JDBC Learning Roadmap

1. **Introduction to JDBC**:
    - Purpose and Importance of JDBC
    - JDBC Architecture Overview
    - JDBC Drivers and Types
2. **Database Connectivity**:
    - Establishing Database Connections
    - JDBC URL Syntax
    - Using DriverManager Class
3. **Executing SQL Queries**:
    - Statement Interface
    - PreparedStatement Interface
    - CallableStatement Interface
4. **Working with Result Sets**:
    - Retrieving and Processing Result Sets
    - Result Set Navigation
    - Handling Result Set Metadata
5. **Transaction Management**:
    - ACID Properties of Transactions

- Commit and Rollback Operations
- Savepoints in Transactions

6. **Exception Handling and Error Management**:

- Handling SQLExceptions
- Best Practices for Error Handling

7. **Connection Pooling**:

- Introduction to Connection Pooling
- Connection Pool Libraries/Frameworks

8. **Advanced JDBC Topics**:

- Batch Processing
- Stored Procedures
- Metadata Retrieval

9. **Integration with Java EE and Spring**:

- JDBC in Servlets
- JDBC in JSP
- JDBC in Spring Framework

10. **Best Practices and Design Patterns**:

- Data Access Object (DAO) Pattern
- Transaction Script Pattern
- JDBC Best Practices

11. **Testing and Debugging**:

- Testing JDBC Applications
- Debugging JDBC Applications
- Unit Testing with JUnit and Mockito

12. **Security Considerations**:

- SQL Injection Prevention
- Database Encryption
- Access Control

13. **Performance Tuning**:

- Optimizing SQL Queries
- Connection Pooling Optimization
- Caching Strategies

14. **Continuous Learning and Updates**:

- Resources for Learning JDBC
- Stay Updated with Latest Features