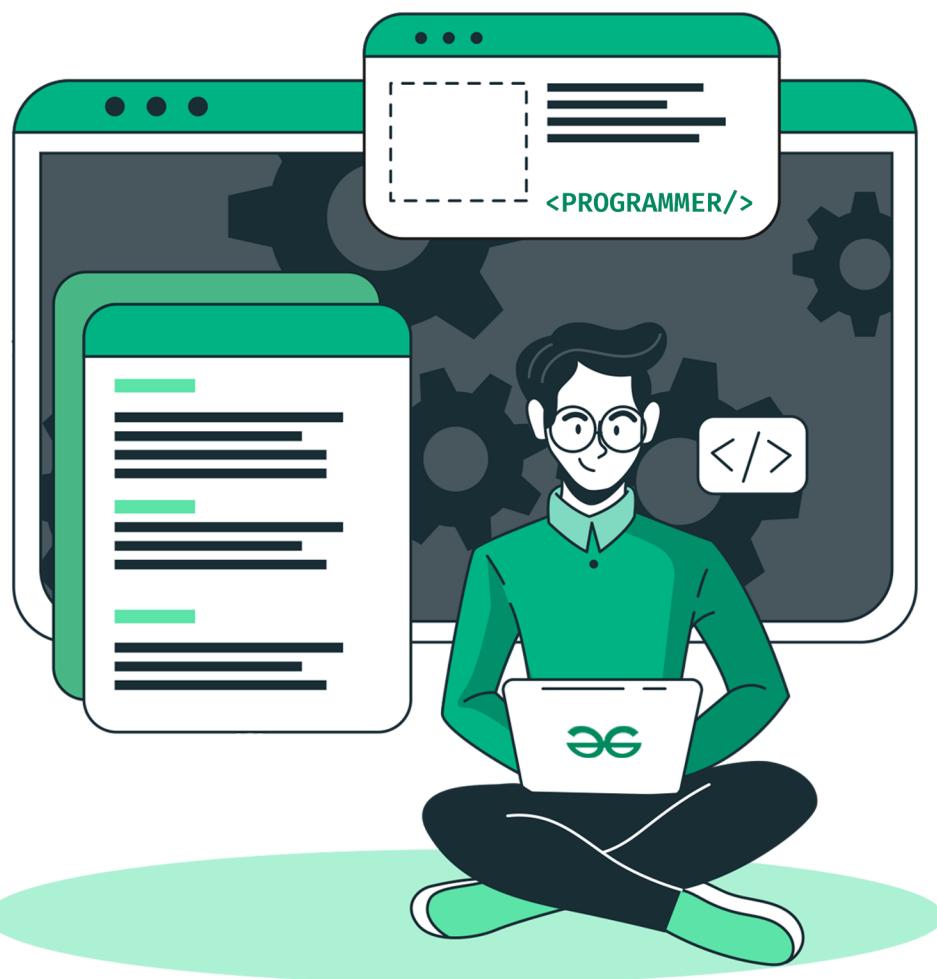


# THE PROGRAMMER'S GO-TO GUIDE

by



Your roadmap to learning, building, and getting hired –  
with everything you need, all in one place.

# {Index}

- Pick your **First Language**
- Data Structure and Algorithm**
- Competitive Programming**
- System Design**
- Data Science and Machine learning**
- Web Technologies**
- Cloud and DevOps**
- Interview Preparation**
- Software Development**
- Choosing a DataBase**
- Projects to show**
- Practice to win**
- Learn from their Experience**

UX ?



PYTHON

JS

=

{}

</>

JAVA

{}

%

html

</>

PHP



html

2

CSS

JAVA



# GETTING STARTED

<Pick your First language>



Confused about where  
to begin? Start here.

”

**P**ython is one of the most popular and **beginner-friendly** programming languages. Its **clean** and **readable** syntax makes it ideal for a wide range of applications—from automating daily tasks to building full-fledged **web apps** and **analyzing data**. Think of it as writing a recipe for your favorite dish; Python lets you describe steps in plain, readable instructions, making it **easy** to follow and tweak.

Python  
Tutorial

Python  
Projects

Python  
Tkinter

Python  
Programming Examples

Python  
Interview Questions



”

**J**ava is a robust, object-oriented language known for its "write once, run anywhere" philosophy. It powers Android apps, enterprise systems, and even large banking platforms. Imagine creating a mobile app that helps your friends split bills during trips—Java is the kind of language you'd use to build that and run it on almost any device.

**Java  
Tutorial**

**Java Interview  
Questions**



**C**++ is a high-performance programming language often used for game development, operating systems, and competitive programming.

Think of it as managing a huge warehouse manually, where you need full control of what happens, when, and how—C++ gives you that control in coding.



**C ++  
Tutorial**

**C++ Interview  
Questions**

# *Learn DSA like the TOP 1% do*

Data Structures  
& Algorithms  
with C++/Java



**DSA for  
Interview  
Preparation**

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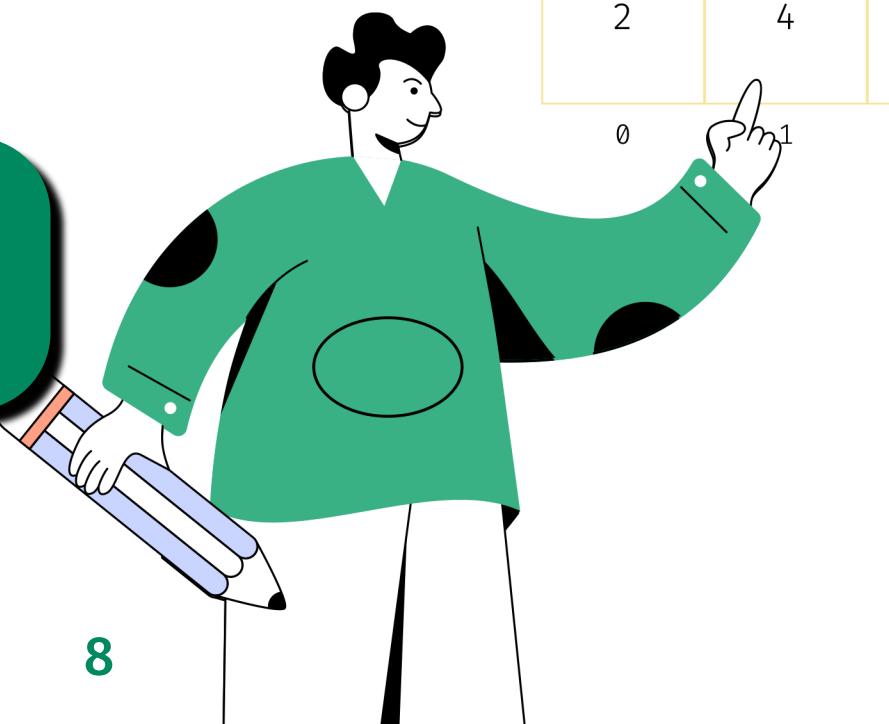
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,,

C is a powerful, low-level programming language that's great for building system software like operating systems and embedded systems.

Think of it like building a machine from scratch using raw materials. You get direct access to the nuts and bolts—memory, hardware interactions, and every tiny operation. C gives you that kind of control, which makes it super efficient and fast, but also means you need to be extra careful with how you use it.

## C Programming Tutorial





”

**G**oLang is a modern language developed by Google, designed to build scalable and efficient applications. It's clean, fast, and easy to deploy, especially in the world of cloud computing.

If you were setting up a delivery app backend that needs to handle thousands of orders every second—Go would be your best friend.

**GoLang  
Tutorial**

**GoLang or  
Node.js ?**



**P**HP is a server-side scripting language designed for web development. Many websites (including big names like Facebook in its early days) were built using PHP.

Think of building a contact form for your school's website where users submit messages—PHP helps process that and send it straight to your email.

**PHP  
Tutorial**

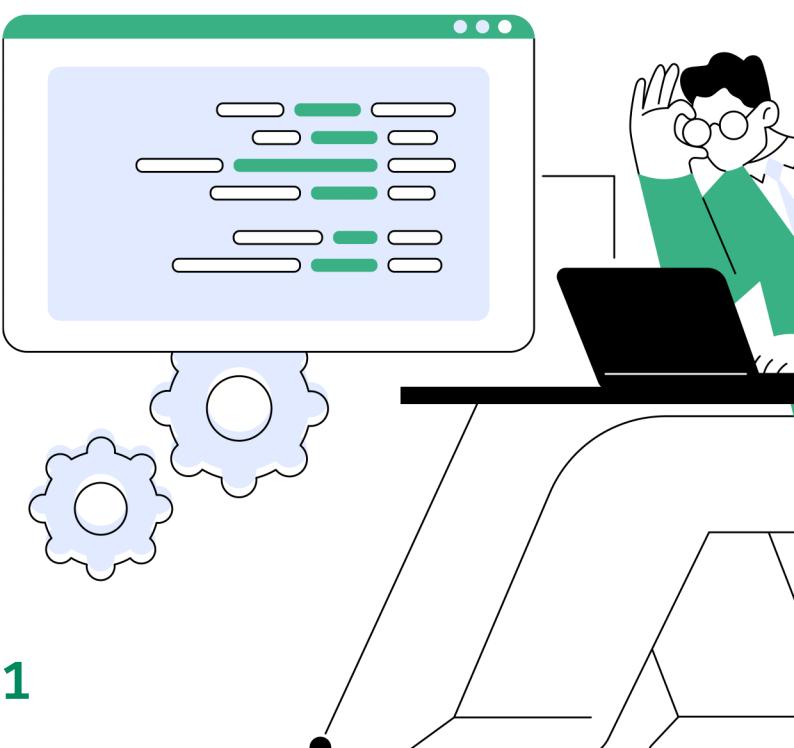
**Top Interview  
Questions for PHP**

”

**R** is a language made for statistics and data visualization. It's widely used in data analysis, especially in academic and research settings.

Imagine you've done a survey in your class about favorite study snacks—R helps you turn those answers into colorful graphs and insights you can present.

## R Language Tutorial



,,

**S**QL is the go-to language for managing data in relational databases. Whether it's storing student grades or retrieving the list of top scorers, SQL helps you organize and analyze structured data efficiently.

It's like searching for your favorite song in a music library—you use SQL to filter and fetch exactly what you need.



SQL  
Tutorial

SQL  
Interview  
Questions



# DSA

<DATA STRUCTURES AND  
ALGORITHMS>



Think of DSA as your toolkit for solving everyday problems in the programming world. Just like you'd organize books on a shelf by genre or size, data structures help you store and access data efficiently. Algorithms, on the other hand, are like the steps in a recipe – structured instructions to get the result you want.

## **WHY YOU NEED IT ?**

Whether you're acing coding interviews or optimizing real-world applications, a strong grip on DSA makes your solutions faster, smarter, and cleaner.

**DSA for  
Beginners**

**Basic DSA  
Problems**

**DSA  
Interview Questions**

**DSA  
Roadmap**

**Sorting  
Algorithms**

**Searching  
Algorithms**

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 On-site · Full-time · Entry level

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# CP

<COMPETITIVE PROGRAMMING>

Think of it as a brain gym for coders.

You solve tricky problems under time pressure—just like in real tech interviews. It's the perfect way to sharpen your logic, speed, and problem-solving skills while having fun competing with others.



**Competitive  
Programming Basics**

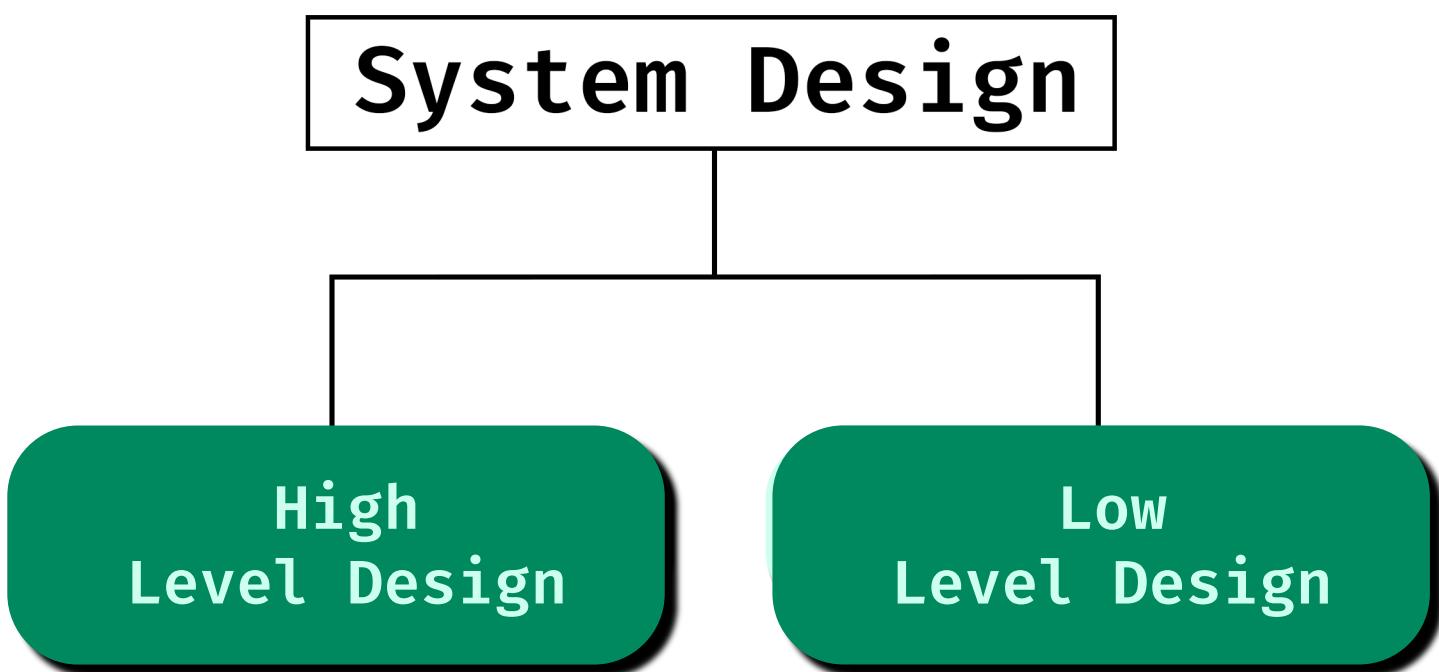
**Master Competitive  
Programming**



# SYSTEM DESIGN

< HIGH LEVEL DESIGN >  
< LOW LEVEL DESIGN >

It's all about building big, smart, and efficient systems that actually work when millions use them. From making apps scalable to ensuring they never crash—this is the secret sauce behind every successful tech product. A must-have skill if you dream of being a top-tier engineer!





## HIGH LEVEL DESIGN (HLD)

Think of HLD as the blueprint of a building –it shows what the system will look like from above. You break things down into big pieces, decide how they'll work together, and set the foundation before getting into the nitty-gritty.

Top High Level  
Interview Questions

## LOW LEVEL DESIGN (LLD)

If HLD is the blueprint, LLD is the step-by-step instruction manual. It zooms into each part of the system—like how data is stored, which APIs are used, and how everything is actually built behind the scenes.

Top Low Level  
Interview Questions

# Data Science Offline Program

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Mentors



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Projects

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# DS & ML

< DATA SCIENCE > &  
< MACHINE LEARNING >



# DATA SCIENCE

Ever wondered how Netflix recommends what to watch next or how companies predict trends? That's Data Science at work. It mixes statistics, algorithms, and domain know-how to pull insights from all kinds of data – from neat spreadsheets to chaotic text. And Python? It's the favorite tool in the kit.

Data Science  
with Python

Data Science  
for Beginners

Data Science  
Interview Questions



# MACHINE LEARNING

Imagine teaching your computer to learn from experience – that's what Machine Learning does. It builds smart algorithms that get better with more data. From powering recommendation engines to understanding human language, ML is the brain behind many of today's tech wonders.

Machine Learning

ML Maths

Deep Learning



# DATA VISUALIZATION

Turning numbers into stories – that's the magic of Data Visualization. It helps you spot patterns, trends, and outliers using charts, graphs, and plots. With tools like Pandas and Matplotlib in Python, you can make data not just readable, but memorable.

[Data Visualization](#)

[Pandas Tutorial](#)

[NumPy Tutorial](#)

[Natural Language Processing \(NLP\)](#)

# WEB TECHNOLOGIES

< FRONTEND DEVELOPMENT >  
< BACKEND DEVELOPMENT >



# FRONTEND DEVELOPMENT

Frontend development is all about creating the part of a website or web app that users interact with. It involves using technologies like HTML, CSS, and JavaScript to build the layout, design, and features. Popular tools like ReactJS and Bootstrap help make this process faster and more efficient.

[HTML Tutorial](#)

[CSS Tutorial](#)

[JavaScript Tutorial](#)

[ReactJS Tutorial](#)

[NextJS Tutorial](#)

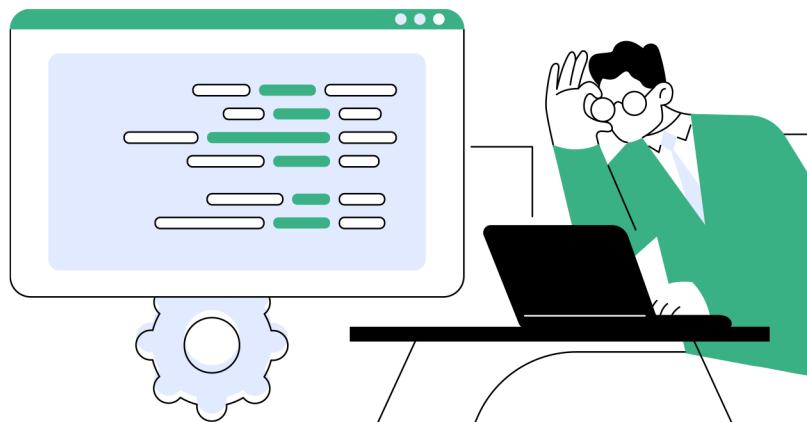
[Bootstrap Tutorial](#)

# BACKEND DEVELOPMENT

While frontend handles what users see, backend development takes care of everything they don't—like storing data, processing requests, and making sure the app runs smoothly. Frameworks like NodeJS, Django, and Flask help developers build this powerful behind-the-scenes engine.

**NodeJS  
Tutorial**

**Django  
Tutorial**



# *Master MERN Stack in 10 weeks*

FULL STACK



MERN  
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# CLOUD AND DEVOPS

< GIT >

< AWS >

< Docker >

< Kubernetes >



# GIT

Git is a tool that helps developers keep track of changes in their code over time. Imagine you're writing a long essay with friends—Git lets each person make edits, save versions, and go back to earlier drafts if needed. It's perfect for teamwork, making sure no one's changes get lost and everyone stays on the same page.

**Know the difference  
Git vs GitHub**

**Git Tutorial**



# AWS

AWS (Amazon Web Services) is a cloud platform that offers on-demand computing power and storage. Think of it like renting space and tools online instead of buying and managing your own servers. It's commonly used to host websites, run applications, and store databases—making it a go-to choice for businesses of all sizes.

**AWS  
Certification Guide**

**AWS Tutorial**



# DOCKER

Docker is a platform that lets developers package an application and everything it needs—like libraries and settings—into a container. Think of it like putting your app in a suitcase that works the same way no matter where you open it. This makes it easier to test, share, and deploy apps without worrying about environment differences

**Docker  
Interview Questions**

**Docker Tutorial**



# KUBERNETES

Kubernetes is an open-source platform that helps manage and scale containerized applications automatically. Imagine you have several Docker containers running your app—Kubernetes acts like a traffic controller, making sure everything runs smoothly, scales when needed, and recovers if something breaks. It's a key tool in cloud-native and microservices-based systems.

**Top Interview  
Questions for Kubernetes**

**Kubernetes Tutorial**



# INTERVIEW PREPARATION

- < SYSTEM DESIGN INTERVIEW GUIDE >
- < DESIGN PATTERNS >
- < Tech Interview 101 >



# SYSTEM DESIGN INTERVIEW GUIDE

System design interviews test how well you can plan and build large-scale, reliable systems. It's less about coding and more about thinking through things like how to handle millions of users, prevent downtime, and balance heavy traffic. Knowing concepts like scalability, fault tolerance, and load balancing is key to doing well.

Crack System  
Design interview

System Design  
Interview Guide

Not so  
Common Questions

# DESIGN PATTERNS

Design Patterns are like shortcuts for common problems in coding. For example, the Singleton ensures only one instance of something exists, while the Factory helps create objects easily, and the Observer keeps things in sync. Learning these patterns helps you write smarter, more efficient code.

Design  
Patterns





# TECH INTERVIEW 101

In tech interviews, you'll often face coding challenges that test your problem-solving skills. To prepare, focus on mastering algorithms, data structures, and system design—they're essential for tackling these problems effectively.

A to Z  
Interview Guide

Tech  
Interview 101



**5+ industry projects**

**1 powerful portfolio**

**Learn Backend development  
by building real systems**

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# SOFTWARE DEVELOPMENT

< SOFTWARE TESTING >

< SOFTWARE DEVELOPMENT LIFE CYCLE>  
(SDLC)



## SOFTWARE TESTING

Think of building software like building with LEGOs. Unit testing checks individual "bricks" fit. Integration testing sees if small connected parts work together. System testing checks the whole "castle." So, software testing is simply making sure all the pieces and the final product work reliably, just like checking your LEGOs at each stage.

**Types of  
Software Testing**

**Software  
Testing Tutorial**



## **SOFTWARE DEVELOPMENT LIFE CYCLE (SDLC)**

Think of building software like a big project with steps. The Software Development Life Cycle (SDLC) is just that step-by-step plan, from figuring out what to build to keeping it running smoothly. It helps make sure everything goes right and the software is built in a smart, organized way.

**Where is  
SDLC used**

**Software Development  
Life Cycle**

# DATABASES

< SQL >

< MYSQL >

< POSTGRESQL >

< MONGODB >



# SQL

Think of SQL as the common language that different computer programs use to talk to databases – like asking a giant filing cabinet (the database) for specific information, or telling it to add, change, or organize things inside. If you want to work with most big digital filing systems like MySQL, PostgreSQL, or SQL Server, you need to know a bit of SQL.

**SQL  
Tutorial**

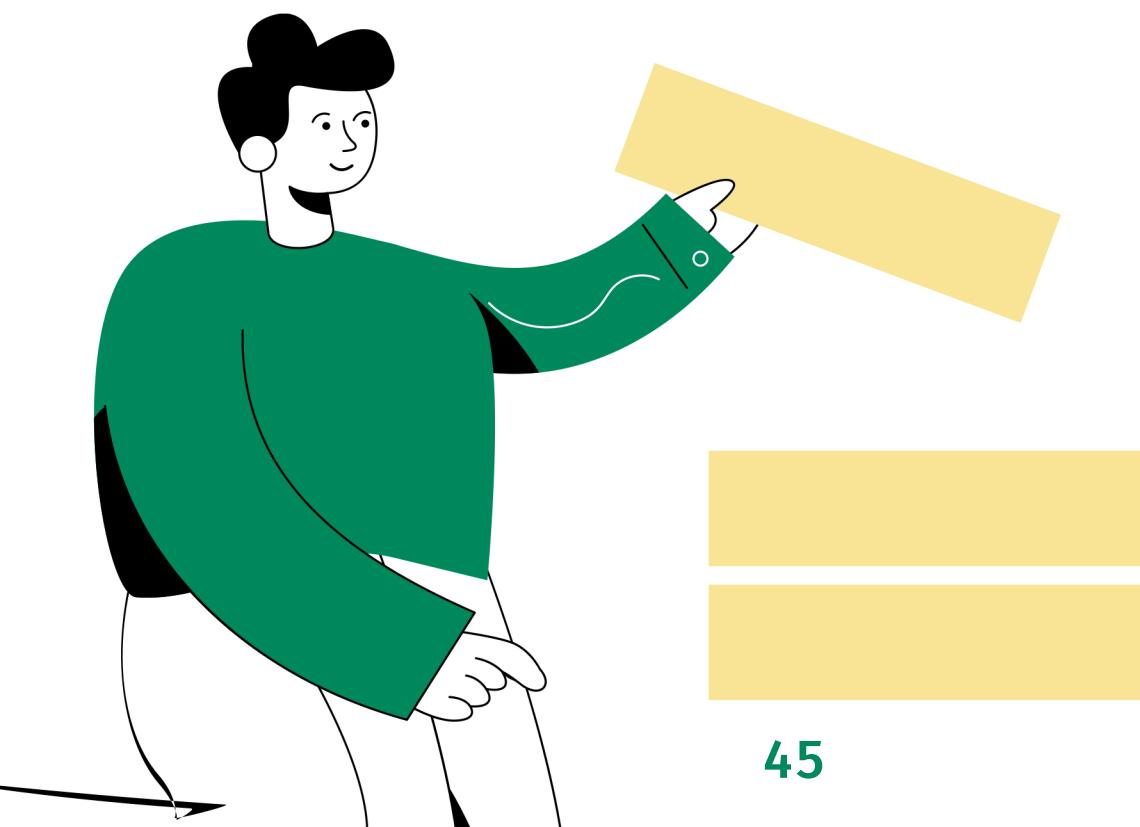
**SQL  
Interview Questions**

# MYSQL

MySQL is a popular relational database management system. It is open-source and widely used for web applications and data storage solutions.

Common MySQL  
Queries

MySQL  
Tutorial





# POSTGRESQL

PostgreSQL is an advanced, open-source relational database system known for its extensibility and standards compliance. It supports complex queries and large datasets.

Did you  
know?

PostgreSQL  
Tutorial

# MONGODB

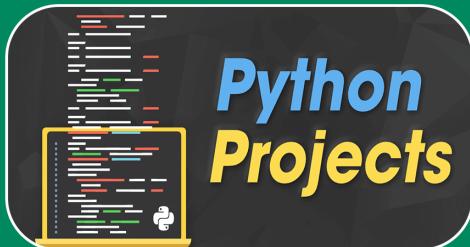
MongoDB is a NoSQL database designed for handling large volumes of unstructured data. It's commonly used for web applications requiring flexible data models

How does  
MongoDB work

MongoDB  
Tutorial



# PROJECTS TO SHOW:



## Python Projects

From 'Hello World' to  
**'Hello, I'm worth hiring'**  
– your Python journey  
starts here.

[\*\*<View>\*\*](#)

## Coding

PROJECTS

for Beginners



Because '**I watched a coding tutorial once**'  
doesn't look as good on your resume

[\*\*<View>\*\*](#)

## Java Project ideas



**Java:**  
where the **projects**  
are hot and the coffee  
references never get old

[\*\*<View>\*\*](#)

TOP 50  
SOFTWARE  
DEVELOPMENT  
PROJECT IDEAS  
FOR BEGINNERS



Why build another  
calculator app  
when you could build  
**your future** instead?

[\*\*<View>\*\*](#)

WEB  
DEVELOPMENT  
PROJECTS



HTML is easy.  
CSS is hard.  
These **projects** will make  
employers hit **refresh** on  
**your application.**

[\*\*<View>\*\*](#)

Project  
Ideas For  
**Final Year  
Students**



Last year of college?  
Time to build  
something more **impressive**  
than your collection  
of **energy drink cans**.

[\*\*<View>\*\*](#)



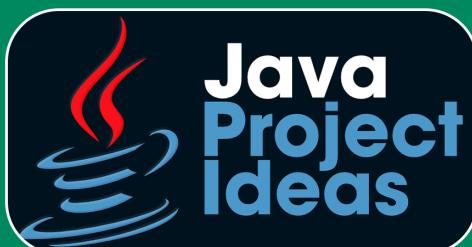
**C-riously**  
impressive projects that  
don't require a **C-nior**  
**developer skill set.**

[\*\*<View>\*\*](#)



**Terminal illness:**  
when you can't stop  
building cool Linux  
projects after  
**reading this article.**

[\*\*<View>\*\*](#)



Seven ways to  
make employers say  
**'Java nice day'** after  
seeing your portfolio

[\*\*<View>\*\*](#)



# LEARN FROM THEIR EXPERIENCE

“ 5 were selected for the Software Development Engineer (SDE) intern role, and I was one of them! ”

“ I applied through the Google Careers Portal as an off-campus applicant from a tier-3 college and this happened ”

“ Nvidia Interview Experience: Only 3 got selected ”

“ All three rounds in Microsoft took place on the same day. ”

“ Samsung Interview Verdict:  
SELECTED ”

## Choose your Experience Level

Fresher

Experienced



# PRACTICE TO WIN



## POTD (Problem of the Day)

Just 1 a day = big improvement

## GfG Weekly Contests

Compete, grow, and win



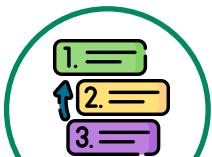
## Jobathon

Get hired  
through challenges



## GfG 160

160 Handpicked  
DSA Problems



## Topic wise

Array, Linked List, Graphs  
and many more



## Company Wise

Amazon, Microsoft, Meta, TCS  
and many more



## Featured Sprint

Top DSA, Top System design, Top Questions  
and many more

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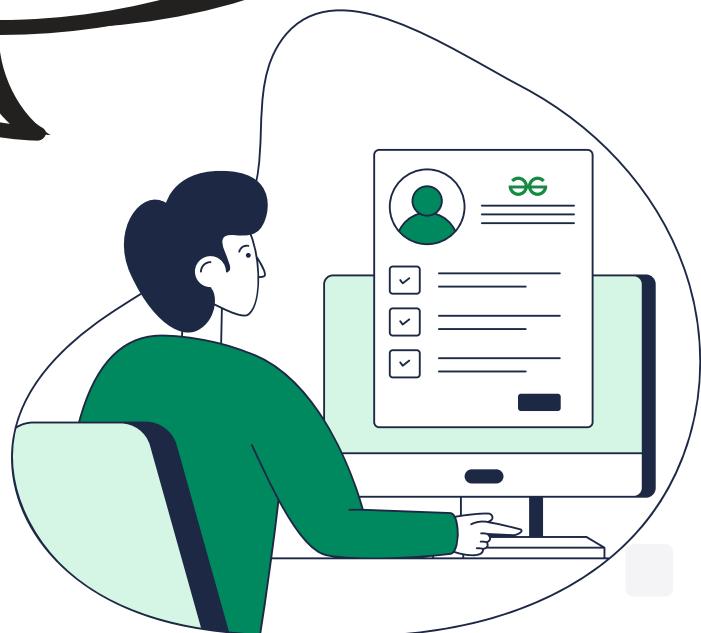


GATE



GeeksforGeeks

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