

Treehacks Smart Contract Challenge

Hey there, Hacker!

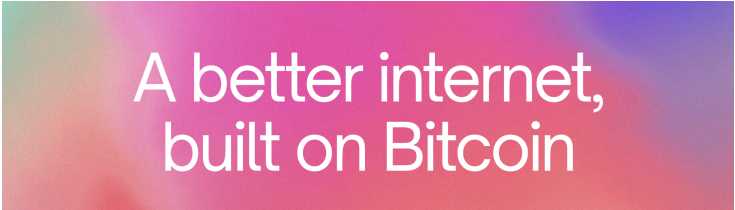
We're thrilled you've decided to experiment with Stacks technology and dive head-first into the world of blockchain! There is truly no other industry today more on the cutting edge of computer science, finance, and economics. We want to give you the tools and resources to build interesting smart contracts, and get comfortable with crypto-tinkering!

1. Blockchain

A blockchain is simply a digital database containing information that can be simultaneously used and shared within a large decentralized, publicly accessible network. Think of it as a ledger where the infrastructure is maintained and secured by all of the participant's computers, instead of a server controlled by a corporation or government.

→ [Learn more about blockchain from this introductory video](#)

2. Smart Contracts



A better internet,
built on Bitcoin

Smart Contracts are when blockchains become extremely powerful! A smart contract is a self-executing piece of software with the terms of an agreement between buyer and seller being directly written into lines of code. They're basically snippets of code that live on the blockchain that can do meaningful operations with cryptocurrency and other data on the network.

→ [Learn more about smart contracts from this explainer video](#)



3. Stacks 2.0 & Clarity



Stacks 2.0 is a new, innovative blockchain that connects to Bitcoin and brings smart contracts and decentralized apps to it. Stacks 2.0 also uses the Clarity smart contract programming language that supports programmatic control over digital assets. These contracts enable exciting use cases with \$BTC and \$STX, and are the basis for a decentralized application ecosystem.

→ [Learn more about Stacks 2.0 from this overview video](#)

→ [Learn more about Clarity smart contracts from this Clarity 101 video](#)

4. Clarity Smart Contracts

While blockchain technology can appear complex and intimidating at first glance, developing smart contracts is actually straightforward and simple! Much like any language, once you grasp the syntax and other nuances, you'll be on your way to building your own robust smart contracts. For example, a smart contract could be as basic as a Counter that either increments or decrements a particular variable:

```
01  (define-data-var counter int 0)
02
03  (define-public (get-counter)
04    (ok (var-get counter)))
05
06  (define-public (increment)
07    (begin
08      (var-set counter (+ (var-get counter) 1))
09      (ok (var-get counter))))
10
11  (define-public (decrement)
12    (begin
13      (var-set counter (- (var-get counter) 1))
14      (ok (var-get counter))))
```

5. Hack Away!

Now it's time for you to go out and build the smart contracts you want to see in the world. For this hackathon we want you to develop a functional Clarity smart contract that performs some action on the Stacks 2.0 blockchain. It should solve a problem, handle cryptocurrency, execute meaningful functionality, or fulfill an interesting use case. Upload your .clar file to Github, and bonus points for well-commented code and a descriptive README!

First, you can either download a text editor of your choice (we recommend [VSCode](#)), or use the [in-browser Gitpod IDE](#) that has already been configured with all the correct dependencies (like the Stacks command-line interface). We also suggest that you work through the introductory Clarity tutorials to get a foundational understanding of the language, before trying to code a totally novel contract.

["Hello World" Tutorial](#)

[Counter Tutorial](#)

[Testing Clarity Code with Javascript & Mocha](#)

Finally, your two main resources for development are going to be:

- The official Stacks documentation: <https://docs.blockstack.org/>
- Stacks Resource Kit: <https://stacks.tools/> ("Clarity" section)

When you're really ready to dive in, here is a [library of all the Clarity contracts](#) that were built during the testnet phase of the Stacks 2.0 blockchain!

Wishing you all the luck in your hacking adventures! We think Stacks and Clarity are crazy-cool tech, and are thrilled to see what you end up building. Do not hesitate to reach out for help if you need it. The [Stacks Discord](#) is full of helpful community members always willing to lend a hand, and there's even a #clarity channel! Also feel free to shoot joe@blockstack.com an email if you need any more assistance.



Clarity, for safer smart contracts

Potential Smart Contract Use Cases

- Token Exchange
- DAOs (Decentralized Autonomous Organizations)
- Dapp (Decentralized Application)
- DeFi (Decentralized Finance)
- Digital Art/Collectibles/NFTs (Non-Fungible Tokens)
- Supply chain provenance
- Deeds for property
- Access Restriction
- Fund Withdrawals
- Digital Identity
-
- State Machines
- Balance Address Checker
- Contracts calling another Contract
- Fundraising Mechanisms
- Simple Marketplace
- Asset transfer
- Random Lottery
- Delegated Voting
- IOT Device Management
- Legal Agreements
- Payment Splitting
- Gambling
- Intellectual Property Rights
- Medical Records
- Insurance

