



# Complete Backend + DevOps Roadmap

Transform from Beginner to Industry-Ready Engineer

6-8 Months Journey



## What You'll Achieve

- ✓ Backend API Development Expert
- ✓ Cloud Deployment & Scaling
- ✓ DevOps & Automation Skills
- ✓ System Design Understanding
- ✓ ₹10-20 LPA Job Ready
- ✓ Multiple Career Paths Open



# Phase 1: C++ + DSA Mastery

Month 1-2

 **Goal: Build rock-solid problem-solving and coding fundamentals**

## Core Topics to Master

### **C++ Fundamentals**

Syntax, OOPs, STL (vector, map, set)

### **Data Structures**

Arrays, Linked Lists, Stacks, Queues, Heaps

### **Algorithms**

Sorting, Searching, Recursion, DP

### **Advanced Topics**

Trees, Graphs, Complexity Analysis



## Essential Resources

[Striver's A2Z DSA Sheet](#)

[LeetCode](#)

[Codeforces](#)

[CSES Problem Set](#)

[GeeksforGeeks Practice](#)



## Project Milestones

### **Library Management System**

CLI-based system using OOPs and STL

### **Parking Lot System**

Complex object modeling and relationships



 **Goal: Understand web fundamentals and frontend basics**

### Core Technologies

#### **HTML5**

Semantic tags, forms, accessibility

#### **CSS3**

Flexbox, Grid, animations, responsive design

#### **JavaScript ES6+**

DOM, events, async/await, fetch API

#### **Version Control**

Git fundamentals, GitHub workflow



### Study Resources

[MDN Web Docs](#)   [freeCodeCamp](#)   [JavaScript.info](#)   [Frontend Mentor](#)



### Projects

#### **Portfolio Website**

Responsive design with animations

#### **Weather App**

API integration and data handling

 **Goal: Master API development and server-side logic**

### **Framework Options (Choose One)**

#### **Node.js + Express**

JavaScript/TypeScript, middleware, JWT auth

#### **Java + Spring Boot**

Spring MVC, Security, JPA/Hibernate

#### **Python + Django/Flask**

ORM, REST framework, authentication

### **Major Projects**

#### **Authentication API**

JWT, OAuth, password reset

#### **Blogging Platform**

CRUD operations, user roles

#### **E-commerce Backend**

Cart, orders, payment integration



 **Goal: Design scalable data solutions and architecture**

### Database Technologies

#### **SQL (MySQL/PostgreSQL)**

Joins, indexes, transactions, optimization

#### **NoSQL (MongoDB)**

Document modeling, aggregation pipelines

#### **Caching (Redis)**

Session storage, caching strategies

#### **System Design**

Load balancing, scaling, CAP theorem

### Architecture Projects

#### **URL Shortener**

Like bit.ly with analytics

#### **Chat Application**

Real-time messaging, scalable

 **Goal: Deploy and scale applications in cloud**

## **Cloud Services**

### **AWS Services**

EC2, S3, RDS, Lambda, CloudFront

### **Google Cloud**

Compute Engine, BigQuery, Cloud Functions

### **Serverless**

Functions, API Gateway, auto-scaling

### **Networking**

VPC, load balancers, CDN

## **Cloud Projects**

### **Full-Stack Deployment**

Complete app on AWS/GCP

### **Serverless API**

Lambda + API Gateway

 **Goal: Containerization and CI/CD automation**

### DevOps Tools

#### **Docker**

Images, containers, multi-stage builds

#### **Kubernetes**

Pods, deployments, services, ingress

#### **CI/CD**

Jenkins, GitHub Actions, pipelines

#### **Infrastructure as Code**

Terraform basics (optional)

### Final Projects

#### **Microservices Architecture**




Containerized, orchestrated


#### **Complete CI/CD Pipeline**

Code to production automation

 **Expected Outcome: ₹10-20 LPA in Product Companies | Backend + Cloud Expert | Multiple Career Paths**

### Pro Tips for Success

-  **Consistency Over Intensity:** Daily 3-4 hours better than weekend marathons
-  **Build in Public:** Share progress on LinkedIn, get feedback from community
-  **Focus on Projects:** Employers care more about what you built than what you studied

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- 💡 **Document Everything:** Good README files show professionalism
  - 💡 **Quality Over Quantity:** 3 polished projects > 10 incomplete ones
  - 💡 **Network Early:** Connect with developers, join tech communities