



# The Web 3.0 Roadmap

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# What is Web 3.0 in simple terms?

Web 3.0 has the potential to change the internet as we know it forever. You're still early in catching the trend and building your first blockchain application, acquiring the skills to get a high-paying job, or creating your own web 3.0 projects that can make you money.

In Web 2.0 all the data is controlled by the Big Tech companies, such as Google, Apple, etc. In the decentralized web, no single person/company owns any data or information about anyone, and everything is visible to the public.

Web3, also known as the decentralized web, is the third and latest "phase" of the internet. Web3 is built on peer-to-peer networks of computers that talk to each other without middlemen.

# Brought to you by JSM

This guide will provide you with useful information and actionable steps, but if you truly want to dominate the competition and secure a high-paying job as a full-stack software developer, [jsmastery.pro](https://jsmastery.pro) is the answer.

Read until the end for more information and **special discounts!** 



# Web 3.0 Roadmap

## 1 You should have Web 2.0 Skills

Most people make one mistake to dive straight into smart contracts without having a technical background in web development. Blockchain technologies are built on top of web technologies.

You can't learn Web 3.0 if you don't have a solid understanding of web 2.0. So before digging deeper into more web 3.0, better understand the fundamentals of web development in general.

Your Web 2.0 skills like React.js, Next.js will be beneficial because Decentralized Applications have a standard vanilla JavaScript or JavaScript framework Front-end.

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## 2 Learn the Fundamentals of Blockchain

As a Web 3.0 developer, you need to understand what the blockchain is, how it works, why do we use it. You first need to know about what you are working with.

### So what is a blockchain?

A blockchain is a network of computers connected in some way, and they collectively run what is called a blockchain client.

Blockchain technology is no more related only to crypto coins.

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To learn and master the basics of blockchain technology. First, learn the fundamental things such as:

- What the blockchain is
- How it works
- How to Interact with the blockchain
- How to connect our web applications to the blockchain

And it is recommended that you get started with the Ethereum blockchain as it is very popular.

Also, one of the reasons to learn Ethereum blockchain first is there is a lot of technical support from its developer's team plus considerable community support.

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## 3 Learn About Smart Contracts

A Smart Contract is software stored on a blockchain-based platform that automatically executes an agreement. Smart contracts are how you can program the blockchain to perform a specific set of instructions, like you telling the blockchain what to do.

Smart contracts enable you to exchange anything of value while also eliminating the middle man. The self-executing feature of a smart contract is what makes it very important.

The smart contract code cannot be changed, which in technical terms, we say is immutable.

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Smart contracts can do everything, right from NFTs to creating your own Crypto Currency to handling the backend of dApps.

Here's the IBM definition for Smart Contracts:

*Smart contracts are simply programs stored on a blockchain that run when predetermined conditions are met. They are typically used to automate an agreement's execution so that all participants can be immediately sure of the outcome without any intermediary's involvement or time loss.*

— IBM

# Web 3.0 Roadmap

## Things to learn about Smart Contract

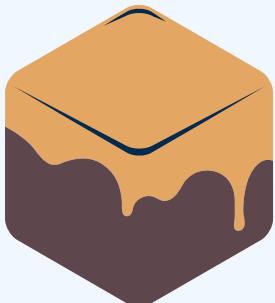
- Basics of Smart Contract
- Life Cycle of Smart Contract
- Interacting with smart contracts using web3.js

## Compiling, Testing, Deploying Smart Contracts

Compiling, Testing, and Deploying Smart Contracts is an essential part, as we know those smart contracts, once deployed, are immutable, so you would like to test them before deploying.

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For Testing, you can go with:



Ganache

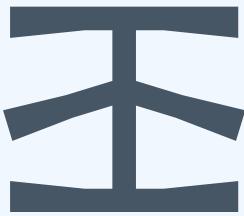


Mocha



Chai

For deployment purposes, you can use:



Infura



Hardhat



Truffle

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## Learn Solidity

Knowing how to write smart contracts is essential in blockchain app development. So in which programming language do we write smart contracts? It's **Solidity**!

Of course, there are some other programming languages also, but Solidity is the most popular one. So understanding Solidity is crucial.

Solidity is an object-oriented programming language for writing smart contracts. It is used for implementing smart contracts on various blockchain platforms.

# Web 3.0 Roadmap

Solidity is a relatively new programming language used for Ethereum blockchain, and it's a combination of a few languages. The creators of Solidity got inspired by JavaScript, Java, C++, rust, & many other languages, therefore making Solidity extraordinarily versatile & intuitive.

As you start to write code in Solidity, you'll notice that all of that seems similar, maybe from Java, JavaScript, but it will make sense as it's almost written in pure English.

# Web 3.0 Roadmap

Here is a small code sample of solidity programming language

```
// My First Smart Contract
pragma solidity >=0.5.0 <0.7.0;
contract HelloWorld {
    function get()public pure returns (string memory){
        return 'Hello Contracts';
    }
}
```

Also, one more reason to learn Solidity is the job market. Many companies require developers who know Solidity well.

# Web 3.0 Roadmap

## 5 Learn more about Decentralized applications

Once you build and deploy your smart contract, you'll need to create a friendly user interface at the front end so that any user can use it. Remember I said earlier you should have Web 2.0 skills before starting blockchain development.

In the front-end interface, you create a DAPP (Decentralized application). The DAPP can be a mobile app or a web app, but it is usually a web app in most cases. The web app is usually just like your regular web apps with HTML, CSS, and JavaScript.

# Web 3.0 Roadmap

And when building the dApp, there will be two essential tasks,

1. The integration with the blockchain
2. The integration with the wallet

We shall use a JavaScript library for integration with the blockchain, Web3.js, which is pretty helpful and easy to use.

# Web 3.0 Roadmap

## 6 Learn about Metamask or any equivalent Crypto Wallet

A blockchain wallet helps someone exchange funds quickly. The transactions are secure, as they are cryptographically signed. A wallet is used to interact with the blockchain. The wallet is accessible from web devices, including mobile ones, and the privacy and identity of the user are maintained.

Blockchain wallet provides all the necessary features for safe and secure transfers and exchanges of funds between different parties. It is very similar to sending or receiving money through PayPal or any other gateway used today, but you use cryptocurrency instead.

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There are a lot of crypto wallets out there, but my recommendation would be first to learn how to integrate your smart contract with the Metamask wallet and then learn about the other wallets.

Metamask allows users to access their Ethereum wallet through a browser extension or mobile app, which users can then use to interact with decentralized applications.

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## Learn Web3.js and Ethers.js to connect your dAPP

You'll need to interface with your front end to talk to the blockchain. Here are two popular choices to interface with blockchains that implement the Ethereum API, web3.js and ethers.js.

Web3.js is a collection of libraries that allow you to connect with a local or remote Ethereum node using HTTP, Websockets, & other communication protocols directly from your JavaScript Based front-end.

Ethers.js is a lightweight JavaScript library used to connect the JavaScript front-end with Smart Contracts as an alternative to Web3.js.

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## 8 Practice your skills by building a blockchain application.

After that, I suggest you should get your hands dirty with the technologies you have learned so far. Practice, Practice, and Practice!

To keep learning effectively, you have to challenge your capabilities. Take up a project well beyond your capabilities and stick to that project until you complete it. By the end of just 4–5 such assignments, you will be almost more proficient than others around you.

# Web 3.0 Roadmap

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## Build your Portfolio

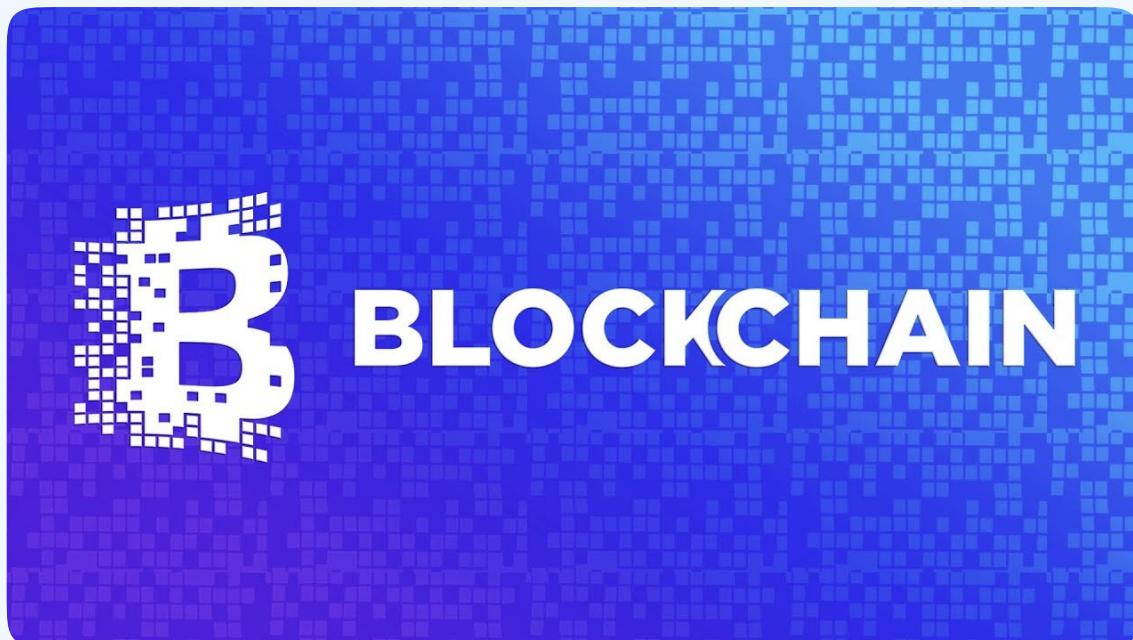
When you're comfortable working with blockchains/dApps, you should consider building your portfolio; a portfolio website shows evidence of expertise in your field. It can also help build trust with clients because they have direct evidence of the quality of your work.

A portfolio will be beneficial whether you are looking for Jobs or Internships. More importantly, potential clients and employers will sense confidence in you.

# Learning Resources



## What Exactly is Web3?



## Blockchain Explained- 2hr Course

# Learning Resources

The screenshot shows the homepage of Web3 University. At the top, there's a banner stating "Over 100,000 students have used Web3U since we launched! Read our Season 0 recap". Below this is the Web3 University logo. To the right are links for "follow us" (Twitter), "help build web3", and "COMMUNITY". The main title "EVERYTHING ABOUT Blockchain Development" is prominently displayed. A sub-section titled "How to Build Your First Smart Contract" is shown with a thumbnail image of a laptop displaying code. Below the main title, a brief description covers the fundamentals of web3 development, from Solidity to NFTs. A "Start Here" button is available. At the bottom, there's a "PARTNERS" section featuring logos for Alchemy, a16z, Pantera, Polygon, Arbitrum, flow, buildspace, ChainShot, OpenSea, Optimism, and a "join us!" button.

## web3 university

The screenshot shows the homepage of Ethhub. It features a dark blue header with the Ethhub logo, which is a stylized diamond shape composed of interconnected lines and dots. Below the logo is the word "ETHHUB" in white capital letters, followed by the tagline "A TRUSTED SOURCE IN A TRUSTLESS WORLD". There are four navigation buttons at the bottom of this section: "DOCS", "PODCAST", "NEWSLETTER", and "SHOP". The main content area has a dark background with a subtle geometric pattern. At the bottom, there are social media icons for GitHub, Twitter, LinkedIn, and Email. A small "DONATE" link is visible at the very bottom.

## Ethhub

# Learning Resources

The screenshot shows the IBM Supply Chain and Blockchain Blog homepage. At the top, there's a navigation bar with links for 'Let's Create', 'Products & Solutions', 'Consulting & Services', 'Learn & Support', and 'Explore more'. Below the navigation is a search bar and a menu icon. The main header 'Blockchain development' is displayed, along with a sub-header 'Resources, guides and tips for blockchain development — for developers looking to build blockchain applications and networks.' To the right of the text is a blue square icon with white bars and a bar chart graphic below it. The main content area features three cards: one about mining in British Columbia, another about fueling the financial industry with open source cross-border payments, and a third card for 'Follow the conversation' with a Twitter feed for @IBMBlockchain.

## IBM Blog

The screenshot shows the Alchemy Blog homepage. At the top, there's a header with the Alchemy logo and a 'Blog' link, followed by a search bar and a 'Get started' button. The main article is titled 'ERC-721 vs. ERC-721A: Batch Minting NFTs', featuring a dark background with a grid of colorful NFT thumbnails. Below the article is a section titled 'Browse the blog' with a sub-section 'Want to learn more? Click on a category below for more from the blog.' It includes categories like 'Learn', 'Announcements', 'Tutorials', 'Products', 'Amplify', and 'NFTs'. At the bottom, there's a footer with social media links for LinkedIn, GitHub, and YouTube, and a 'Series C1' banner.

## Alchemy Blog

# Learning Resources

The screenshot shows the Udemy website interface. At the top, there's a purple header bar with the text "Future-ready skills on your schedule | Learn on iOS, Android, and more." Below it is the Udemy logo and a search bar. The main content area shows a course titled "Blockchain Theory 101" by Melanie Swan. The course thumbnail features a woman with long red hair. Below the thumbnail, there's a play button icon and a "Preview this course" link. To the right of the thumbnail, the course title "Blockchain Theory 101" is displayed in bold, followed by a brief description: "Basic description, applications, and implication of blockchain technology". It also shows a "Free tutorial" badge, a 4.5-star rating with 4,802 reviews, 57,246 students, and a duration of 1hr 27min. The course is created by Melanie Swan and is available in English and English (Auto). A "Free" badge is present, along with a "Enroll now" button. Below the course details, there's a section titled "What you'll learn" with a bullet point: "✓ Understand the basics and potential applications of blockchain technology". At the bottom, there are sections for "Try free courses or enroll in paid courses", "Free courses", and "Paid courses", each listing some features.

## Blockchain Theory 101

The screenshot shows the QuickNode website with a dark theme. At the top, there's a navigation bar with links like "QuickNode", "Pricing", "Supported Chains", "Use Cases", "Learn", "Compare", "NFT API", and "Blog". There are also "Sign up" and "Sign in" buttons. The main content area has a title "The Web3 Developer Stack" with a date "April 12, 2022". Below the title, there's a section titled "Overview" which defines a developer stack as a bag of technologies. It lists common stacks like MEAN and MERN. The article then introduces the web3 developer stack. A sidebar on the left lists "Prerequisites" (Node.js installed, Text editor, Terminal, Willingness to learn) and "The Developer Stack" (The wallet, The contract, The Node, The Web3 library, Conclusion). On the right, there's a bio for "Sahil Sen" with a small profile picture, describing him as a web developer and community builder. At the bottom, there are sharing options for Facebook, Twitter, and Email.

## Web 3 Developer Stack

# Learning Resources

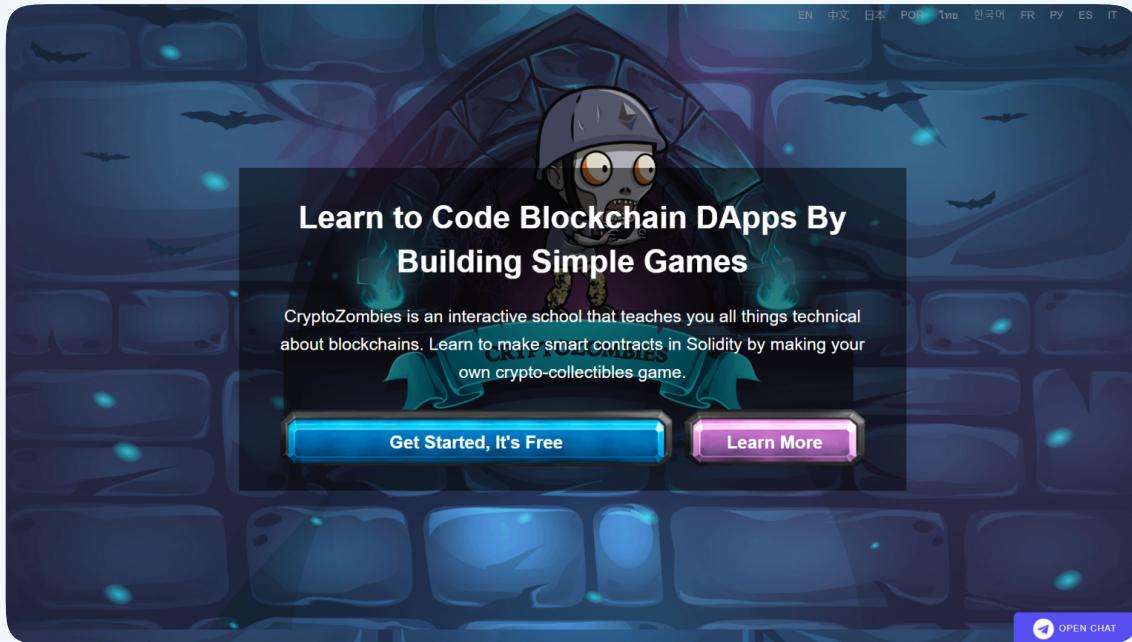
The screenshot shows a course page for "Blockchain Essentials" on a platform. At the top, there's a navigation bar with links for "Courses & Projects", "Badges", "Learning Paths", "Business", a search bar, "Sign in", and a "Register" button. Below the navigation is a large orange background image featuring a 3D geometric cube structure. On the left side of the main content area, there's a sidebar with the "developerWorks" logo and some course statistics: "BC0101EN | 181293 Enrolled | ★★★★☆ (405)". A "Login to enroll" button is also visible. The main content area contains the course title "Blockchain Essentials", a brief description ("Understand blockchain technology and how it can solve business problems. Learn the basics of developing applications with chaincode."), a "Continue reading" link, and a summary section with "Estimated Effort: 3 hours" and a "Tell Your Friends!" sharing button.

## Blockchain Essentials

The screenshot shows the homepage of 101 Blockchains. At the top, there's a navigation bar with links for "COURSES", "CERTIFICATION", "FREE COURSE", "BECOME A MEMBER", and "SIGN IN". The main feature is a large blue banner for the "Enterprise Blockchains Fundamentals - Free Course", which is "Trusted by 30,000+ professionals". A prominent "Enroll for FREE" button is shown. Below the banner, there are three icons with text: "4 Days", "15 MINUTES per DAY", and "Flexible learning". Further down, there's a "COURSE OVERVIEW" section with a brief description of the course: "The 'Enterprise Blockchains Fundamentals' free course is the first step in the journey for any professional looking to upgrade their skills and position in the corporate world. In this course, you will learn the basics of blockchain technology, how it works, and how it will boost your career." A "Support" button is located at the bottom right of this section.

## Blockchain Fundamentals

# Learning Resources



## Cryptozombies

A screenshot of the Capture the Ether game interface. The top section has a teal background with an orange flag icon and the text "Capture the Ether". Below it, the subtitle "THE GAME OF ETHEREUM SMART CONTRACT SECURITY" is displayed. A large orange "LET'S PLAY >" button is centered. The bottom section is white and contains three columns of text: "What is this?", "How do I win?", and "What do I need to know first?".

**What is this?**  
Capture the Ether is a game in which you hack Ethereum smart contracts to learn about security.  
It's meant to be both fun and educational.  
This game is brought to you by [@smarx](#), who blogs about smart contract development at [Program the Blockchain](#).

**How do I win?**  
The game consists of a series of challenges in different categories. You earn points for every challenge you complete. Harder challenges are worth more points.  
Each challenge is in the form of a smart contract with an `isComplete` function (or public state variable). The goal is always to make `isComplete()` return true.  
If you're into that sort of thing, there's a [leaderboard](#).

**What do I need to know first?**  
The [warmup](#) category is designed to introduce the basic tools you need, but if you're brand new to Ethereum smart contract development, head over to [Program the Blockchain](#) first and do some background reading.  
If you find you're missing some tools or knowledge, check out the [resources page](#) or consider [asking for help](#).

## Capture the Ether

# Learning Resources

The screenshot shows the homepage of the Ethereum Smart Contract Security Best Practices. At the top, there's a navigation bar with links for Home, General Philosophy, Development Recommendations, Attacks, Security Tools, Bug Bounty Programs, and About. A GitHub icon indicates the repository has 5.4k stars and 1.1k forks. Below the navigation, a sidebar on the left has a 'Home' link, a 'Where to start?' section, and a 'Contributions are welcome!' section. The main content area is titled 'Ethereum Smart Contract Security Best Practices'. It contains a paragraph about the document being a baseline for intermediate Solidity programmers, maintained by ConsenSys Diligence, and mentions translations in Chinese and Vietnamese. A 'Where to start?' section lists links to General Philosophy, Development Recommendations, Known Attacks, Security Tools, and Bug Bounties. A 'Tip' box provides information about staying updated with the newsletter. A 'Contributions are welcome!' section encourages pull requests and links to the contributing page.

## Smart Contract Best Practices

The screenshot shows the GitHub page for the 'awesome-solidity' repository. At the top, there's a search bar and a navigation bar with links for Pull requests, Issues, Marketplace, and Explore. The repository details show it's public, has 145 stars, 574 forks, and 4.1k issues. The 'Code' tab is selected, showing a list of files and their commit history. The 'README.md' file is expanded, showing the contents of the 'Awesome Solidity' page. This page is a curated list of awesome Solidity resources, libraries, tools, and more. It includes sections for Readme, Code of conduct, and Contributors. The page footer links to contribution guidelines and a support via GitCoin button.

## Awesome Solidity

# Learning Resources

The screenshot shows the homepage of ChainShot, a platform for Ethereum coding education. At the top, there's a navigation bar with links for 'ChainShot', 'BOOTCAMP' (which is underlined), 'COURSES', and 'BLOG'. On the right side of the nav bar are 'LOGIN' and 'SIGN UP' buttons. Below the navigation, a large section titled 'Choose a Course' is displayed. A sub-section header says 'Choose From Multiple Paths to Begin Your Ethereum Coding Journey' followed by 'Tutorials for Experienced Professionals and Beginners'. Three course cards are shown in a grid:

- JavaScript Crash Course**: A yellow card with a JS icon. Description: 'Learn everything you need to know to do well in the Ethereum Developer Bootcamp'. Status: FREE.
- Aave Protocol**: A purple card with an Aave icon. Description: 'Build smart contracts that integrate with AAVE to borrow, lend and execute flash loans!'. Status: FREE.
- Introduction to Solidity**: A blue card with a Solidity icon. Description: 'Learn the basics of Solidity to start coding smart contracts'. Status: FREE.

Below each card is a horizontal button with the text 'FREE' and a star icon.

## Chainshot

The screenshot shows the homepage of useWeb3, a platform for developers to explore and learn about Web3. The left sidebar contains a navigation menu with links: Home, Jobs, Books, Code Challenges, Courses, Guides, Movies, Podcasts, Starter kits, Tutorials, Videos, Websites, Grants, Gas, Tags, Latest, and Submit. The main content area has a light blue header with the title 'useWeb3'. Below the header, there's a section titled 'useWeb3' with a brief description: 'useWeb3 is a platform for developers to explore and learn about Web3. Whether you're a new dev getting your hands dirty for the first time, or a seasoned developer making the transition into the Web3 space.' It also features a tagline 'Explore. Learn. Build.' and a section for 'Web3 Jobs' with a list of categories: Engineering, Product, Sales, Marketing, People, Operations, Non-Tech, and Remote Web3. There's a link for 'Hiring for Web3 jobs? Post your job'. The 'Start learning' section lists books, videos, and tutorials. Under 'Books', three items are shown: 'Mastering Ethereum', 'The Cryptopians', and 'Token Economy'. Each book entry includes a brief description, author(s), a 'Beginner' or 'All' skill level indicator, and a 'More details' link. The 'Code Challenges' section shows three challenges: 'CryptoZombies', 'Damn Vulnerable DeFi', and 'HyperFun'.

## useWeb3

# Learning Resources

The screenshot shows the YouTube channel page for 'Dapp University'. The channel has 499k subscribers. The 'VIDEOS' tab is selected, showing several live video thumbnails. One thumbnail for 'HERE WE GO AGAIN!' has 29:46 duration. Another for 'CROSS-CHAIN IS THE FUTURE!' has 12:06 duration. A third for 'DON'T MISS THIS!' has 32:49 duration. A fourth for 'ETH 2.0 IS COMING!' has 33:31 duration. A fifth for 'WEB3JS VS ETHERS' has 26:02 duration. The channel also features a banner at the top with the text 'SUBSCRIBE IF YOU WANT TO MASTER BLOCKCHAIN' and a picture of a smiling man.

## Dapp University

The screenshot shows the YouTube channel page for 'EatTheBlocks'. The channel has 116k subscribers. The 'VIDEOS' tab is selected, showing several video thumbnails. One for 'POLKADOT IN 2MINS' has 3:24 duration. Another for 'RIPPLE & XRP LEDGER IN 2 MINS' has 2:52 duration. A third for 'POLYMATHE SECURITY TOKEN' has 11:14 duration. A fourth for 'RE-ENTRANCY ATTACKS SOLIDITY' has 3:47 duration. A fifth for 'BECOME A SOLIDITY EXPERT' has 1:00 duration. The channel also features a banner at the top with the text 'Blockchain Development' and a picture of a smiling man.

## EatTheBlocks

# Blockchain Project Ideas

## Customers Loyalty tokens

Nowadays, companies provide traditional paper, coupons, discount and other sorts of reward and loyalty rewards to their customers.

You can build an app that allows companies to make use of this new digital format Blockchain loyalty tokens for their customers.

## Pay Per Use

Tired of montly subscription fee model? Then build a platform where service providers give viewers an option to decide on a pay-per-use basis for digital content. This payment can be via micropayments in Ethereum based tokens.

# Blockchain Project Ideas

## Medical Records

It's really hard to keep your complete, accurate health records.

Create an app where you can publish your medical records safely on the blockchain. And, be assured that you or an authorized person can access it anywhere in the world.

## Rent Parking

You can create an app using blockchain, where parking owners can rent out their long-term parking space that is unused, and other drivers can take benefit from it, especially drivers that only need temporary parking.

# Blockchain Project Ideas

## Registry of Land Ownership

Transferring ownership of a property from one person to another person.

Create a secured platform for real estate record keeping. It should record, track title and other property records.

## Ride Sharing

Currently, most ride sharing systems are in the control of agencies.

You can create a real-time ridesharing service, powered by blockchain. This platform can synchronize empty seats with passengers in real time, matching like-minded people.

# Blockchain Project Ideas

## Crowdfunding

Build a secure and transparent blockchain-powered framework for crowdfunding.

Nowadays there are lots of wrong campaigns that can misuse everyone's money. With blockchain technology, you know more info, about the campaigns, to who are you sending money and where is the money going.

## Polling system

Build a polling system, where people would be able to create a new poll, and in that poll, they would be able to mention different choices.

Users would place their vote for one of the mentioned choices.

# Blockchain Project Ideas

## Charge For Consultation

You can provide a way to connect two or more people to exchange a paid knowledge via online voice or video call. Instead of per hour block, per minute rates can be set by experts.

Once both parties are happy, payment can deducted via the Ethereum blockchain.

## Decentralized Hosting

With blockchain, you can split your website content into granules and distribute it all over the internet and then link them together using a blockchain registry. This eliminates web hosting costs and always accessible.

# JS Mastery Pro

Looking to advance your career and understand the concepts & technologies that top-shelf employers are looking for?

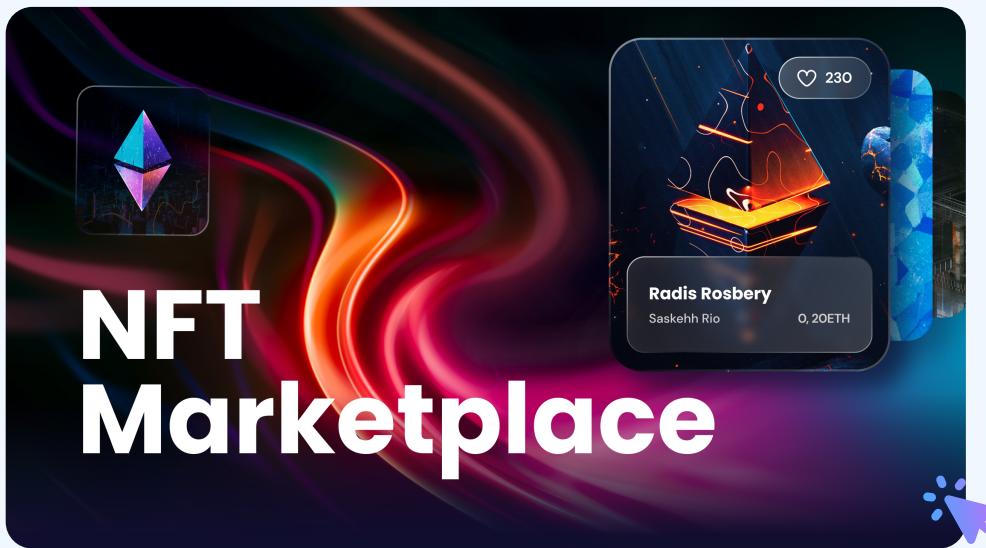
JS Mastery Pro offers two courses that will help you master libraries, tools, and technologies such as React.js, Next.js, Material UI, Solidity, Redux, and many more.

If your goal is to earn a high income while working on projects you love, JS Mastery Pro can help you develop your skills to become a top candidate for lucrative employment and freelance positions.





**Become a React.js master as you create a stunning Netflix clone streaming app to showcase movies, actor bios, and more with advanced AI voice functionality.**



**Leverage Web 3.0 and blockchain technology to build a comprehensive NFT platform where users can discover, create, purchase, & sell non-fungible tokens.**

Plus, if you really want to make a splash and add multiple group projects to your portfolio, join the JSM Masterclass Experience to set yourself above the rest and impress hiring managers.



**Collaborate with other developers on exciting monthly group projects, have your code reviewed by industry experts, and participate in mock interviews and live Q&As. With two masterclass options available, this is the best way to truly launch your programming career and secure the job of your dreams!**

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