

Here's a 7-day, 12-hours-a-day study plan designed for quick revision of the software engineer syllabus you shared:

## **Day 1: Programming Fundamentals (12 hours)**

### **Morning (4 hours)**

- **Data Structures**
  - Arrays, Linked Lists, Stacks, Queues
  - Practice coding problems on each topic (e.g., LeetCode, HackerRank)

### **Afternoon (4 hours)**

- **Trees, Graphs**
  - Binary Trees, Binary Search Trees, Graph Traversal (BFS, DFS)
  - Solve problems related to these data structures

### **Evening (4 hours)**

- **Algorithms**
  - Sorting (Merge, Quick, Heap), Searching Algorithms (Binary, Linear)
  - Practice dynamic programming problems (Knapsack, LCS, etc.)

## **Day 2: Object-Oriented Programming & Software Development Methodologies (12 hours)**

### **Morning (4 hours)**

- **OOP Concepts**

- Inheritance, Polymorphism, Encapsulation
- Practice implementing these in your preferred language (e.g., Python, Java)

### **Afternoon (4 hours)**

- **Agile Development & Scrum**
  - Revise Agile principles, Scrum roles, and ceremonies
  - Review Test-Driven Development (TDD) and Continuous Integration (CI) concepts

### **Evening (4 hours)**

- **Waterfall Model & Continuous Deployment (CD)**
  - Compare Agile with Waterfall
  - Study the CI/CD pipeline and deployment automation

## **Day 3: Data Storage & Management (12 hours)**

### **Morning (4 hours)**

- **Relational Databases**
  - SQL, MySQL, Data Modeling
  - Practice SQL queries, focus on joins, subqueries, and optimization

### **Afternoon (4 hours)**

- **NoSQL Databases**
  - MongoDB, Cassandra, Data Schema Design
  - Study use cases and differences between SQL and NoSQL databases

### **Evening (4 hours)**

- **Database Performance Optimization**

- Indexing, Sharding, Data Partitioning
- Focus on real-world database performance tuning techniques

## **Day 4: Software Design Patterns (12 hours)**

### **Morning (4 hours)**

- **Creational Patterns**
  - Singleton, Factory, Builder
  - Review examples in code and identify their use cases

### **Afternoon (4 hours)**

- **Structural Patterns**
  - Adapter, Bridge, Composite
  - Focus on solving design pattern-related problems

### **Evening (4 hours)**

- **Behavioral Patterns**
  - Observer, Strategy, Template Method
  - Study practical implementations and benefits in code architecture

## **Day 5: Web Development (12 hours)**

### **Morning (4 hours)**

- **Front-End Development**
  - HTML, CSS, JavaScript, React
  - Build a basic front-end project using React and CSS

### **Afternoon (4 hours)**

- **Back-End Development**

- Node.js, Django
- Set up a basic RESTful API using Node.js or Django

### **Evening (4 hours)**

- **RESTful API Design & Web Services**

- Study RESTful API best practices, focus on statelessness and scalability
- Understand SOAP vs REST

## **Day 6: Testing, Debugging, and Cloud Computing (12 hours)**

### **Morning (4 hours)**

- **Unit & Integration Testing**

- JUnit, PyUnit
- Write and run unit tests for your back-end API from Day 5

### **Afternoon (4 hours)**

- **Debugging Techniques**

- Practice using print statements, breakpoints, and debuggers in your IDE
- Focus on debugging complex algorithms and code

### **Evening (4 hours)**

- **Cloud Computing**

- AWS, Google Cloud basics
- Study cloud deployment models (IaaS, PaaS, SaaS) and cloud security

## **Day 7: DevOps & Soft Skills (12 hours)**

### **Morning (4 hours)**

- **Containerization**
  - Docker basics, container orchestration using Kubernetes
  - Set up a basic Docker container for your API

### **Afternoon (4 hours)**

- **Infrastructure as Code & Monitoring**
  - Study Terraform basics and review monitoring tools like Prometheus, Grafana
  - Go through Infrastructure as Code (IaC) principles

### **Evening (4 hours)**

- **Soft Skills & Interview Prep**
  - Review common behavioral interview questions
  - Practice problem-solving scenarios and time management techniques

This plan ensures you cover each topic thoroughly in 7 days with hands-on practice, coding exercises, and revision of theoretical concepts.