

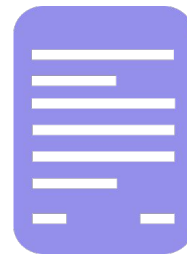
# Introduction to BE

**Relevel**  
by Unacademy



# List of Concepts Involved

- 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

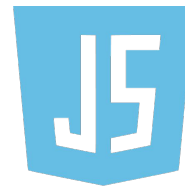


# What is BE?

- 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.



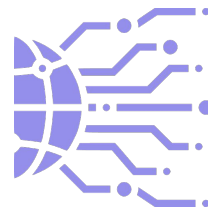
# What is NPM ?

- Npm stands for Node Package Manager. it's a package manager for the Node JavaScript platform.
- Npm is understood because the world's largest software registry. Open-source developers everywhere the planet use npm to publish and share their ASCII text file .
- Npm consists of three components:
- The website allows you to seek out third-party packages, found out profiles, and manage your packages.
- The command-line interface or npm CLI that runs from a terminal to permit you to interact with npm.
- The registry may be a large public database of JavaScript code.



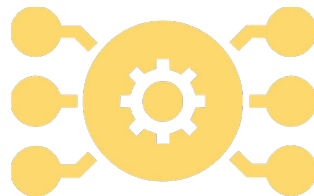
# What is NPM ?

- To find the npm CLI on your computer, you run the npm command from a terminal:
- `npm`
- Code language: JavaScript (javascript)
- For example, the subsequent command will display the present npm version on your system:
- `npm -v`



# What are you able to do with npm?

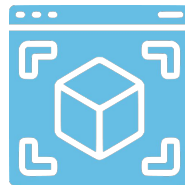
- npm allows you to put in a replacement package from the registry. this is often what you'll do most of the time with npm.
- On top of this, npm allows you to get and publish your new node packages.





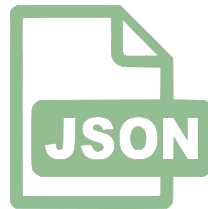
# package.json

- In general, every npm project features a file called package.json located within the root directory. The package.json may be a plain document that contains important information that npm uses to spot the project and handle dependencies.
- To create the package.json file, you attend the basis directory of the project and execute the subsequent command:
  - npm init
  - Code language: JavaScript (javascript)
  - When you run the npm init command, it'll prompt you for the project information including:
    - Package name



# package.json

- Version, Test command, Git repository, Keywords
- Author, License
- If you hit Return or Enter, it'll accept the default values and advance to subsequent prompt.
- If you would like to use default options, you employ the subsequent command:
- `npm init --yes`
- Code language: JavaScript (javascript)
- Later, you'll change the default values within the package.json.



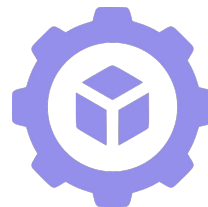
# Install a new package

- To install a replacement package, you employ the subsequent npm install command:
- npm install
- Code language: JavaScript (javascript)
- In this command, you place the package name after the npm install keywords.
- To find packages, you attend the npm website and look for them.
- For example, if you would like to put in the express package, you'll run the subsequent command:
- npm install express
- Code language: JavaScript (javascript)
- Note that express may be a fast web framework for Node.

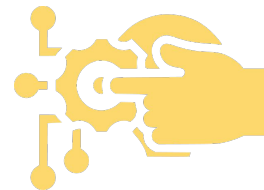


# Install a new package

- Once the installation is completed, you'll see a replacement directory called `/node_modules` created under the basis of the project. All the new modules that you simply install are going to be placed during this directory.
- If you expand the `/node_modules` directory, you'll see that npm installed not only express but also the dependencies of express, and dependencies of those dependencies, and so on.

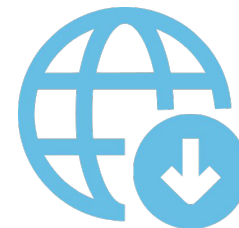


# Install a new package



- If you open the package.json enter the basis of the project, you'll also find that the dependencies section is updated, which incorporates the express package like this:
- "dependencies": {
- "express": "^4.17.1"
- }
- Code language: JavaScript (javascript)
- In general, any new package that you simply install are getting to be listed within the dependencies section. during this instance , the dependencies include the express package with version 4.17.1. Notice that Npm follows the semantic versioning specification.

# Install a package globally on your system



- To install a package globally on your system, you employ the subsequent command:
- `npm install --global`
- Code language: JavaScript (javascript)
- Or in short:
- `npm i -g`
- Code language: JavaScript (javascript)
- Generally, you put in a package globally once you want to use it in your instruction or shell.
- If you would like a package that you simply will include in your application, you ought to install it locally.

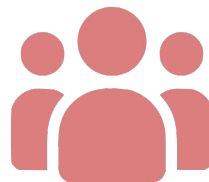
# Roles and Responsibilities of an BE Engineer

- 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 :

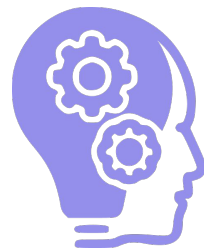
- Understanding of JavaScript, HTMLS, CSS3, NodeJS, ES2015+, and jQuery.
- Integration of data sources and databases into a single system.
- User authentication and authorization between multiple systems and servers.
- Write clean and maintainable code.
- Understanding cross-platform functionality and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





# Skills required

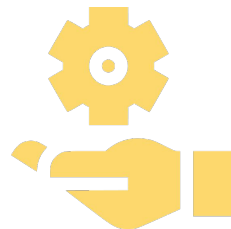
- Express JS
- SQL and No SQL DB
- JS
- Additional libraries and frameworks :



# Tools required

A code editing tool is simply the program a backend developer chooses to use to write the code for their website.

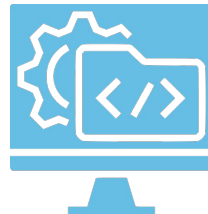
- Notepad
- Vs Code
- Atom
- Eclipse



# Skills and tools needed for Back-End developement :

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



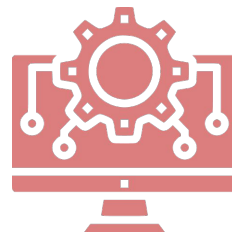
# Skills and tools needed for Back-End developement :

- 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 logic in the backend



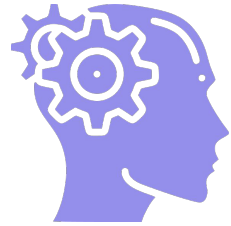
# How to Become a Backend Engineer?

- 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.



# Difference between FE and BE

Parameters of Comparison	Frontend	Backend
Meaning	Frontend is the part of a web page where the users can see the UI.	Backend is the part of a web page where the users cannot see this part.
Role	Frontend is where users can perform their tasks like reading texts, design, and other kinds of stuff.	Backend, on the other hand, plays a crucial role for making the user interface possible in a particular webpage.
Client-side/Server-side	Frontend is the client-side application of a web page.	Backend is considered as the server-side of the application.
Essentials	In the case of frontend, the essentials include HTML, CSS and JS	Backend, on the other hand, essentials like JS, Nodejs, and many others.

# 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.





# Upcoming Class Teasers

- What is a DB
- Why DB is needed
- Evolution of DB
- A brief introduction of different types of databases
- Requirement Gathering



**Thank you!**