

What is Software
Engineering + What is
BE ?



Topics to be Covered:

- Software Development : What! Why
- Software job in 2022 & beyond
- Backend Development
- What is BE?
- Brief Introduction to Node JS
- Roles and responsibilities of an BE Engineer
- BE libraries and frameworks.
- Difference between FE and BE
- How to Become a Backend Engineer?
- Interview Process of Backend roles in the industry
- Flow of BackEnd

Software Development | What ?

“Everyone Should Know How To Program A Computer, Because It Teaches You How To Think !”

- Steve Jobs

Software

It's basically the combination of instructions and data that tells the computer how to operate/execute

Activities involved for creating, designing, deploying and supporting above software is called as **Software Development**.

Software Development | Why ?



Motivations:

- It brings great power. One can literally make anything, from a simple blogging website to a complex search engine
- Allows you to make your product/ideas reach all nooks and corners of the world.
- To become a software developer, neither does your age or self-perceived intellectual capability matters. So literally any one can become a Software developer. All it takes, is a computer, internet and the interest
- And the most important, a lot of money !!!! Software development jobs are one of the highly paid job offerings

Software jobs in 2022 and beyond



How software jobs has evolved in the last couple of years ?

Whole world has witnessed the unprecedented impacts of Covid-19. It has badly impacted almost all the countries and their economies. It had the similar impacts on the IT sector as well. Few of the major changes that happened in the last couple of years have been :

- Moving from offline to Online recruitment/interviews.
- Work from home getting well accepted.
- Distributed team and remote communications

Software jobs in 2022 and beyond



High points of Software jobs in these testing times :

- When almost all the sectors saw decline, Software jobs almost remained immune to this Covid disruptions
- Software industry is built on the principle of change. When the whole world was going through the extremely tough phase of change, it was comparatively easy for the Software based jobs to adapt.

Software jobs in 2022 and beyond



Job Prospects :

- Since most of the companies have realized the potential of the internet in this era of multiple lockdowns, more and more companies are getting online, meaning more software development opportunities.
- Demand for software developers has never been this higher. And this will continue for many coming years
- Whole world has accepted the possibility of remote working. This has opened global opportunities for everyone. What it means is, now we can sit in a small town in India and still work for an MNC operating from another part of the World.

Software jobs in 2022 and beyond



We know, there's a lot of opportunities in coming years, but is it really easy ?

Challenges :

- Very high competition
- Evolving technologies
- Lack of awareness about the right technologies

So we need to have what the industry demands to be successful in 2022 and beyond !

What is BE?

- Discuss what is the back-end of a website
- Server Side the back end is the nuts and bolts
- Part of the application that the user cannot see
- Backend contains: a server, an application, and a database.
- In order to communicate the database, server and the application, backend technology is used
- When the user submits their information it gets processed on the server side (back end).
- Take this example : Open amazon.in and talk about the personal login data, orders placed on the website

Basic Introduction to Node JS

- Node.js is an open-source and cross-platform JavaScript runtime environment. It is a well-liked tool for nearly any quite project!
- Node.js runs the V8 JavaScript engine, the core of Google Chrome, outside of the browser. This allows Node.js to be very performant.
- A Node.js app runs during a single process, without creating a replacement thread for each request. Node.js provides a group of asynchronous I/O primitives in its standard library that prevent JavaScript code from blocking and usually , libraries in Node.js are written using non-blocking paradigms, making blocking behavior the exception rather than the norm.
- When Node.js performs an I/O operation, like reading from the network, accessing a database or the filesystem, rather than blocking the thread and wasting CPU cycles waiting, Node.js will resume the operations when the response comes back.

Basic Introduction to Node JS

- This allows Node.js to handle thousands of concurrent connections with one server without introducing the burden of managing thread concurrency, which might be a big source of bugs.
- Node.js features a unique advantage because many frontend developers that write JavaScript for the browser are now ready to write the server-side code additionally to the client-side code without the necessity to find out a totally different language.
- In Node.js the new ECMAScript standards are often used easily , as you do not need to await all of your users to update their browsers - you're responsible of deciding which ECMAScript version to use by changing the Node.js version, and you'll also enable specific experimental features by running Node.js with flags.

Roles and Responsibilities of an BE Engineer

- Backend developers curating the structure of server side information.
- writing business logic, server scripts, and application programming interfaces (APIs) that will eventually be utilized by front-end engineers and UX designers.
- their primary focus is to define and maintain the central database, making sure that it has high performance and responsiveness to requests from the front-end.

Common Roles:

- Understanding of JavaScript, HTMLS, CSS3, NodeJS, ES2015+, and jQuery.
- Integration of data sources and databases into a single system.
- User authentication and authorization between multiple systems and servers.
- Write clean and maintainable code.
- Understanding cross-platform functionality and compatibility of applications.

Skills Required

- Express JS
- SQL and No SQL DB
- JS
- Additional libraries and frameworks :

Tools required

- A code editing tool is simply the program a backend developer chooses to use to write the code for their website.
- Notepad
- Vs Code
- Atom
- Eclipse

Skills and tools needed for Back-End development :

In order to create a website user facing code and create aesthetically pleasing designs You need to have the following skills :

- Programming skills : Writing clean code which executes the logic of the program using any scripting language eg : Javascript
- Database management : All of the website's data is stored and managed by backend developers.
 - Expertise in the database is one of the prominent skills that employers seek within a backend developer.
 - Database like MongoDB are simple to use to understand database management systems
- Knowledge of web services :
 - All modern web apps are integrated with payments, social media networks etc
 - To connect to these external API's : we need to write the login in the backend

How to Become a Backend Engineer?

- Database design and structure implementation
- Come up with new ways to improve the response time for each request.
- Makes ensuring the DB request is safe, and scalable.
- Keep up with the current backend design trends, for example.
- Creating the architecture of the backend
- Making sure proper cross-platform optimization
- Checking the responsiveness of the website or application
- Monitoring the project from conception to delivery
- Catering the technical as well as consumer needs.
- Working together with architect to integrate the designing features.

Skills Required:

- Knowledge of frontend technology : A full-stack developer must possess strong knowledge of vital frontend technologies such as HTML, JavaScript, CSS3, etc.
- Understanding the programming language : , a full stack developer must also have acquired a thorough understanding of all important programming language as well.
- Expertise in Database Management : It is important for a full stack developer to have a staunch knowledge of database management system technology. Some of the widely used database management systems include Oracle, MySQL, MongoDB, etc.
- Ability to execute Basic Designing : It is important to have a strong knowledge of basic designing in order to obtain a lucrative job, as a full stack developer. Furthermore, you must also be aware of the basic principles associated with prototype designs, as well as UI/UX design.

Interview Process of BE openings in the industry

- **Initial Technical Screening:** This usually involves a coding round and a discussion of your past Backend projects. The coding questions are typically at an Easy/Medium level on Leetcode. While discussing projects, basic questions related to the project might be asked to understand your knowledge of the stack

Assessment: 4-6 Rounds:

- **Coding Rounds:** Depending on the total years of experience, candidates go through 1-2 coding (DSA based) rounds. Usually, the difficulty level of these questions is easy/medium, but sometimes they ask some hard questions also.
- **DB Round:** They test knowledge of SQL and No SQL DB knowledge and ask us to write a query using joins and other DB topics
- **Behavioural Round:** This round is to judge your team skills, leadership qualities, your strengths and weaknesses etc.

Flow of the BE course



Programming Fundamentals - Helps to get you ready for the course



Ecommerce Application - Learn by doing End to End Development



CRM Application - Learn by doing End to End Development

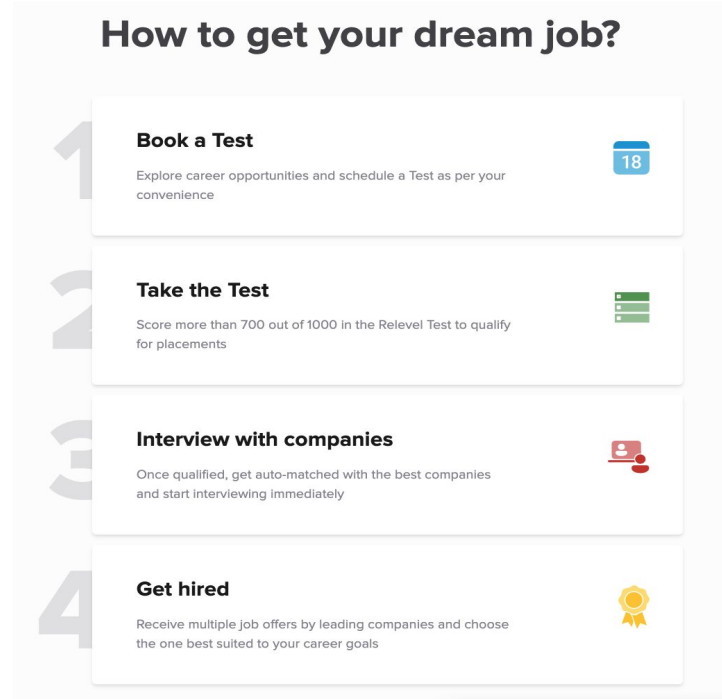


Movie Booking Application - Learn by doing End to End Development

Along the process learn :

- Computer fundamentals
- Practical understanding of database
- Data Structure and Algorithms
- System Design
- Resume preparations
- Interview readiness
- Relevel test preparation

Relevel - Backend Development Test



Relevel - Backend Development Test

Skills required :



Programming Fundamentals

Test programming fundamentals like arrays, logical operators, conditional statements, etc.



Data Structures and Algorithms

Showcase your problem solving skills using lists, stacks, trees, queues, etc.



HTML, CSS and React.js

Test your understanding of frontend tools



Node.js or Python or Java

Showcase your understanding of backend tools

Relevel - Backend Development Test | Phase 1

Phase - I Get 150+ out of 300 to qualify for Phase II

ROUND 1

✓ 100 Marks ⌚ 45 mins

Back to basics

An MCQ round of 40 questions to test your knowledge of programming fundamentals

Programming Fundamentals

ROUND 2

✓ 200 Marks ⌚ 90 mins

Assess your algo

A DSA round with two problems to test your coding skills in a high pressure situation

DSA

Relevel - Backend Development Test | Phase 2

Phase - II Get 700+ out of 1000 to qualify for Relevel Placements

ROUND 3

✓ 250 Marks

🕒 120 mins

Building the back

Code Quality

Backend Development

A round designed to test your ability to build backend features for an existing web application

ROUND 4

✓ 250 Marks

🕒 120 mins

Creation of the front

Code Quality

Frontend Development

A round designed to test your ability to build frontend features for an existing web application

ROUND 5

✓ 200 Marks

🕒 60 mins

Face the interview

Programming Fundamentals

Fundamentals of Full Stack Development

An interview round with an experienced engineer to assess your knowledge on the specific tech stacks used for frontend and backend

Ask me anything . . .

“If you think education is expensive — try ignorance.”

Thank You!