The Dark Ages of App Configuration

presented by Scott Motte (Mot)

Secrets lived in code (2008)

Then came Heroku

(2009)

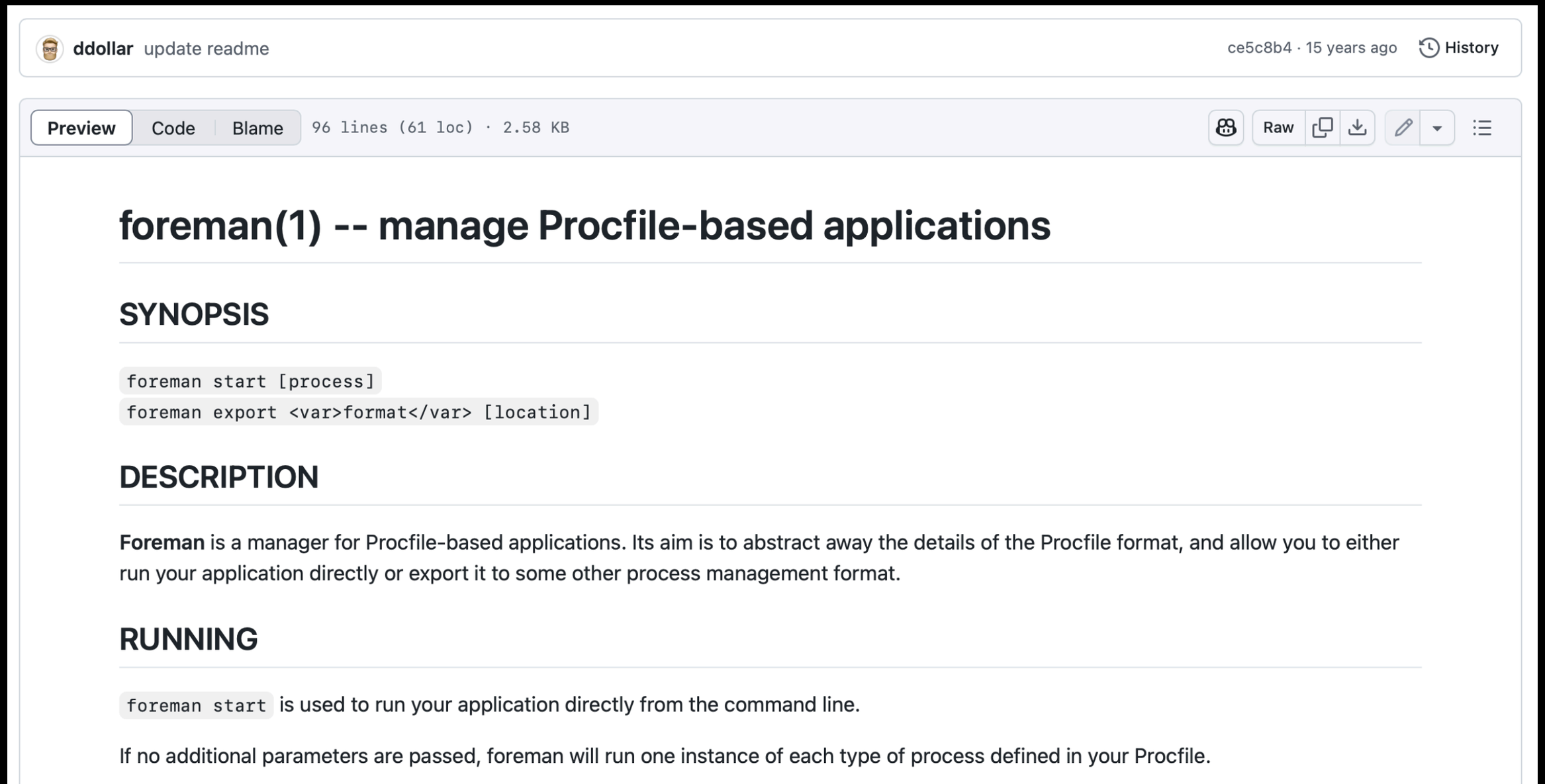
Procfile (2009)

1 Procfile

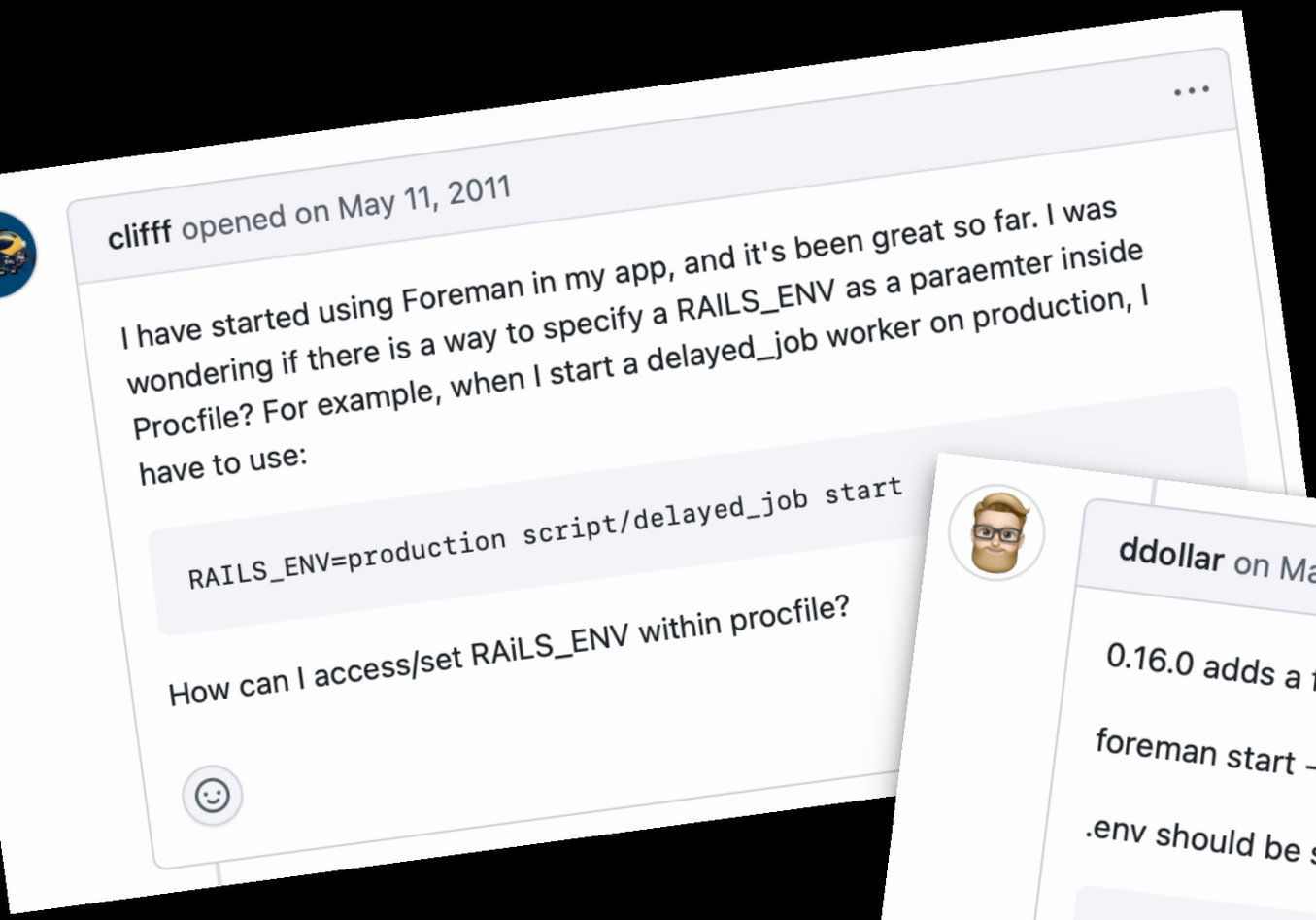
```
web: RAILS_ENV=production rails server
worker: RAILS_ENV=production script/delayed_job start
```

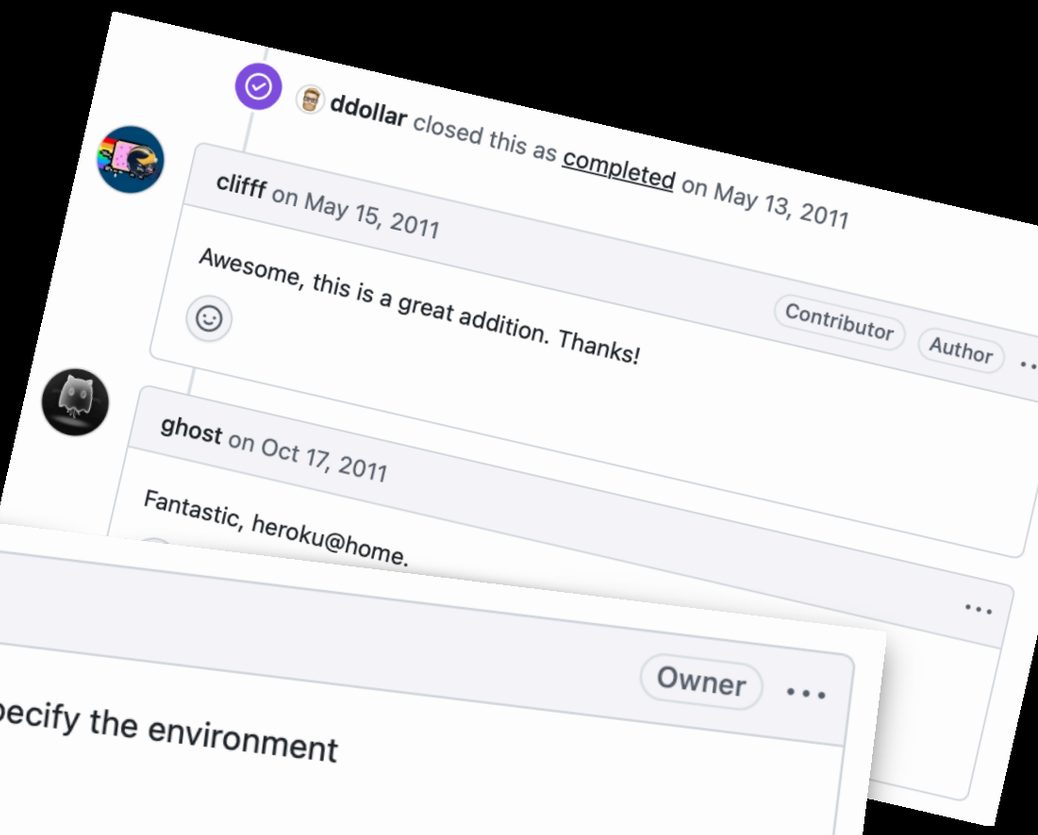
NORMAL master Procfile 33% 1:1

Foreman (2010)



The Rise of .env Files





Twelve-Factor App (2011)

Dotenv is Born (2012)

13 files changed +188 -0 lines changed ↑ Top Search within code

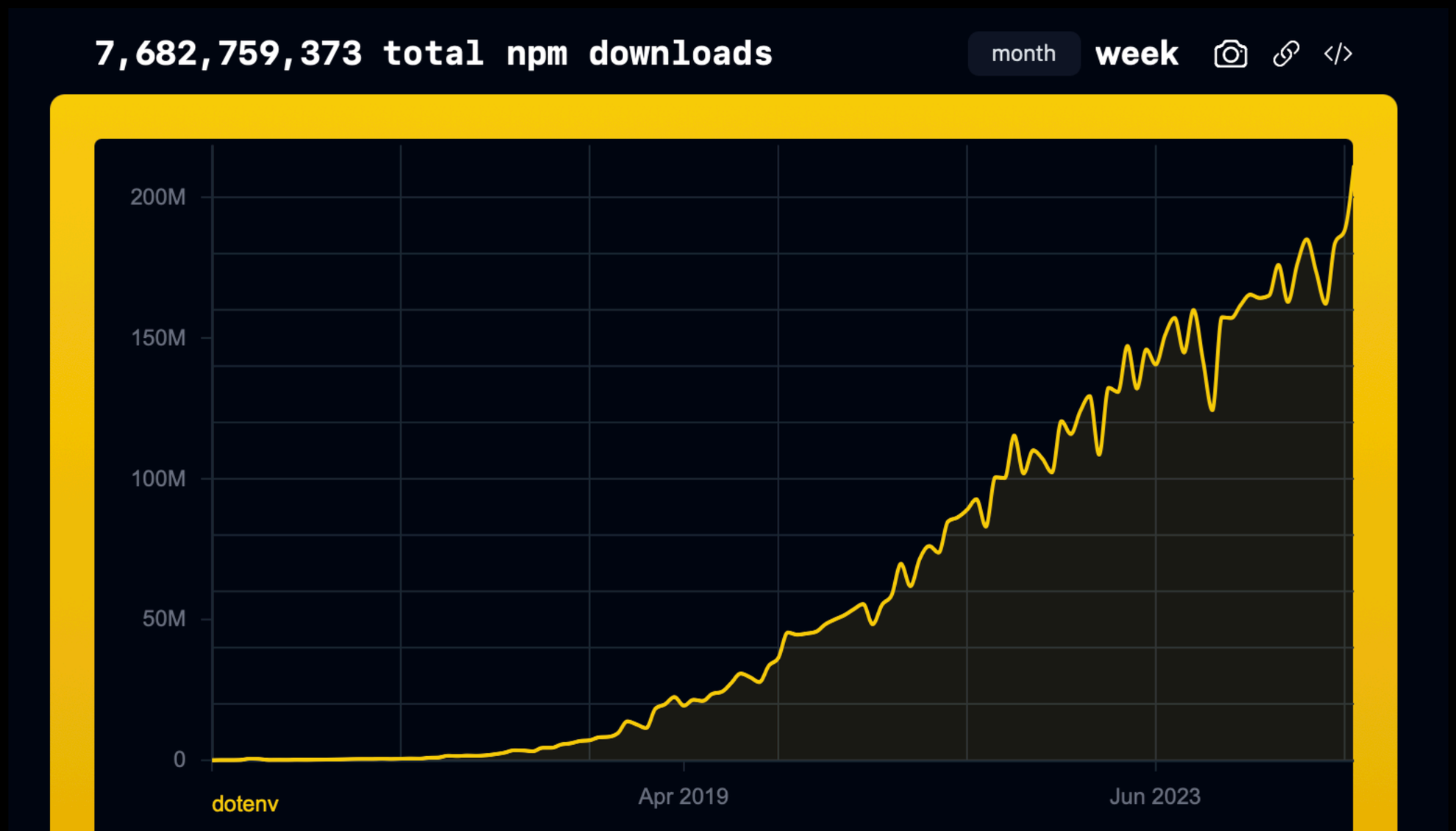
lib/dotenv/environment.rb +22

```
@@ -0,0 +1,22 @@
+ module Dotenv
+   class Environment < Hash
+     def initialize(filename)
+       @filename = filename
+       load
+     end
+
+     def load
+       read.each do |line|
+         self[$1] = $2 if line =~ /\A([\w_]+)=(.*)\z/
+       end
+     end
+
+     def read
```

Ruby to Node (2013)

2013: phpdotenv
2013: python-dotenv
2013: dotenv (nodejs)
2013: godotenv
2013: dotenv_elixir
2014: dotenv-rs
2014: docker-compose
2017: dotenv.net
2017: dotenv-kotlin
2020: dotenv-java
2021: swift-dotenv

Small Code, Big Reach



Present Day – Rethinking .env

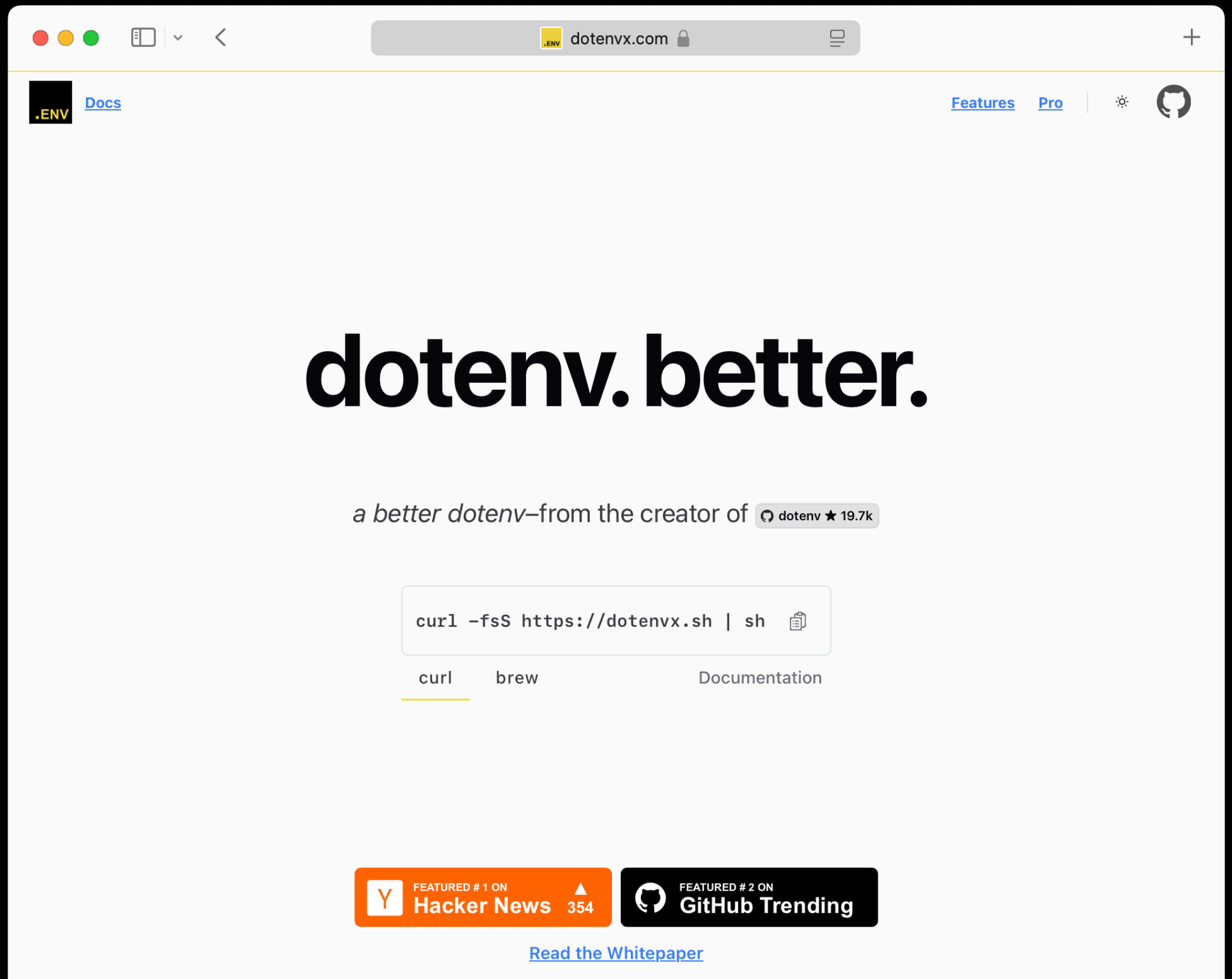
Three Problems

- Inconsistency across platforms
- Juggling multiple environments
- Leaking your .env file

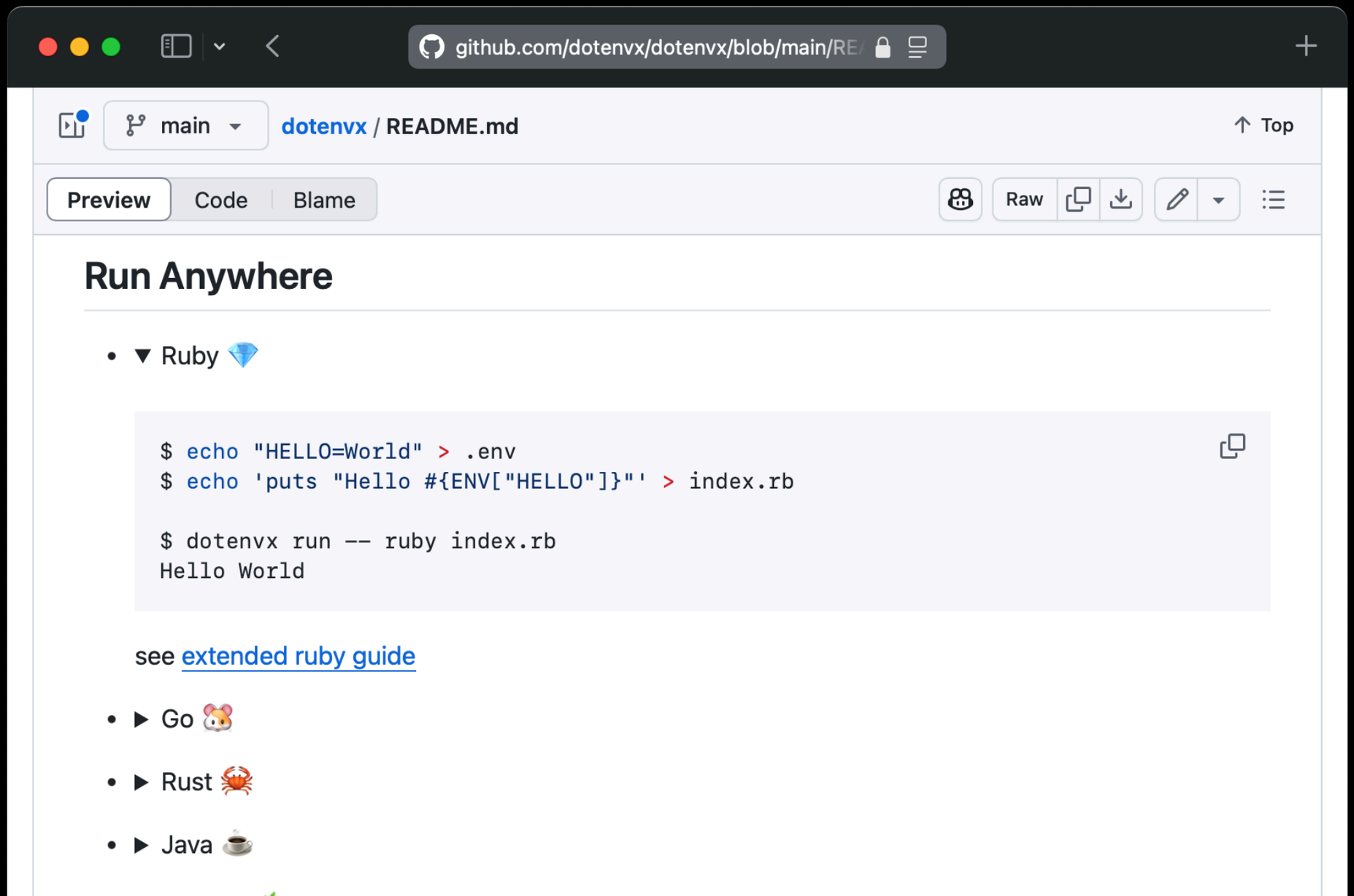
Three Solutions

- Make it run the same everywhere
- Add first-class support for multiple environments
- Encrypt your .env files to counteract leaks

Introducing dotenvx



Run Anywhere



demo: dotenvx run --

Run Anywhere

Consistency

dotenvx.com/spec/

.ENV Docs Features Pro

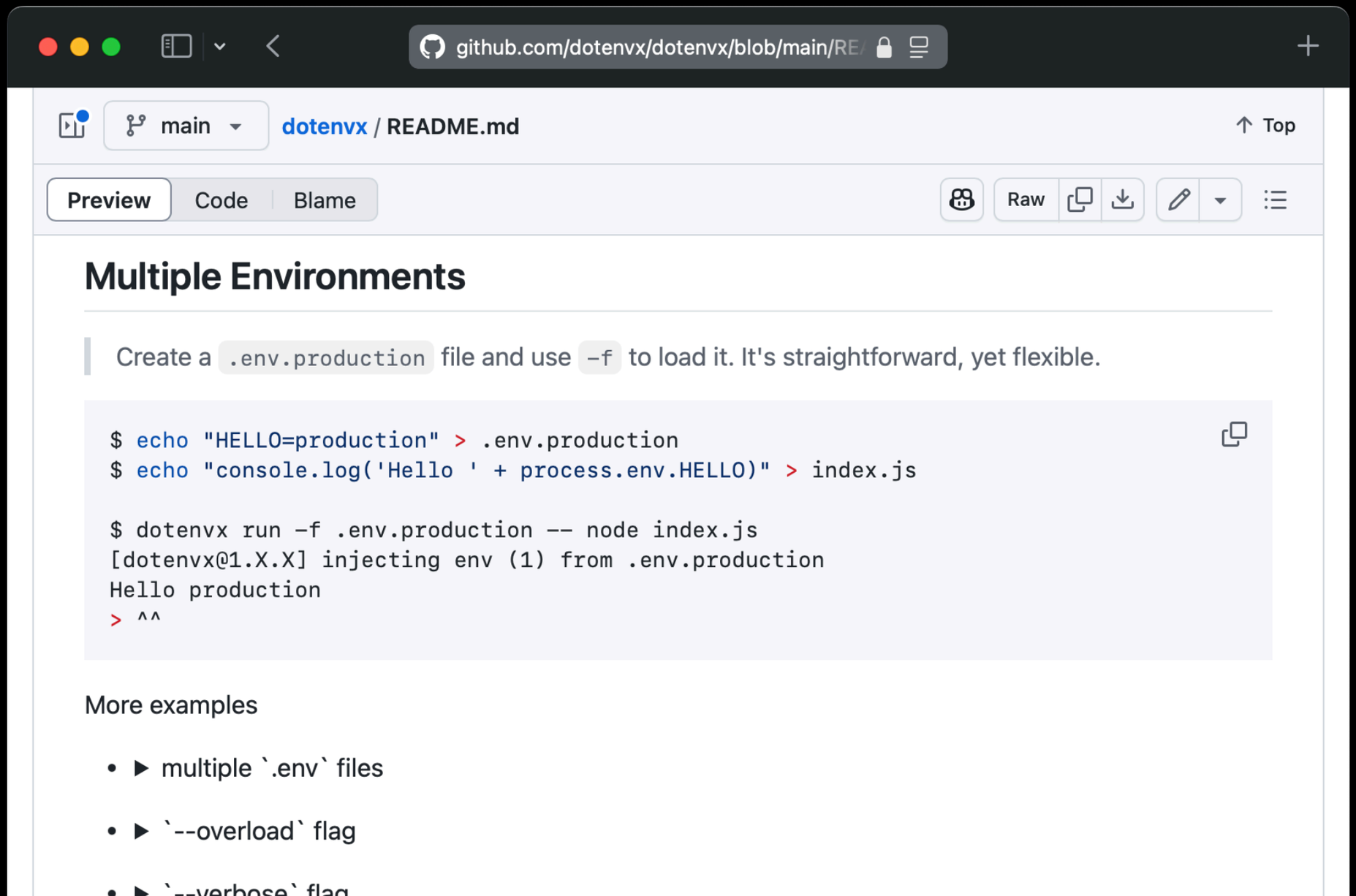
Spec

Dotenv Spec

A formal comparison of dotenv parsing behavior across major libraries, languages, and frameworks.

	dotenvx	docker	docker-compose	npm@dotenv	n
Pass Rate	100%	13%	63%	90%	
101_BASIC	✔	✔	✔	✔	
102_EMPTY	✔	✔	✔	✔	
103_MACHINE	✔	✔	✔	✔	

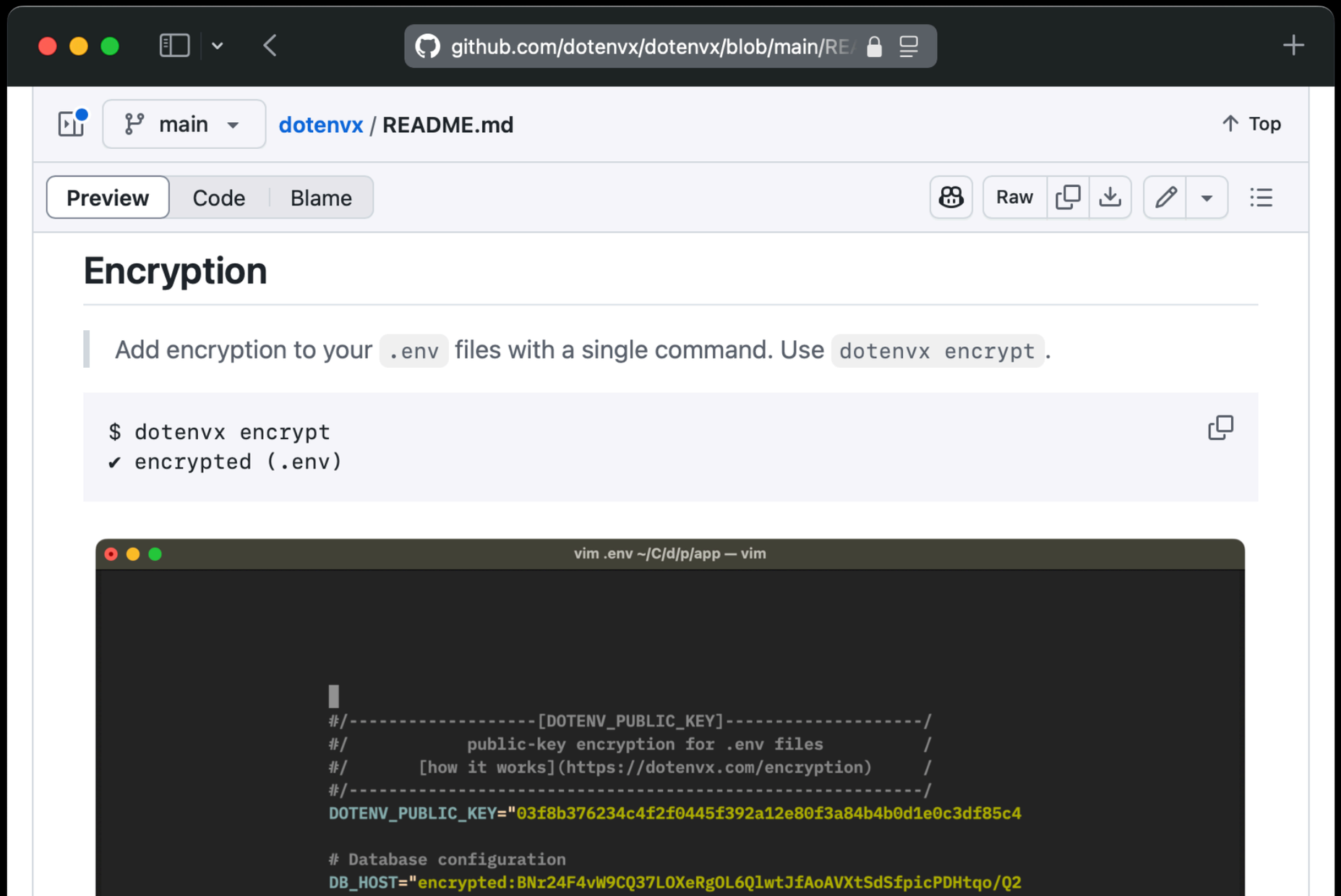
Multiple Environments



demo: dotenvx run -f .env.production --

Prevent leaks

Encryption



demo: dotenvx encrypt

Additional Benefits

- Support for write-only access
- Set a single environment variable on your infra
- PR Reviews for secrets

Additional Features

- ext gitignore
- ext precommit
- ext prebuild
- get
- built-in debugging and help

Go Deeper

dotenvx.com

Read the Whitepaper

Dotenvx: Reducing Secrets Risk with Cryptographic Separation

Abstract. An ideal secrets solution would not only centralize secrets but also contain the fallout of a breach. While secrets managers offer centralized storage and distribution, their design creates a large blast radius, risking exposure of thousands or even millions of secrets. We propose a solution that reduces the blast radius by splitting secrets management into two distinct components: an encrypted secrets file and a separate decryption key.

[Read the Whitepaper]

Dotenvx: Reducing Secrets Risk with Cryptographic Separation

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Abstract. An ideal secrets solution would not only centralize secrets but also contain the fallout of a breach. While secrets managers offer centralized storage and distribution, their design creates a large blast radius, risking exposure of thousands or even millions of secrets. We propose a solution that reduces the blast radius by splitting secrets management into two distinct components: an encrypted secrets file and a separate decryption key.

1. Introduction

Modern software relies on secrets to operate—API keys, tokens, and credentials are essential for applications to interact with services like Stripe, Twilio, and AWS. The majority of these secrets are stored in platform-native secrets managers such as AWS Secrets Manager, Vercel Environment Variables, and Heroku Config Vars. These systems offer convenience by centralizing secrets and seamlessly injecting them into runtime environments. However, this centralization introduces significant risks. If breached, they expose all secrets stored within, resulting in a blast radius where thousands or even millions of secrets may be leaked. At the same time, alternatives such as .env files minimize blast radius but lack the safeguards necessary to prevent unauthorized access. Developers are left choosing between simplicity with higher risk or complexity with a larger blast radius.

What is needed is a secrets system based on hybrid cryptography instead of trust, allowing a developer to encrypt secrets without relying on any third party to remain secure. In this paper, we propose a solution to these risks using a library that decrypts an encrypted secrets file at runtime with a private key stored separately in the platform's secrets manager. This approach contains the blast radius of a breach while maintaining the simplicity of .env files. Even if one component—either the encrypted file or the secrets manager—is compromised, secrets remain secure. Only simultaneous access to both can expose them.

2. Secrets

We define a secret as a token or string value, typically issued by a third-party

1

Thank you.

dotenvx.com

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