

J A V A

1. Introduction to Java Programming

- What is java
- History of java
- Difference between c++ & Java
- Features of Java
- Java Virtual machine (JVM)
- Java Development Kit (JDK)
- Java Run-time Environment (JRE)
- parts of JAVA Edition SE, EE, ME
- JDK installation & environment variable's path setting
- "Hello world" first program in java
 - compile & run the program
 - .class file
 - java _{vs} javac cmds
 - run program without class file
- Tokens in java
 - variable
 - keywords
 - literals
 - special symbols
 - strings
 - operator
- About main method
- display statements
 - System.out.println()
 - System.out.print()
 - System.out.printf()

2. Dawn of core programming

- Comments in programming
 - single line
 - multi-line
 - document
- naming conventions
- data types
 - Integer
 - float
 - double
 - character
 - string
 - boolean
- Literals
 - Integer
 - float
 - double
 - character
 - string
 - boolean

- Importing classes & packages
 - Scanner class
 - BufferedReader
- Operators
 - Binary Operators
 - Arithmetic
 - relational
 - logical
 - bitwise
 - assignment
 - Unary operator
 - minus
 - plus
 - increment
 - decrement
 - Ternary operator
 - ()?: operator
 - Other operator
 - boolean
 - instanceof
 - new
 - cast
- Priority of Operator

3. Control statements

- Conditional statement
 - if statement
 - if .. else statement
 - else if ladder
 - nested if else
 - switch statement
- Iteration control statement
 - while loop
 - do .. while loop
 - for loop
 - for-each loop
 - nested loop
- Flow control statement
 - break
 - continue
 - return
 - System.exit(0)

4. Array : collection of elements

- Understanding array
- types of array
 - 1 dimension array
 - 2 dimension array
 - nth dimension array
- Array.length & string.length()

- command line arguments

5. String

- String class
 - String Constructors
 - string class methods
 - String comparing
 - Immutability of Strings
- StringBuffer class
 - StringBuffer constructors
 - StringBuffer methods
- String Tokenizer

6. OOP's Concepts with JAVA

- POP vs OOP
- java as Pure OOP
- class & objects
 - data members & methods
- constructors
 - Default constructor
 - parameterized constructor
- Encapsulation
- abstraction
- access specifiers
 - public
 - private
 - protected
 - default
- inheritance
- polymorphism

7. Methods

- Understanding methods
- Method prototype & method Body
- function vs method
- instance of method
- passing to method
 - passing value
 - passing object
 - passing array
- recursion

- factory method
- static keyword
 - static method
 - static data member
 - static block
- Anonymous inner class

8. Inheritance

- Understanding Inheritance
- Types of Inheritance
 - single
 - multi-level
 - hierarchical
- Why java doesn't support Multiple inheritance
- this keyword
- super keyword
- protected keyword
- final keyword
 - final data member
 - final method
 - final class

9. Polymorphism

- Understanding Polymorphism
- Types of polymorphism
 - Compile time polymorphism
 - Run-time Polymorphism
- Method overloading vs method overriding
- Polymorphism with methods
 - static
 - private
 - final

10. Type casting

- Types of type casting
 - widening
 - narrowing
- Generalization & Specialization
- Object class
- cloning the object

11. Abstract & Interface

- Abstract
 - Abstract method & abstract class
- Interface
- multiple inheritance using interface
- Abstract class vs Interface

12. Packages

- Understanding packages
- packages
 - Build-in packages
 - User-Defined packages
- jar file
- interface with package
- nested package

13. Exception Handling

- Errors in Java
- Exceptions
- throws clause & throw clause
- Types of Exception
 - Build-in in exception
 - User-Defined exception
- re-throwing an exception

14. Wrapper classes

- Understanding wrapper class
- Number class
- Character class
- Byte class
- Short class
- Integer class
- long class
- Float class
- Double class
- Boolean class

15. The collection Framework

- Understanding Collection Framework
- Array of object as Collection
- Collection Objects
 - Sets
 - Lists
 - Queues
 - Maps
- Retrieving Elements from Collection Objects
 - For-each
 - Iteration Interface
 - ListIteration Interface
 - Enumeration Interface
- HashSet class
- LinkedHashMap class
- Stack class
- LinkedList class
- ArrayList class
- Vector class
- HashMap class
- Hashtable class
- Calendar class
- Data class

16. Streams & Files

- Understanding Stream
- File handling
 - FileOutputStream
 - FileInputStream
 - FileWriter
 - FileReader
- Zip & UnZip the files
- File class

17. Networking in Java

- Understanding networks
- TCP/IP protocol
- User Data-gram Protocols
- socket programming
 - Knowing IP Address
 - URL class
 - creating server & client
 - server client talks
 - file sharing

18. Threads

- Understanding process & Threads

- Thread Life Cycle
- Multi-threaded in java
- Multiple Threads Acting on Single Object
- Thread Class Methods
- Deadlock of Threads
- Daemon Threads
- Applications of Thread

19. Graphics programming

- GUI
- draw with frames
- AWT vs Swing
- frames
- Layouts
 - flow layout
 - Card Layout
 - GridBagLayout
 - Border layout
 - Grid Layout
 - BoxLayout
- swing widgets
 - JButton
 - JPasswordField
 - Jlist
 - JLabel
 - JcomboBox
 - JtextField
 - JcheckBox
 - JMenu
 - JtextArea
 - JradioButton
- Event handing with interfaces
- creating own GUI Desktop app.