoUnBoxing

Command-Line Arguments

188. What is a Command-Line Argument?

189. Java Application with Command-Line Arguments

190. Conversion of Command-Line Arguments

191. Passing Command-Line Arguments

192. About main() method

Multithreading

193. Introduction

194. Advantages

195. Creating a Thread by inheriting

196. from Thread class

197. run() and start() method

198. Constructor of Thread Class

199. Various Method of Thread Class

200. Runnable Interface Implementation

201. Thread Group

202. Thread States and Priorities

203. Synchronization method, block

204. Class & Object Level Lock

205. Deadlock & its Prevention

206. Interthread Synchronization

207. Life Cycle of Thread

208. Deprecated methods : stop(), suspend()

209. resume(), etc

Collection Framework(Java Data Structure) Generics

210. What is generic

211. Creating User defined Generic classes

212. The java.util package

213. Collection

214. What is Collection Framework

215. Using user defined class for DataStructure

216. Why List, Set & Map interfaces

217. Using Vector, ArrayList, Stack, LinkedList, etc

218. Using Collections class for sorting

219. Using Hashtable, HashMap, TreeMap

220. SortedMap, LinkedHashMap etc

221. Iterator, Enumerator

222. Using Queue, Deque, SortedQueue, etc

223. Using HashSet, TreeSet, LinkedHashMap etc

224. Using Random class

225. Using Properties in a Java Program

226. Using Date and Formatting Date class

Input Output Streams

227. Stream Class Hierarchy

228. Using File Class

229. Copy and Paste the content of a file.

230. Byte Streams vs Character Streams

231. TextFile vs Binary File

232. Character Reading from Keyboard by InputStreamReader

233. Reading a Line/String from Keyboard by BufferedReader

234. Using Data Streams to read/write primitive data

235. PrintStream vs PrintWriter

236. Serialization

237. Using Object Streams to read/write object

238. Deserialization Process

239. Transient Keyword

SQL

240. DDL, DML, DQL, TCL, DQL

JDBC (Java Data Base Connection)

241. Introduction to JDBC

242. Databases and Drivers

243. Types of Driver

244. Loading a driver class file

245. Establishing the Connection to different Database with different Driver.

246. Executing SQL queries by ResultSet Statements, PreparedStatement interface

247. A

GUI :

248.Applet, AWT, Event Handling

274.

249.Applet(java.applet)

250. • Introduction & Advantage of Applet

251. • How to create and run an Applet in

252.browser and appletviewer

253. • Life Cycle of Applet

254. • Using Graphics, Color, Font and other

255.classes in Applet to draw Shapes, String, Images

256. • Creating Banner in Applet

257.Abstract Window Toolkit (java.awt)

258.AWT Hierarchy

259.Using Component classes like Button

260.TextArea, TextField, Checkbox, Label, Choice, List, etc

261.Using Container classes like Applet

262.Panel, Frame, Window, Dialog(Open & Save Dialog)

263.Using Layout Manager to organize component on a container

264.Using Borders, Menus, Toolbars, Dialogs

265.Using setBounds() to place component

266.GUI Event Handling (java.awt.event)

267.Delegation Event Model

Networking

268.Networking Basics

- What is IP Address
- What is Protocol
- What is Ports
- What is Client/Server Architecture
- What is Sockets

269.Creating chat application

Java Regs

270.matcherResult interface

271.Matcher class

272.Pattern class

273.PatternSyntaxException



