Java Professional Program

1. **OOP (Object-Oriented Programming)**
   1. Classes, objects, fields and methods of an object. Encapsulation. Fields and methods of a Class. Modifier 'static' and 'final.'
   2. Inheritance. Abstract classes. Polymorphism
   3. Enums in Java
   4. Understanding reference type. Reference Data Types in Java

2. **JCF. Java Collections Framework**
   1. Working with Arrays in Java. Binary search. Sort.
   2. Data structures definition. Interfaces. Data structure 'List'. ArraysList implementation, beginning.
   3. Iterators and Iterable. Foreach syntax.
   4. Lists implementations. LinkedList.
   5. Java Set implementation. HashSet. Exercises.
   6. Comparing objects in Java. Comparator, Comparable. Method sort.
   7. Data structures 'Queue', 'Stack'. Custom ArrayDeque implementation.
   8. Data structure 'Map'. Object.hashCode, HashMap implementation.
   9. Trees, Binary Trees, Tree Map.
   10. Graphs. Plractice.
   Test

3. **Lambdas & Stream API**
   1. Lambdas, Functional Interfaces, Method references.
   2. Practice. Functions and Supplier interfaces.
   3. Stream API: Stream, primitive streams. Intermediate and Terminal operations.
   4. Java Streams. Practice. Flat map. Collectors.

4. **Input and Output in Java.**
   1. Introduction to Input and Output in Java
   2. Reading/Writing streams of bytes, streams of strings.

5. **General and repetition**
   1. Regular expressions. Basics. Regular Expressions, Java RegExp
   2. Class String and its methods. Immutable. StringBuilder, StringBuffer, performance test.
   3. Generics, Object.equals, Exceptions.
   4. Unit testing. JUnit.
   5. LocalDate, LocalDateTime, ZonedDateTime, exercises.
   Test

6. **Multithreading**
   1. General introduction to Java multithreading, main problems.
   2. Thread, Runnable, Daemon threads, Interrupted Exception
   3. Synchronization. Mutex, Monitor. Atomic types.
   4. Object.wait, Object.join. One-element blocking queue (Messenger).
   5. JavaUtilConcurrent. Concurrent Collections.
   6. Threads Executors.

7. **Spring & Spring Boot**
   1. Apache Maven, сборка проектов.
   2. Принципы программирования: DRY, YAGNI, KISS, SOLID.
   3. Reflections. Annotations..
   4. Spring Framework: Introduction, Context and Beans
   5. Spring Framework: Beans configuration
   6. Spring Boot: Onion (Hexagonal) architecture
   7. Spring Boot: Implementing Rest Controllers
   8. Java JDBC API, работа с базами данных
   9. Spring Boot: JPA and databases
   10. Spring Boot: validation
   11. Spring Boot: logging and AOP basics
   12. Spring Boot: scheduled jobs
   project