

## **Foundation**

Foundation Javascript, async nature of JS  
Node.js and its runtime  
Databases (NoSQL/SQL)  
Mongo and Postgres deep dive  
Typescript beginner to advance

## **Backend**

Backend communication protocols  
Express basic to advance  
ORMs  
Middlewares, routes, status codes, global catches  
Zod  
MonoRepos, turborepo  
Serverless Backends  
OpenAPI Spec  
Autogenerated clients  
Authentication using external libraries  
Scaling Node.js, performance benchmarks  
Deploying npm packages

## **Frontend**

Reconcilers and Frontend frameworks  
React beginner to advance  
Internals of state, Context API  
State management using recoil  
CSS you need to know of, Flexbox, basic styling  
Frontend UI frameworks, Deep dive into Tailwind  
Containerization, Docker  
Next.js  
Custom hooks  
In house auth using next auth

## **Basic Devops**

Docker end to end  
Deploying to AWS servers  
Newer clouds like fly/Remix  
Nginx and reverse proxies

## **Projects**

GSoC Project setting up and issue solving  
Building Paytm/Wallet End to End

## **Advanced Backend, System Design**

Advanced backend communication

Message queues and PubSubs

Proxies, Load balancers

Redis Deep dive

Kafka Deep dive

Common Design Patterns in JS

Advanced DB concepts (Indexing, normalization)

Rate limiting

Captchas and DDoS protection

Sharding, Replication, Resiliency

Horizontal and vertical scaling

Polling and websockets

Grpc

Capacity Estimation

Load Balancers

CAP Theorem

Testing Node.js Apps in 2023

Real time communication, basics of WebRTC

## **Advanced Devops**

Docker Deep dive

Container orchestration, Docker Swarm

Kubernetes

CI/CD

Monitoring systems basics to advance

Prometheus, Grafana

Newrelic as a paid service

Serverless Deep dive

AWS Constructs (EC2, S3, CDNs, LB, EKS)

## **Projects**

Zerodha end to end

Zapier end to end

Real world open source projects