Part - 1

Block 1- Introduction

- Types of Programming language and Paradigms.
- Java – what, where and why?
- Platform independency
- Comparison in Java with C and C++
- Role of Java Programmer in Industry.
- Java Evolution and History
- Features of Java Language.
- The Java Virtual Machine (JVM) – The heart of Java.
- Java's Magic Byte code
- JDK , JRE and JIT

Block 2– Language Fundamentals or Grammar of Java

- The Java Environment:
- Installing Java in WINDOWS and LINUX.
- Java Program Development in different environment.
- Java Source File Structure
- Introduction to VI, notepad, edit plus editor and Net beans, Eclipse IDE.
- Compilation and Executions procedure using different editor and IDE.
- Reference parameters, Output parameters.
- Access specifiers and its requirement injava.
- Naming conventions

Module 3- Reserve/Keywords present inJava

- Lexical Tokens, Identifiers

Abstract	Const	For	Implements	switch
Assert	Default	Go to	Package	super
Boolean	Do	If	Private	this
Break	Double	new	protected	throw
Byte	Else	Import	Instanceof	throws
Case	Enum	public	Return	static
Catch	Extends	Int	Interface	try
Char	Final	short	transient	void
volatile	Finally	Long	Strictfp	Class
Continue	Float	Native	synchronized	while

Block4- Primitive Data types and Block in java

- Data types
- int , char , float , double,Boolean , short , long , byte
- UNICODE system
- Value type, Reference type.
- Types and Scope of variables

- Static variables, Instancevariable, Local variables, finalvariable, transient variable,volatile variable.
- Static block and Non-static block.
- Static,non-static,final,abstract, native and synchronized
- Communicate java applicationwith other language using java nativeinterface.

Part - 2

Block 5- Java Operators

- Arithmetic operators,
- Relational operators,
- Logical operators,
- Shift operators
- AssignmentOperators,
- Unary operator
- Bitwise operators,
- Special operators.
- Ternary operator
- Instanceof operator and typecasting.

Block 6- Wrapper Class

- Integer
- Character
- Float
- Double
- Boolean
- Short
- Long
- Type conversions
- Implicit conversion,
- Explicitconversion

Module 7- Decision making and branching PROGRAMMING WITH JAVA

- If statement
- If….Else statement and if….else ladder.
- Nested if
- Multipleif
- Switch... case statement
- Conditional operator vs. ifstatement
- Break and continue in java

Module 8- Decision making andlooping

- While
- Do
- For
- For each

Part - 3

Module 9- Object Oriented Programming

- Class
- Object
- Polymorphism
- Inheritance
- Encapsulation
- Abstraction
- Method
- Message Passing
- Life time of object & Garbage Collection.
- Creating with Operating reference and Objects.
- Constructor & initialization code block.
- Access Control, Modifiers,methods
- Nested, Inner Class &Anonymous Classes
- Abstract Class & Interfaces Defining Methods, Argument Passing Mechanism
- Method Overloading, Recursion.
- Dealing with Static Members.Finalize ()Method.
- Use of "this" reference.
- Use of Modifiers with Classes & Methods.

Block 10- Package

- Organizing Classes and Interfaces in Packages.
- Package as Access Protection
- Defining Package.
- Advantage of package
- Sub-Package
- CLASSPATH Setting for Packages.
- Making JAR Files for Library Packages
- Import and Static Import
- Creating .EXE and jar executable file.

Block 11- Exception Handling

- The Idea behind Exception Exceptions & Errors
- Types of Exception
- Checked andUn-CheckedExceptions
- Control Flow in Exceptions
- Use of try and catch block
- Multiple catch block
- Nested try
- finally block throw keyword
- Exception Propagation
- throws keyword
- Exception Handling with Method Overriding
- In-built and User DefinedExceptions
- Exception handling rule in case of method overriding.
- How to handle unreachable statements using finally.

Part - 4

Block 12- Array & String

- Defining an Array Single–Dimensional Array Initializing & Accessing Array Multi – Dimensional Array Jagged Array
- Arrays class
- Methods in Arrays class Sorting the elements of Array
- Searching, insert, delete dynamically.
- Matrix multiplication, addition, transpose, upper triangular, lower triangular, sparsematrix.
- String – what and why Operation on String Immutable String
- String comparison andconcatenation
- Method of String class StringBuffer class and itsmethods.
- StringBuilder class in java. Creating Immutable class likeString.
- Using Collection Bases Loopfor String
- Tokenizing a String
- Object comparisons using Comparator and comparable interface.

Block 13- Dancing and Singing together "Multithreading "In Java

- Understanding Threads and process.
- Multithreading – what and why Creating Thread
- Thread Life-Cycle
- Thread Priorities Daemon thread
- Performing multiple job by multipleThread.
- Runnable class.
- Synchronizing Threads – what and why
- Synchronized method Synchronized block
- Inter Communication of Threads Producer & Consumer problem without balancing
- Producer & Consumer problem with balancing using wait() & notify().

Block 14 - Transformation from CUI to GUI"Applet"

- Applet and its use
- Design Patterns using Applet and JApplet.
- Run Applet application by browser and applettool.
- Applet Architecture.
- Parameters to Applet Life Cycle of Applet
- Embedding Applets in Web page.
- Graphics in Applet
- Displaying image in Applet Animation in Applet Painting in Applet
- Applet Communication Digital Clock in Applet Analog Clock in Applet

Block 15- Input/output Operation in Java (java.io Package)

- Streams and the newI/OCapabilities
- Understanding Streams File class and its methods.
- Creating file and folder using java code.
- The Classes for Input and Output FileOutputStream &FileInputStream
- FileWriter & FileReader
- Input from keyboard byInputStreamReader
- Input from keyboard by Console Input from keyboard byScannerPrintStream class

- PrintWriter class
- BufferedReader and BufferedWriterclass.
- Compressing and Uncompressing File.
- Reading and Writing datasimultaneously
- DataInputStream andDataOutputStream
- The Standard Streams Working with File Object Java & XML Data Binding

Part - 5

Block 16- GUI Programming and Designing Graphical User Interfaces in Java

- Components andContainers Basics of Components UsingContainers
- Layout Managers and user-definedlayout.
- BorderLayout , FlowLayout , GridLayout , GridbagLayout, BoxLayout.
- AWT Components
- Adding a Menu to Window Extending GUI Features UsingSWINGComponents
- Designing GUI using Netbeans. Advanced swing components like JProgressbar , JSlider,JRadioButton , JTree, JTable,JToggleButton,etc.

Block 17- Java Data Structure by the help of java.util Package.

- Collections of Objects Stack
- Queue & Deque
- Use of HashSet &TreeSet Sets
- Map
- Understanding Hashing Use of ArrayList & Vector Use of LinkedList.
- Use of HashMap & TreeMap LinkedHashMap class Hashtable class
- Generics

Block 18 - Event Handling

- Event- Handling Process with AWT.
- Working with Listeners
- Event-Handling Mechanism with SWING.
- Event Classes and its methods. Adapter Classes as HelperClasses in EventHandling
- Applet with Event-Handling.

Block 19- Database Programming using JDBC

- Introduction to JDBC
- Steps to connect to the database JDBC Drivers & Architecture Types of JDBC Drivers.
- Connectivity with Oracle Connectivity withMySQL

Block 20- Projects on J2SE

- A application just like Notepad
- A application like a Calculator
- A application like Address book
- Puzzlegame
- Snake game
- A chatting Application.
- Paint Application Develop any editor.
- Library information System

In Addition to that:

- How to host a website (Free of cost)
- Fundamentals of Python
- What the IT company expect from a fresher
- Problem solving(Interview Questions)

Note:

- At the end of each and every block we have a q/a section and activity(Problem solving).
- Totally we have 5 parts. After completion of each and every part X amount will gifted through Gpay to Y student based on the performance of the q/a section and activity. X and Y based on the students count.
- Requirement : Lap with internet connection