

INFOSOFT IT SOLUTIONS

Training | Projects | Placements

Revathi Apartments, Ameerpet, 1st Floor, Opposite Annapurna Block,

Info soft It solutions, Software Training & Development 905968394,918254087

GROOVY PROGRAMMING

1: Introduction to Groovy

- Overview of Groovy language
- History and background
- Installation and setup
- Basic syntax and structure
- Hello World program
- Variables and data types
- Operators and expressions

2: Control Structures

- Conditional statements (if, else, switch)
- Loops (for, while, do-while)
- Exception handling (try-catch, finally)

3: Functions and Methods

- Defining functions
- Parameters and return types
- Function overloading
- Closures and lambda expressions
- Higher-order functions

4: Collections and Data Structures

- Lists, maps, and sets
- Working with collections
- Iterating over collections
- Collection manipulation methods

- Collection streaming and filtering

5: Object-Oriented Programming in Groovy

- Classes and objects
- Inheritance and polymorphism
- Interfaces and abstract classes
- Access modifiers
- Overriding methods
- Groovy specific OOP features (traits, metaprogramming)

6: File Handling and I/O Operations

- Reading and writing files
- File manipulation
- Working with directories
- Serialization and deserialization

7: Groovy GDK (Groovy Development Kit)

- Introduction to GDK
- String handling and manipulation
- Regular expressions in Groovy
- Date and time manipulation
- Working with JSON and XML

8: Groovy Testing Frameworks

- Introduction to testing in Groovy
- Unit testing with Spock framework
- Mocking and stubbing
- Integration testing

9: Groovy Scripting and Automation

- Writing scripts in Groovy
- Groovy shell
- Scripting best practices
- Automating tasks with Groovy scripts
- Integration with other tools and platforms (e.g., Jenkins)

10: Groovy Web Development

- Introduction to web development with Groovy
- Groovy server pages (GSP)
- Building RESTful APIs with Groovy
- Using frameworks like Grails or Ratpack

11: Database Interaction

- Database connectivity in Groovy
- CRUD operations with GORM (Grails Object Relational Mapping)
- Working with SQL and NoSQL databases
- Transactions and data access patterns

12: Advanced Topics

- Metaprogramming and AST transformations
- Performance optimization techniques
- Groovy concurrency and parallelism
- Working with Groovy AST (Abstract Syntax Tree)
- Best practices and coding standards in Groovy

13: Advanced Groovy Syntax

- Advanced closure concepts
- Method pointers and method references
- Safe navigation operator (?.) and Elvis operator (?:)
- Spread operator () *and the splat operator (.)*
- Null-safe operators
- Advanced string interpolation and multiline strings

14: Metaprogramming in Groovy

- Introduction to metaprogramming
- Dynamic method invocation
- Expand Meta Class and Category classes
- Property and method interception
- AST transformations
- Metaprogramming use cases and best practices

15: Groovy DSLs (Domain Specific Languages)

- Introduction to DSLs
- Creating internal DSLs in Groovy
- Using closures and method delegation for DSLs

- Type checking and static compilation in DSLs
- DSL design patterns
- Examples of DSLs in Groovy (e.g., Gradle build scripts)

16: Advanced Functional Programming

- Functional programming concepts in Groovy
- Working with higher-order functions
- Currying and partial application
- Memoization and lazy evaluation
- Function composition and chaining
- Concurrency with functional programming

17: Groovy Performance Tuning

- Profiling and benchmarking Groovy code
- Understanding Groovy runtime optimizations
- Reducing memory usage and improving execution speed
- Compiler configuration for performance
- Caching and memoization techniques
- Advanced optimization tools and techniques

18: Advanced OOP Concepts

- Mixins and traits in-depth
- Advanced meta classes and metaprogramming in OOP
- Design patterns in Groovy
- Aspect-oriented programming (AOP) with Groovy
- Integrating Groovy with existing Java libraries and frameworks
- Dynamic vs. static typing in OOP design

19: Groovy and Microservices

- Introduction to microservices architecture
- Building microservices with Groovy and Grails
- Containerization with Docker
- Service discovery and orchestration with Kubernetes
- Monitoring and logging microservices
- Security considerations in microservices architecture

20: Groovy and Big Data

- Introduction to big data technologies

- Using Groovy for data processing and analysis
- Integration with Apache Spark and Hadoop
- Real-time data processing with Apache Kafka
- Machine learning with Groovy
- Data visualization with Grails and other tools

21: Reactive Programming with Groovy

- Introduction to reactive programming
- Using Reactor and RxGroovy libraries
- Asynchronous programming with Groovy
- Reactive streams and backpressure handling
- Integrating reactive programming with web applications
- Testing and debugging reactive code

22: Groovy for Android Development

- Introduction to Android development with Groovy
- Setting up Groovy for Android projects
- Building user interfaces with Groovy XML layouts
- Working with Android APIs and libraries
- Testing and debugging Groovy Android apps
- Performance optimization for Android with Groovy

23: Groovy for IoT (Internet of Things)

- Overview of IoT concepts and devices
- Using Groovy for IoT development
- Interfacing with sensors and actuators
- MQTT and other IoT protocols with Groovy
- Building IoT applications with Grails
- Security and privacy considerations in IoT with Groovy

24: Advanced Web Development with Grails

- Introduction to Grails framework
- Grails architecture and conventions
- Advanced controllers and services in Grails
- Using plugins and dependencies effectively
- RESTful APIs with Grails
- Grails security and authentication