



The Web 3.0 Roadmap

by JavaScript Mastery

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.

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.

Web 3.0 Roadmap

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

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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

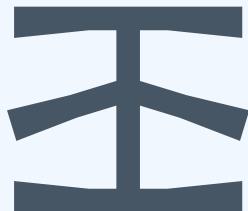


Mocha



Chai

For deployment purposes, you can use:



Infura



Hardhat



Truffle

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4

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.

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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.

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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.

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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 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.

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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.

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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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7

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.

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9

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

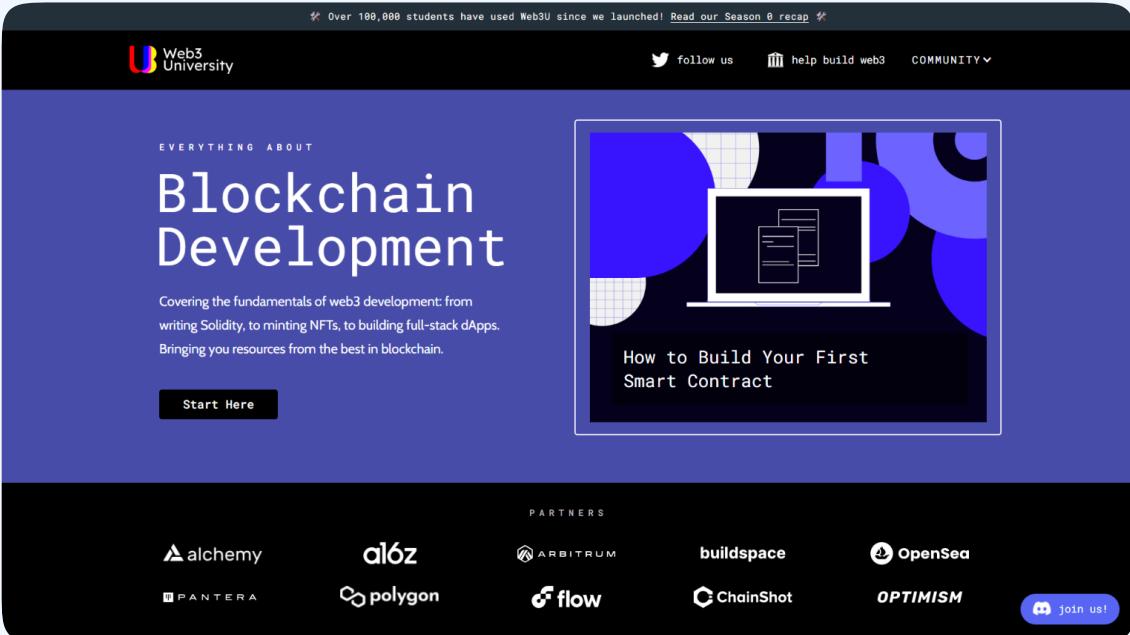


What Exactly is Web3?



Blockchain Explained- 2hr Course

Learning Resources



Over 100,000 students have used Web3U since we launched! Read our Season 0 recap [↗](#)

Web3 University

EVERYTHING ABOUT Blockchain Development

Covering the fundamentals of web3 development: from writing Solidity, to minting NFTs, to building full-stack dApps. Bringing you resources from the best in blockchain.

[Start Here](#)

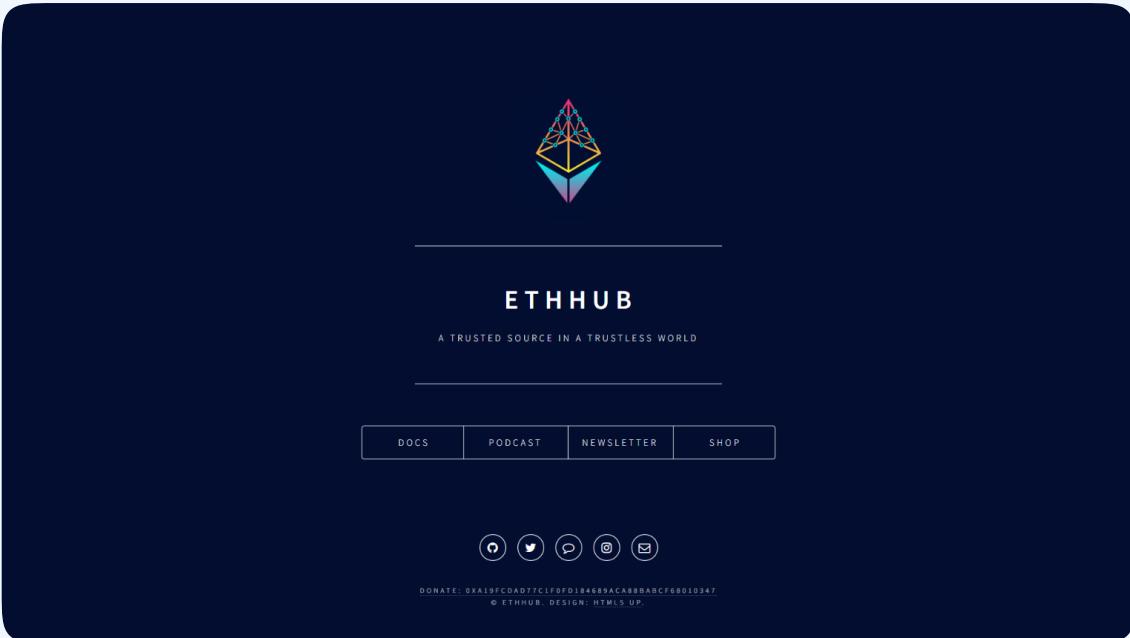
How to Build Your First Smart Contract

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web3 university



ETHHUB

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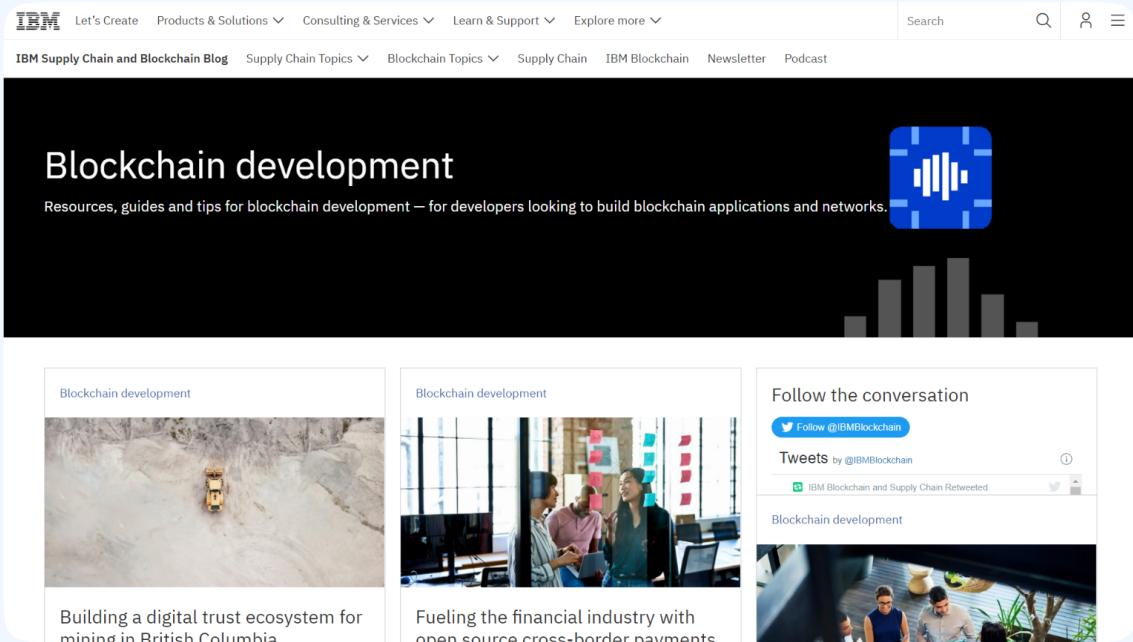
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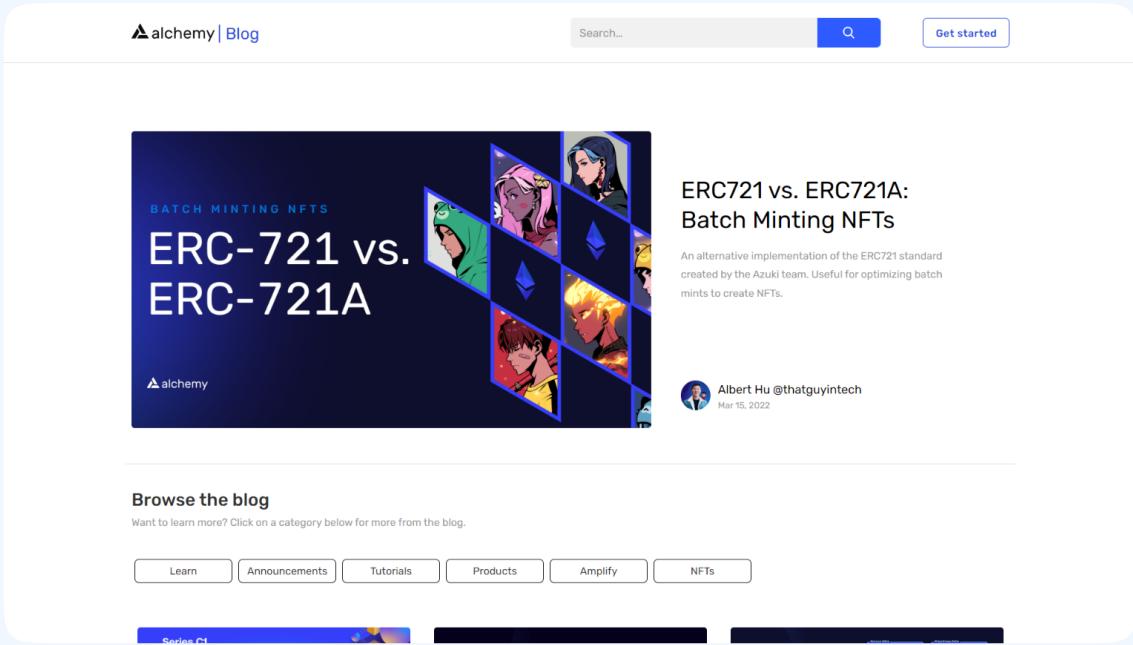
Ethhub

Learning Resources



The screenshot shows the IBM Supply Chain and Blockchain Blog homepage. The header includes the IBM logo, a search bar, and navigation links for 'Let's Create', 'Products & Solutions', 'Consulting & Services', 'Learn & Support', and 'Explore more'. Below the header, a navigation bar lists 'IBM Supply Chain and Blockchain Blog', 'Supply Chain Topics', 'Blockchain Topics', 'Supply Chain', 'IBM Blockchain', 'Newsletter', and 'Podcast'. The main content area features a dark background with a blue icon of a bar chart and a bar chart graphic. The title 'Blockchain development' is displayed, along with a subtitle 'Resources, guides and tips for blockchain development — for developers looking to build blockchain applications and networks.' Below this, there are three cards: 'Blockchain development' (image of a truck), 'Building a digital trust ecosystem for mining in British Columbia' (image of a truck), 'Blockchain development' (image of people in an office), 'Fueling the financial industry with open source cross-border payments' (image of people in an office), and a 'Follow the conversation' section with a Twitter feed for @IBMBlockchain.

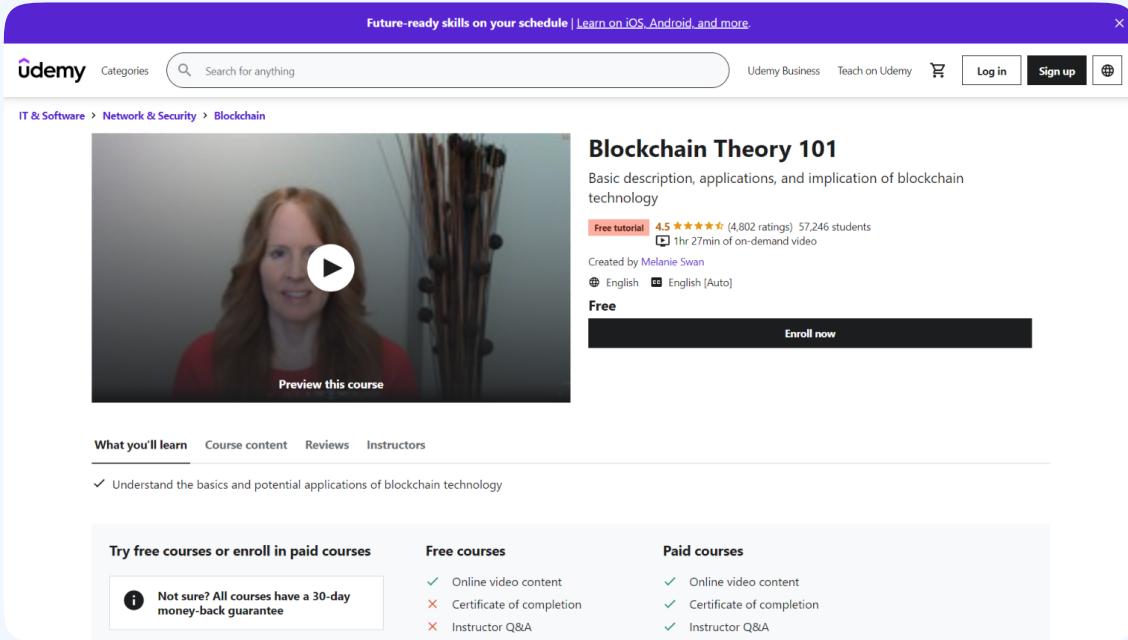
IBM Blog



The screenshot shows the Alchemy Blog homepage. The header features the Alchemy logo and a search bar. The main content area features a large image for a post titled 'ERC-721 vs. ERC-721A: Batch Minting NFTs'. The post image shows a grid of NFT characters. The title is 'ERC-721 vs. ERC-721A: Batch Minting NFTs' and the subtitle is 'An alternative implementation of the ERC721 standard created by the Azuki team. Useful for optimizing batch mints to create NFTs.' The author is Albert Hu (@thatguyintech) and the date is Mar 15, 2022. Below the main post, there is a 'Browse the blog' section with a 'Learn' button and other category buttons for 'Announcements', 'Tutorials', 'Products', 'Amplify', and 'NFTs'. There are also three horizontal bars at the bottom.

Alchemy Blog

Learning Resources



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IT & Software > Network & Security > Blockchain

Blockchain Theory 101
Basic description, applications, and implication of blockchain technology

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English English (Auto)

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✓ Understand the basics and potential applications of blockchain technology

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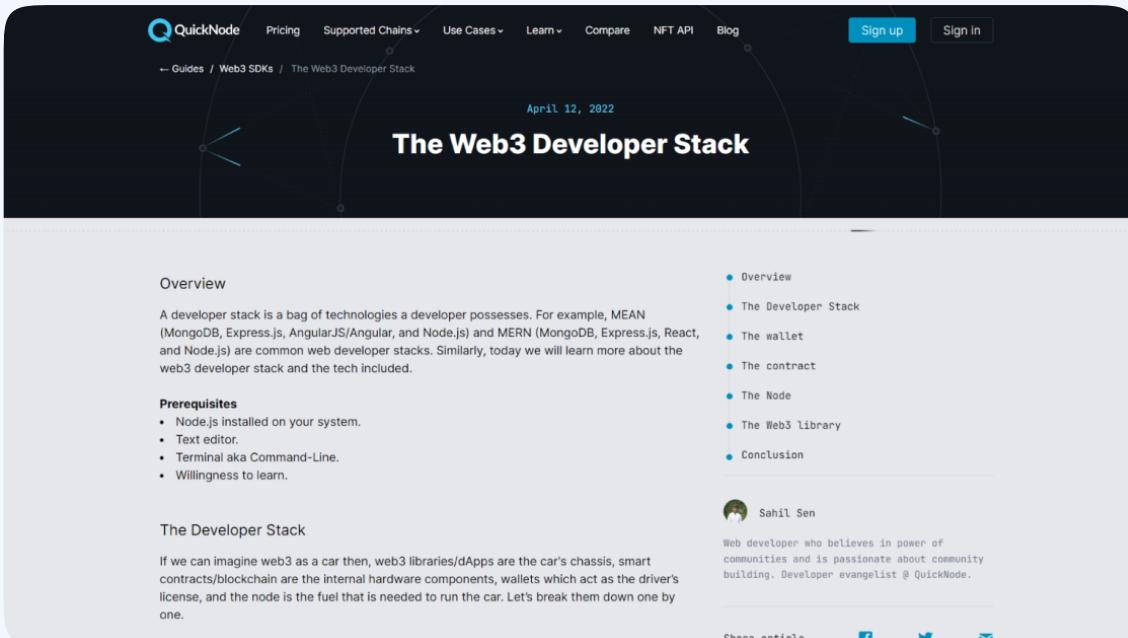
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Blockchain Theory 101



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→ Guides / Web3 SDKs / The Web3 Developer Stack

April 12, 2022

The Web3 Developer Stack

Overview
A developer stack is a bag of technologies a developer possesses. For example, MEAN (MongoDB, Express.js, AngularJS/Angular, and Node.js) and MERN (MongoDB, Express.js, React, and Node.js) are common web developer stacks. Similarly, today we will learn more about the web3 developer stack and the tech included.

Prerequisites

- Node.js installed on your system.
- Text editor.
- Terminal aka Command-Line.
- Willingness to learn.

The Developer Stack
If we can imagine web3 as a car then, web3 libraries/dApps are the car's chassis, smart contracts/blockchain are the internal hardware components, wallets which act as the driver's license, and the node is the fuel that is needed to run the car. Let's break them down one by one.

Overview

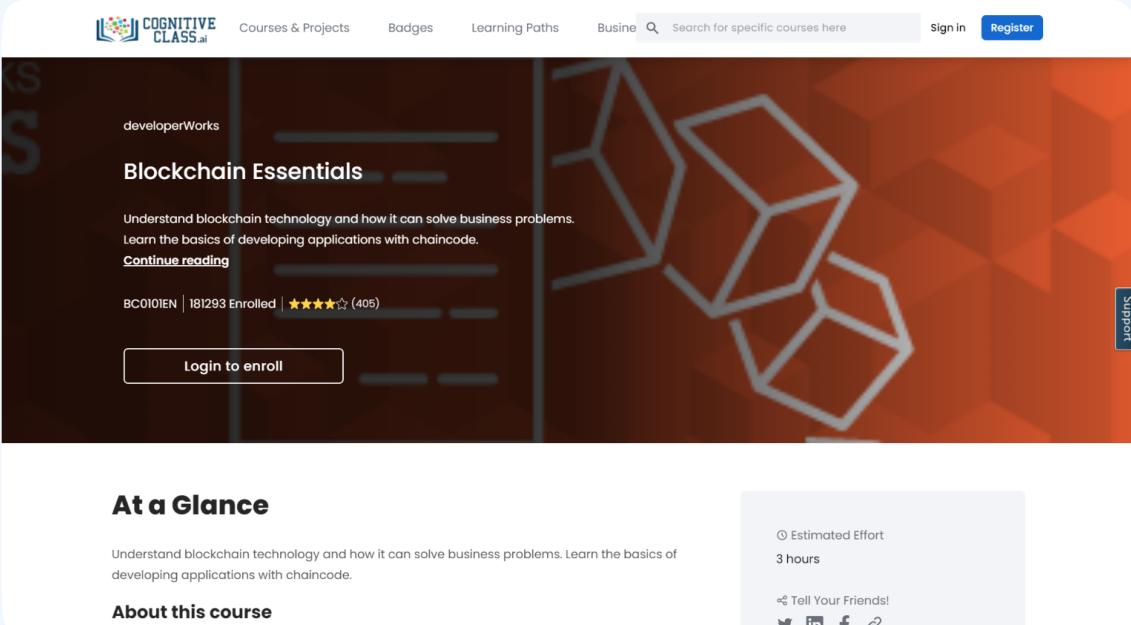
- The Developer Stack
- The wallet
- The contract
- The Node
- The Web3 library
- Conclusion

 **Sahil Sen**
Web developer who believes in power of communities and is passionate about community building. Developer evangelist @ QuickNode.

Share article Facebook Twitter Email

Web 3 Developer Stack

Learning Resources



The screenshot shows a course page for 'Blockchain Essentials' on a platform. The course title is 'Blockchain Essentials' with a subtitle 'Understand blockchain technology and how it can solve business problems. Learn the basics of developing applications with chaincode.' Below the title, it says 'BC0101EN | 181293 Enrolled | ★★★★☆ (405)'. A 'Login to enroll' button is visible. The background features a large orange hexagonal graphic. On the right, there's a 'Support' button. At the top, there's a navigation bar with 'Cognitive Class.ai' logo, 'Courses & Projects', 'Badges', 'Learning Paths', 'Business', a search bar, 'Sign in', and a 'Register' button.

At a Glance

Understand blockchain technology and how it can solve business problems. Learn the basics of developing applications with chaincode.

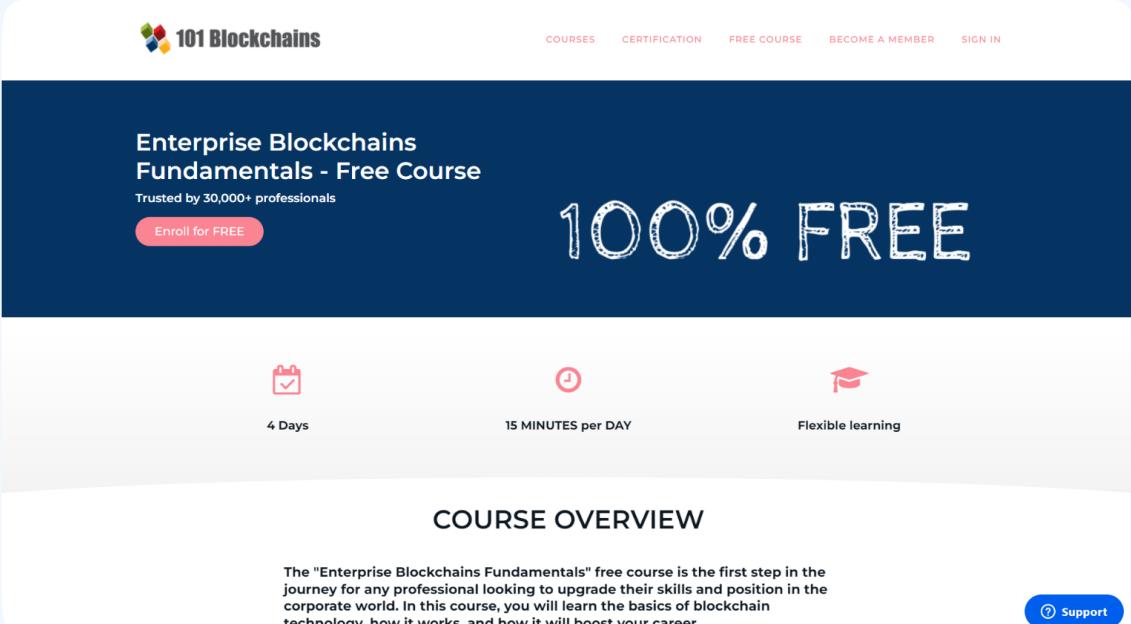
[About this course](#)

Estimated Effort: 3 hours

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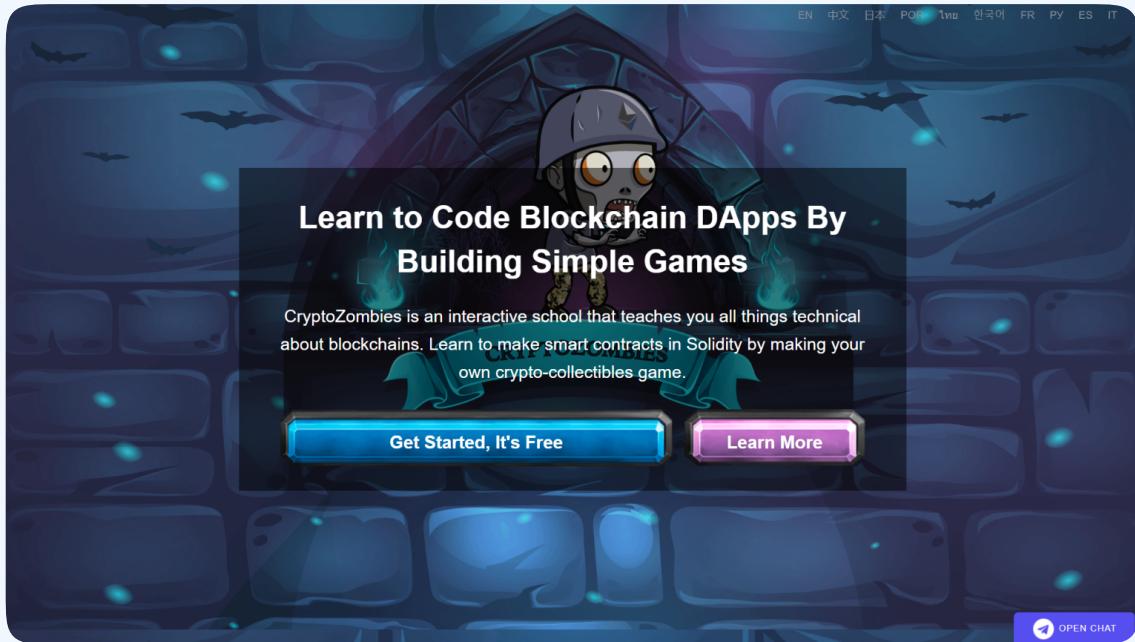
Blockchain Essentials



The screenshot shows a course page for 'Enterprise Blockchains Fundamentals - Free Course' on the 101 Blockchains website. The course is described as 'Trusted by 30,000+ professionals' and is labeled '100% FREE'. Below this, there are three icons: a calendar icon with '4 Days', a clock icon with '15 MINUTES per DAY', and a graduation cap icon with 'Flexible learning'. At the bottom, there's a 'COURSE OVERVIEW' section with the text: '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 also present.

Blockchain Fundamentals

Learning Resources



Cryptozombies



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](#).

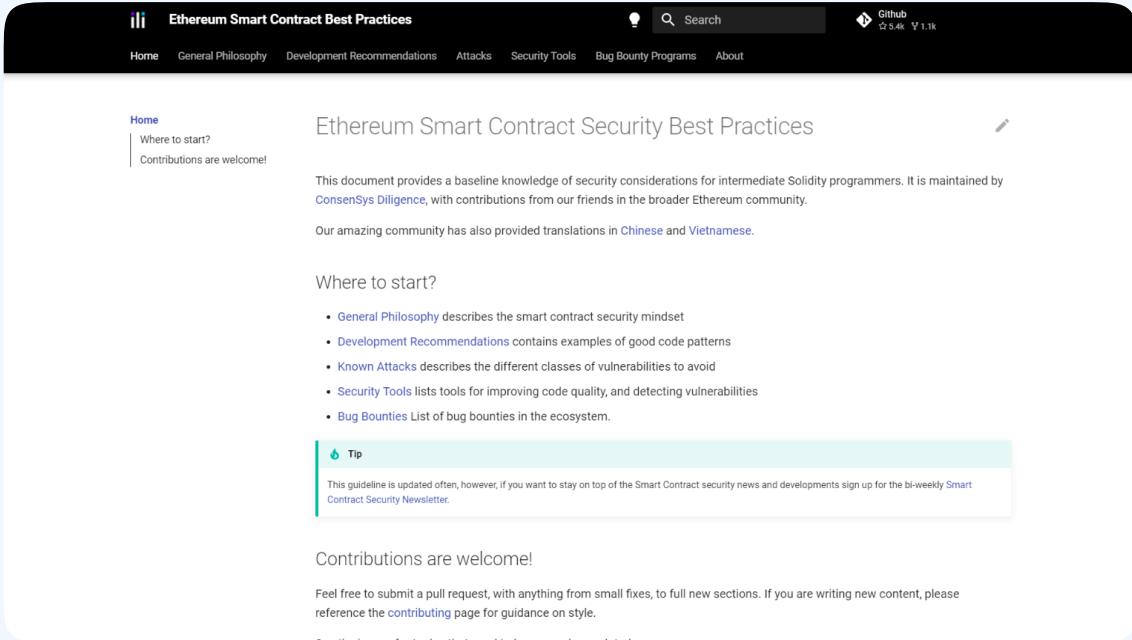
What do I need to know first?

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](#).

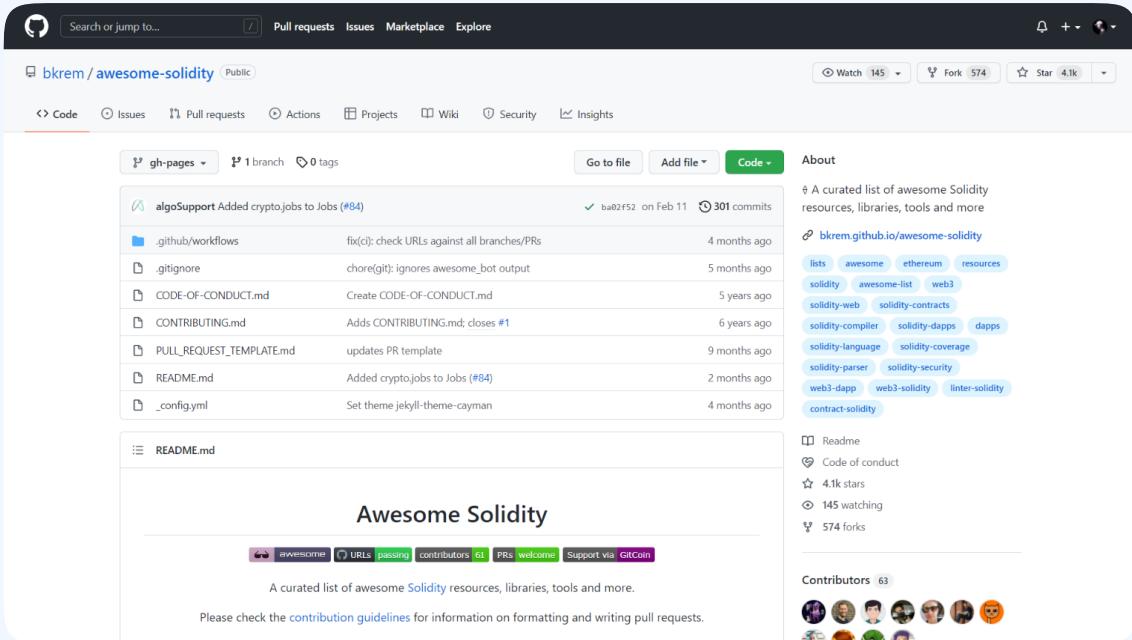
Capture the Ether

Learning Resources



The screenshot shows the homepage of the Ethereum Smart Contract Security Best Practices. The page has a dark header with the title 'Ethereum Smart Contract Best Practices' and a search bar. Below the header, there are navigation links for Home, General Philosophy, Development Recommendations, Attacks, Security Tools, Bug Bounty Programs, and About. The main content area is titled 'Ethereum Smart Contract Security Best Practices' and includes a 'Tip' box with a green background and white text, which says: 'This guideline is updated often, however, if you want to stay on top of the Smart Contract security news and developments sign up for the bi-weekly Smart Contract Security Newsletter.' There is also a 'Contributions are welcome!' section with a note: 'Feel free to submit a pull request, with anything from small fixes, to full new sections. If you are writing new content, please reference the contributing page for guidance on style.'

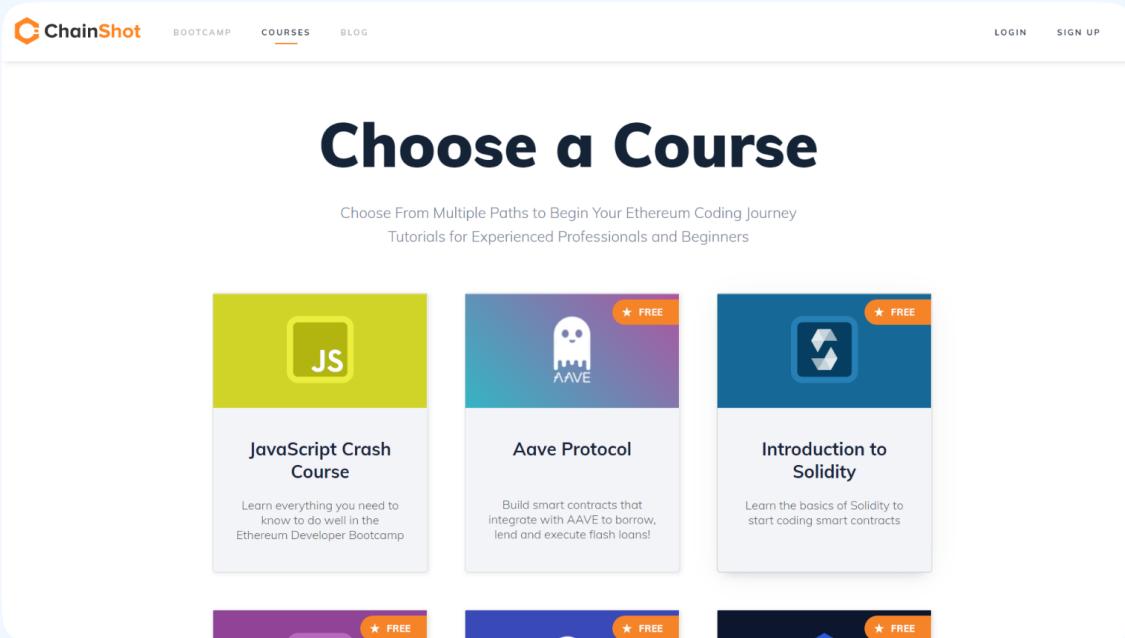
Smart Contract Best Practices



The screenshot shows the GitHub repository for 'Awesome Solidity'. The repository has 145 stars, 574 forks, and 4.1k contributors. The repository description is: 'A curated list of awesome Solidity resources, libraries, tools and more'. It includes a 'Code' tab with a list of files and their commit history, and a 'About' section with a list of tags: lists, awesome, ethereum, resources, solidity, awesome-list, web3, solidity-web, solidity-contracts, solidity-compiler, solidity-dapps, dapps, solidity-language, solidity-coverage, solidity-parser, solidity-security, web3-dapps, web3-solidity, inter-solidity, contract-solidity. The repository also features a 'README.md' file and a 'Contributors' section with 63 contributors.

Awesome Solidity

Learning Resources

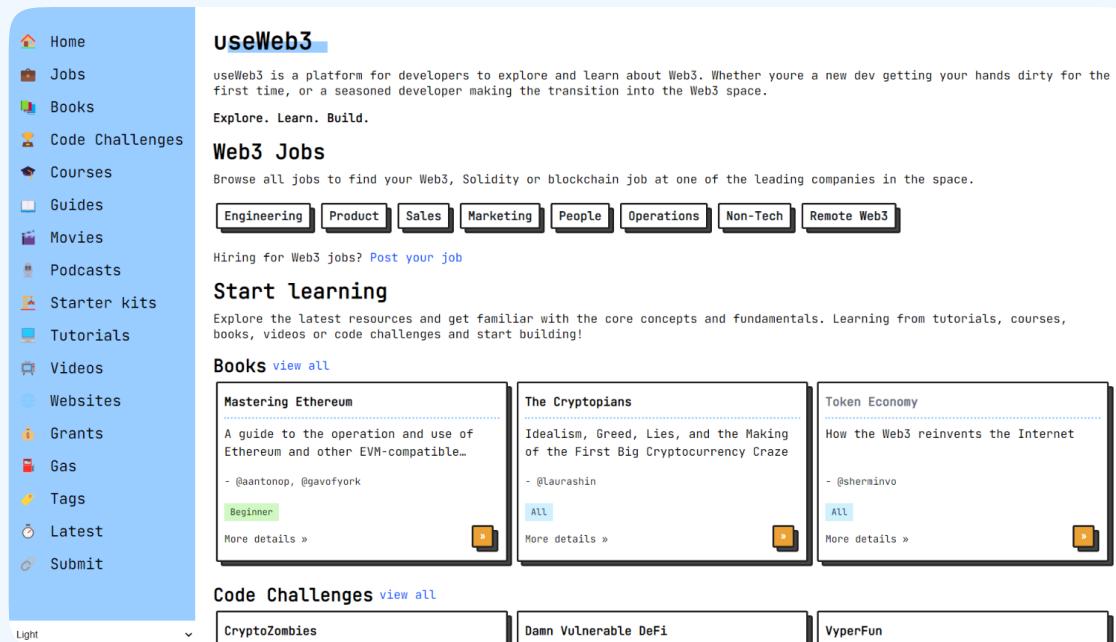


The screenshot shows the ChainShot website's course selection interface. At the top, there's a navigation bar with the ChainShot logo, 'BOOTCAMP' (which is underlined), 'COURSES', 'BLOG', 'LOGIN', and 'SIGN UP'. The main heading 'Choose a Course' is displayed in a large, bold, dark font. Below it, a sub-headline reads 'Choose From Multiple Paths to Begin Your Ethereum Coding Journey' and 'Tutorials for Experienced Professionals and Beginners'. Three course cards are shown in a grid:

- JavaScript Crash Course** (Yellow background): 'Learn everything you need to know to do well in the Ethereum Developer Bootcamp'.
- Aave Protocol** (Blue background): 'Build smart contracts that integrate with AAVE to borrow, lend and execute flash loans!'. It has a 'FREE' badge.
- Introduction to Solidity** (Dark Blue background): 'Learn the basics of Solidity to start coding smart contracts'.

Below each card is a horizontal bar with a 'FREE' badge. The entire interface is set against a light gray background.

Chainshot



The screenshot shows the useWeb3 website's homepage. On the left, a blue sidebar contains a list of links: Home, Jobs, Books, Code Challenges, Courses, Guides, Movies, Podcasts, Starter kits, Tutorials, Videos, Websites, Grants, Gas, Tags, Latest, and Submit. Below this is a 'Light' theme switch.

The main content area features a section titled **useWeb3**. It includes 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.' Below this is a 'Explore. Learn. Build.' section.

Web3 Jobs section: 'Browse all jobs to find your Web3, Solidity or blockchain job at one of the leading companies in the space.' It features a grid of job categories: Engineering, Product, Sales, Marketing, People, Operations, Non-Tech, and Remote Web3.

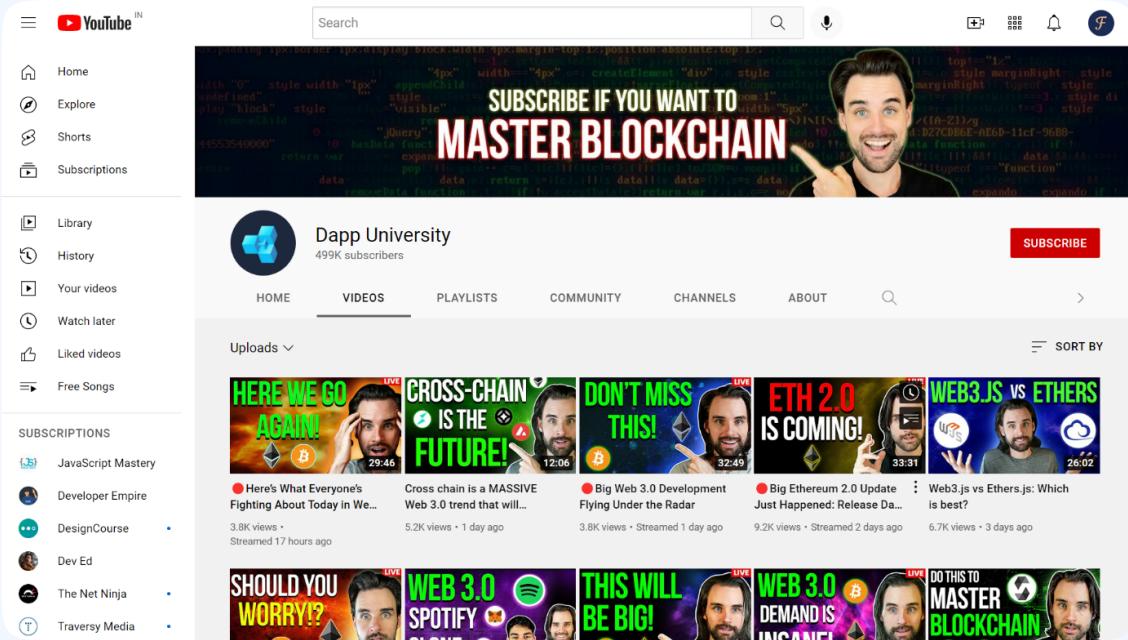
Start learning section: 'Explore the latest resources and get familiar with the core concepts and fundamentals. Learning from tutorials, courses, books, videos or code challenges and start building!'

Books section: 'view all' link. It lists three books in cards: 'Mastering Ethereum', 'The Cryptopians', and 'Token Economy'.

Code Challenges section: 'view all' link. It lists three challenges: 'CryptoZombies', 'Damn Vulnerable DeFi', and 'HyperFun'.

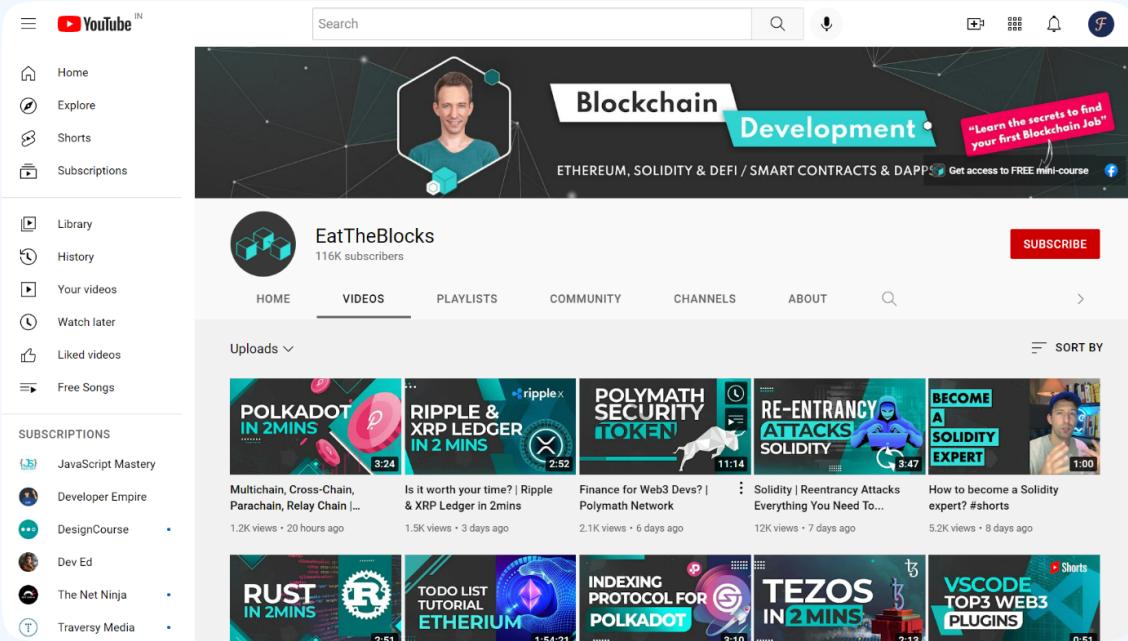
useWeb3

Learning Resources



The screenshot shows the YouTube channel page for 'Dapp University'. The channel has 499k subscribers. The 'VIDEOS' tab is selected, showing a grid of video thumbnails. The top video is titled 'HERE WE GO AGAIN!' and has 29:46 of content. Other visible video titles include 'CROSS-CHAIN IS THE FUTURE!', 'DON'T MISS THIS!', 'ETH 2.0 IS COMING!', 'WEB3JS VS ETHERS', 'SHOULD YOU WORRY!?', 'WEB 3.0 SPOTIFY', 'THIS WILL BE BIG!', 'WEB 3.0 DEMAND IS INSANE!', and 'DO THIS TO MASTER BLOCKCHAIN'. The channel's banner features a man pointing and the text 'SUBSCRIBE IF YOU WANT TO MASTER BLOCKCHAIN'.

Dapp University



The screenshot shows the YouTube channel page for 'EatTheBlocks'. The channel has 116k subscribers. The 'VIDEOS' tab is selected, showing a grid of video thumbnails. The top video is titled 'POLKADOT IN 2MINS' and has 3:24 of content. Other visible video titles include 'RIPPLE & XRP LEDGER IN 2 MINS', 'POLYMAT SECURITY TOKEN', 'RE-ENTRANCY ATTACKS SOLIDITY', 'BECOME A SOLIDITY EXPERT', 'RUST IN 2MINS', 'TODO LIST TUTORIAL ETHERIUM', 'INDEXING PROTOCOL FOR POLKADOT', 'TEZOS IN 2MINS', and 'VS CODE TOP3 WEB3 PLUGINS'. The channel's banner features a man in a hexagon and the text 'Blockchain Development'.

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.

Important Note

These are not all the things you need to learn to become a web 3.0 developer, there are many more things you should consider learning, but these are the main building blocks you should learn first.

There is no end of learning in web development there's always something to learn.

So never stop learning!

Thank You for your attention, Subscribe to my youtube channel for more Advanced Tutorials.



- JavaScript Mastery



jsmasterypro



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