

# Algorand Developer Bootcamp



# **Joe Polny**

Developer Advocate  
@AlgoFoundation



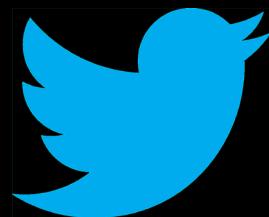
# **Ryan R. Fox**

Developer Advocate  
@AlgoFoundation

**Joe Polny**

@joe\_polny

@AlgoFoundation



**Ryan R. Fox**

@ryanRfox

@AlgoFoundation

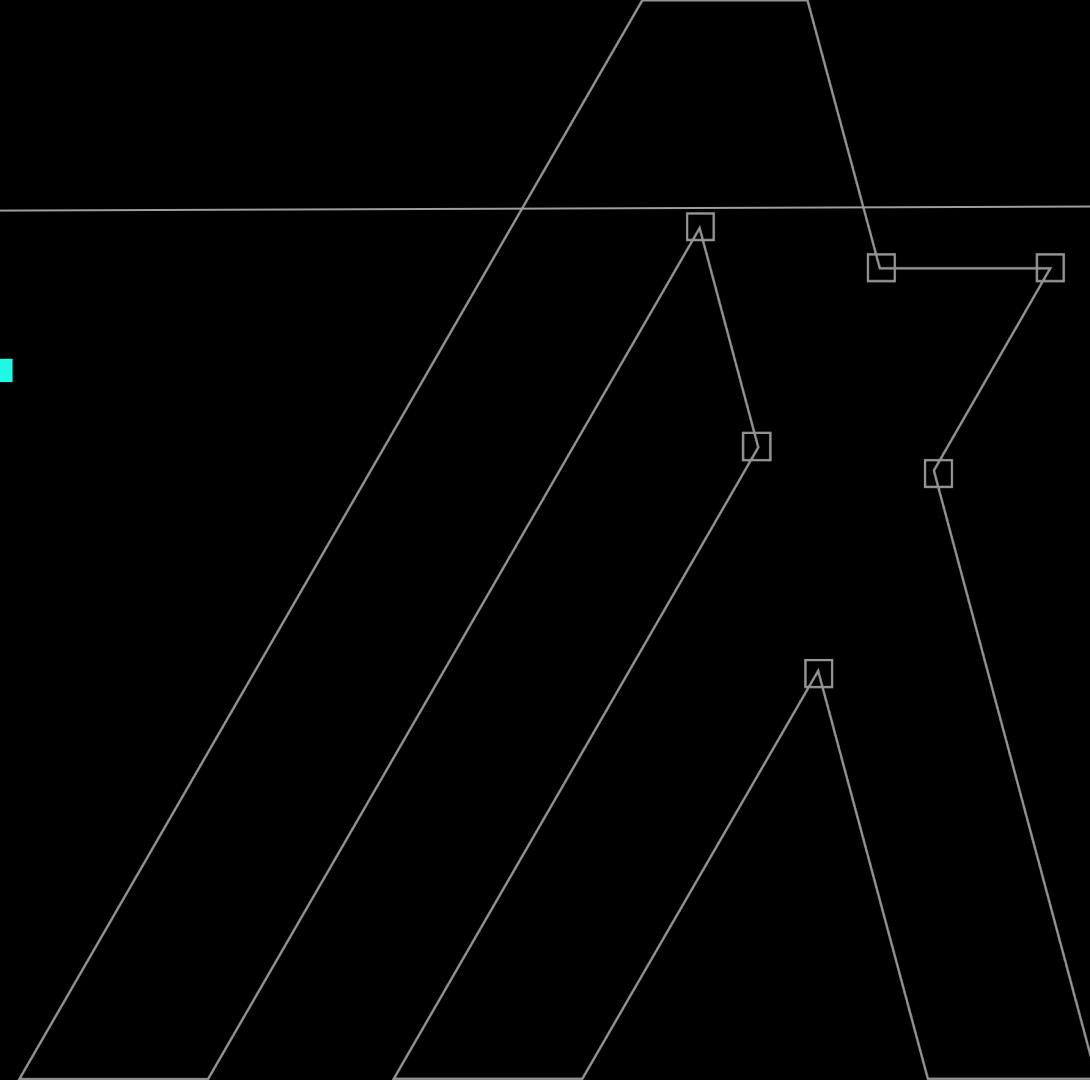
**Let's Connect  
@AlgoDevs**

# Housekeeping

## Algorand Developer Bootcamp

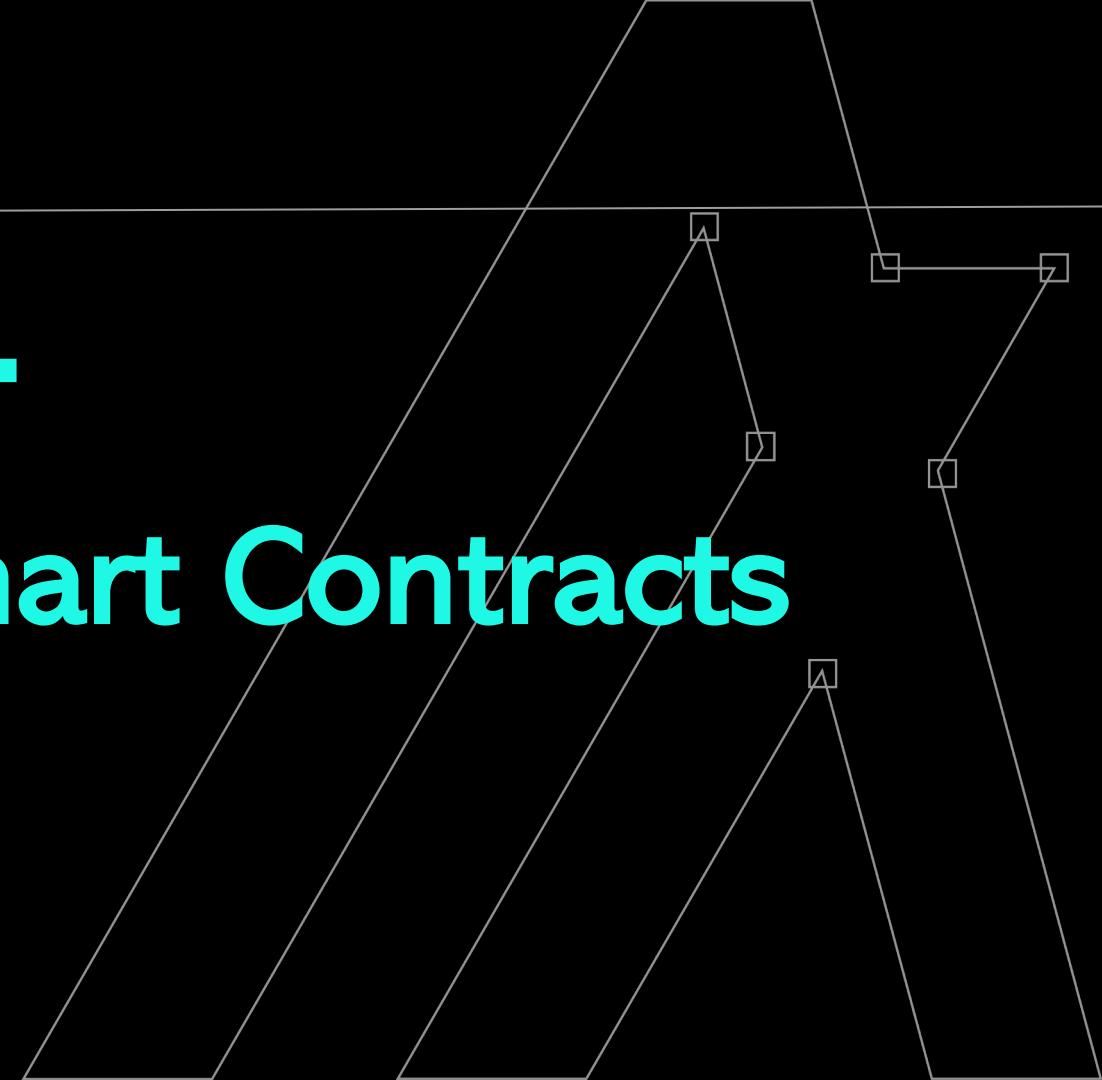


# #BUILDL



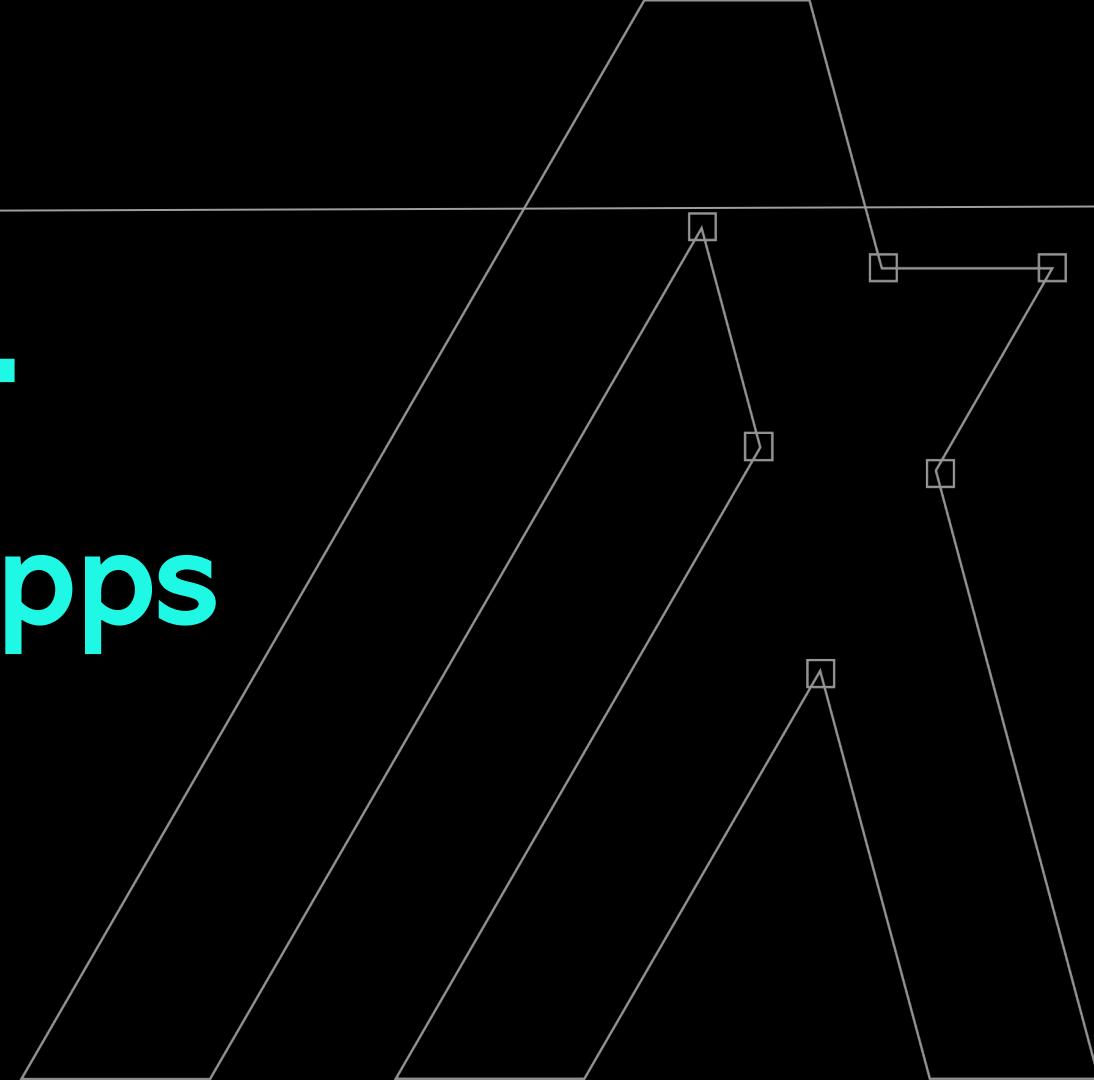
# #BUIDL

## Smart Contracts



# #BUIDL

# dApps



# #BUIDL

## DeFi

#Decipher2022

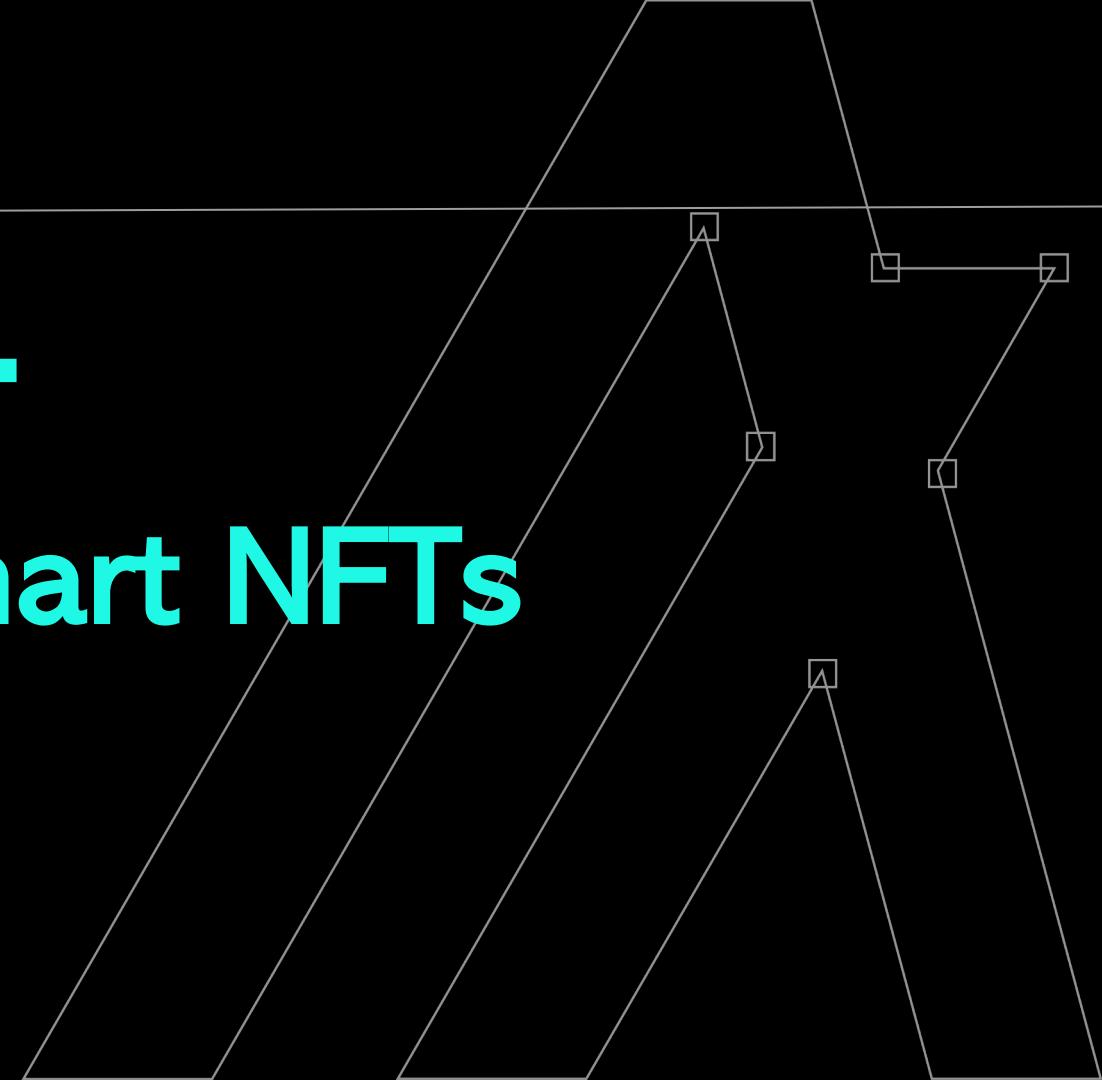
# #BUILDL

## Games



# #BUIDL

## Smart NFTs



# #BUIDL

## Randomness



# #BUIDL

## Oracles



# #BUIDL

## Bridges



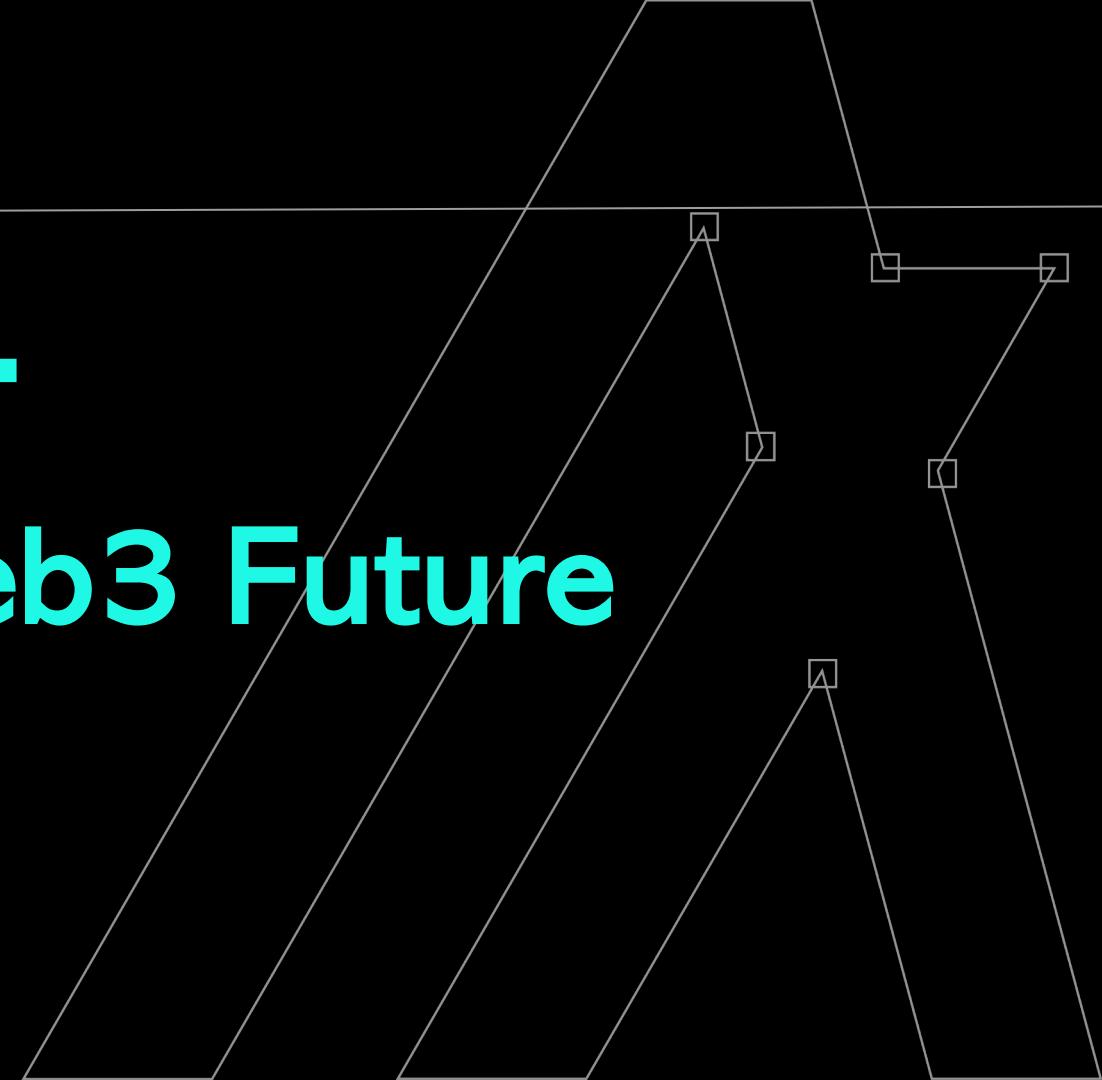
# #BUIDL

# Community



# #BUIDL

# Web3 Future



#BUIDL

Algorand

#AlgoFam

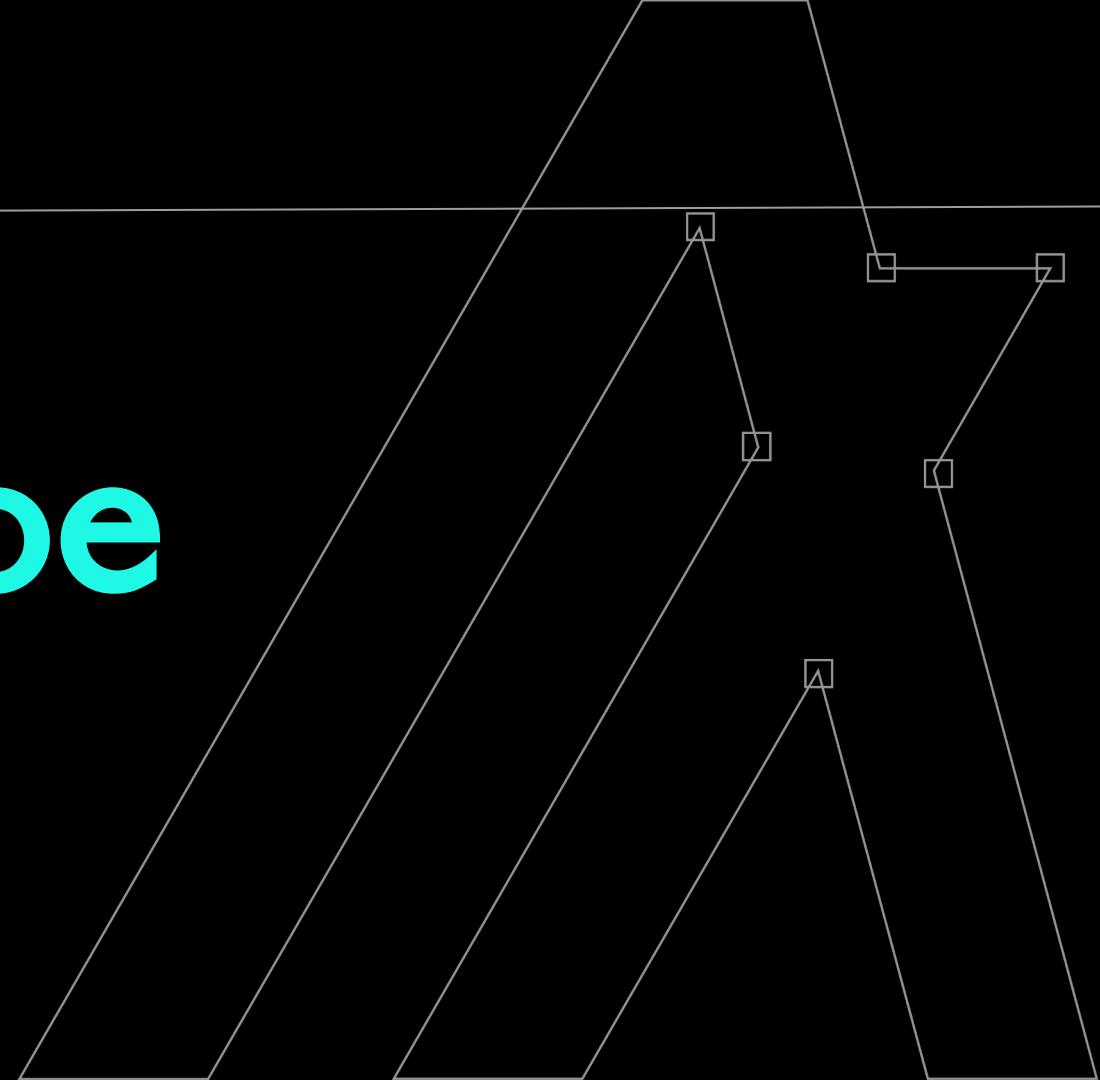
Algorand

@AlgoDevs  
Algorand

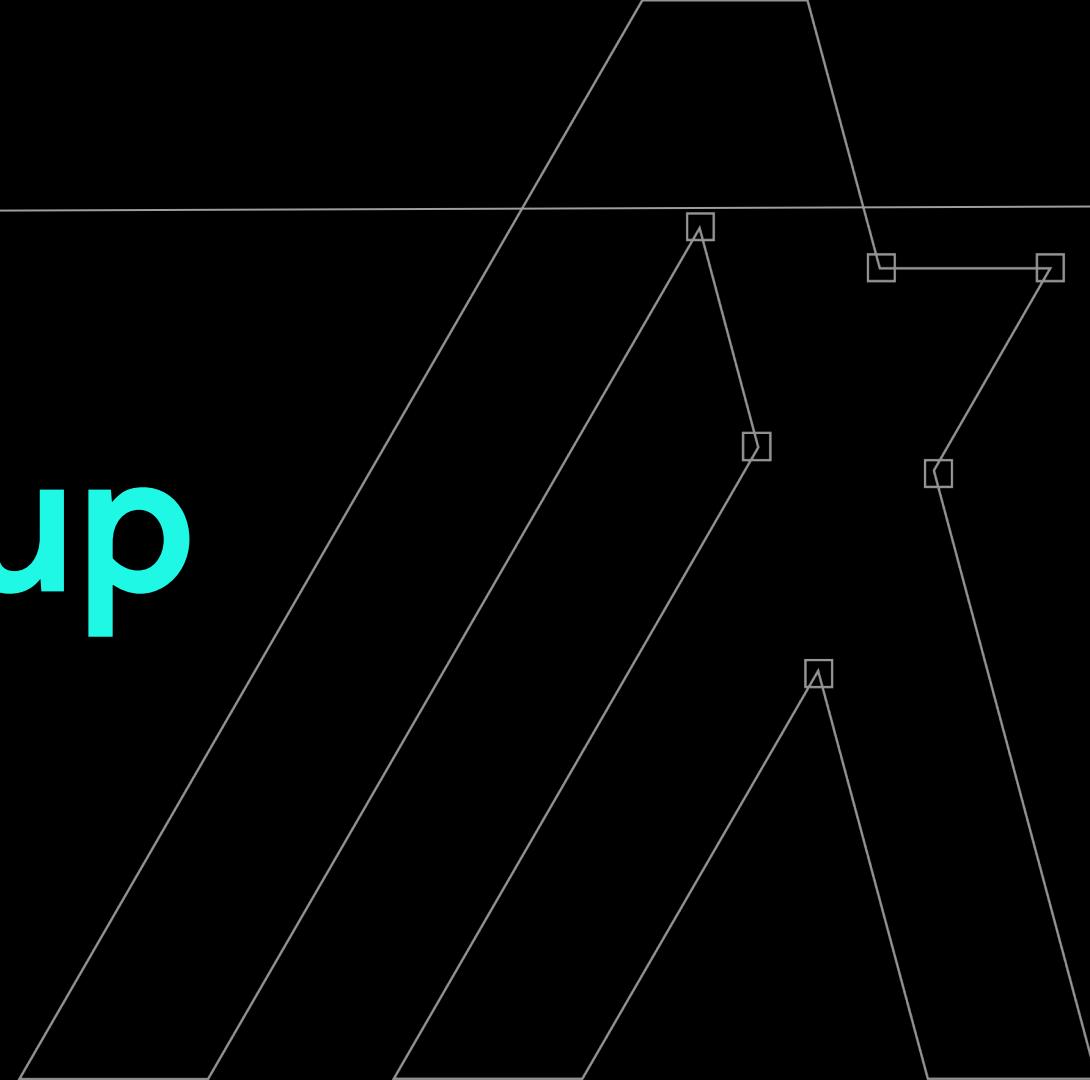


LFG

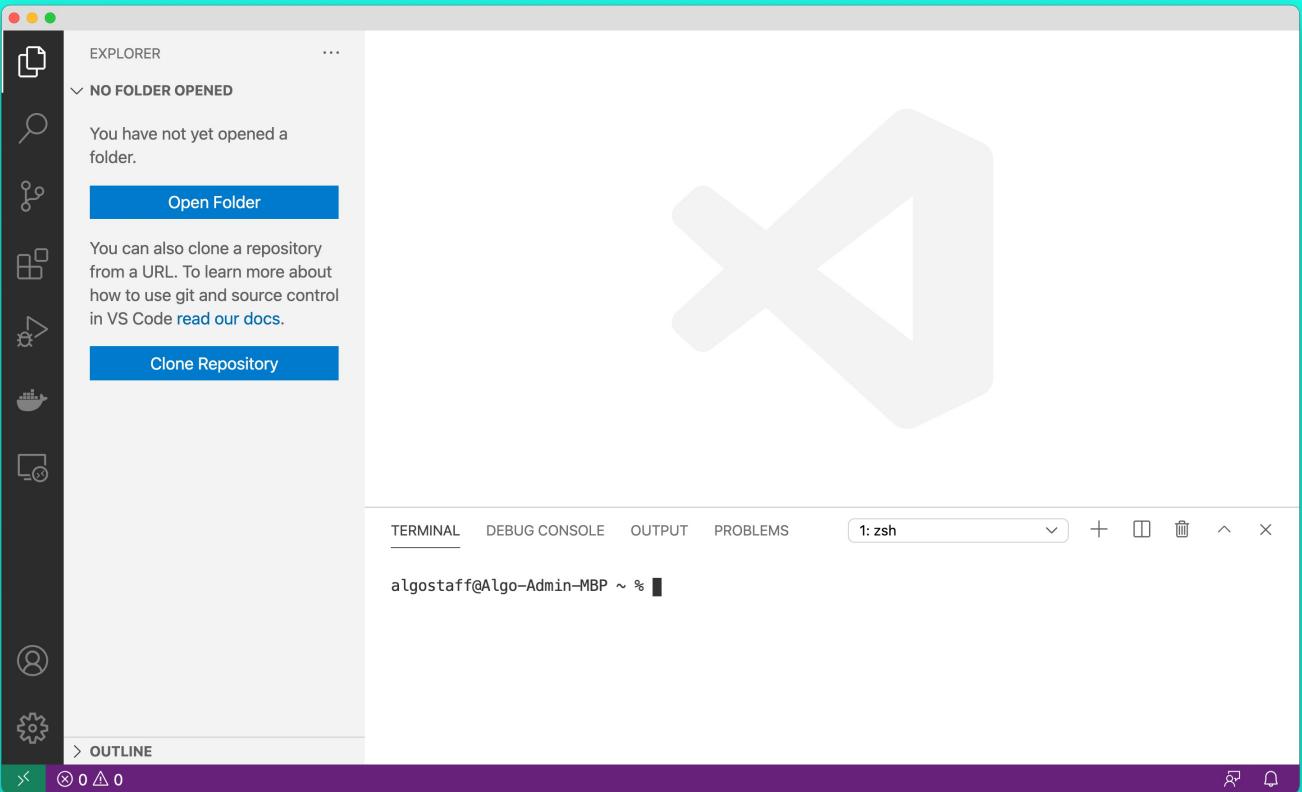
joe



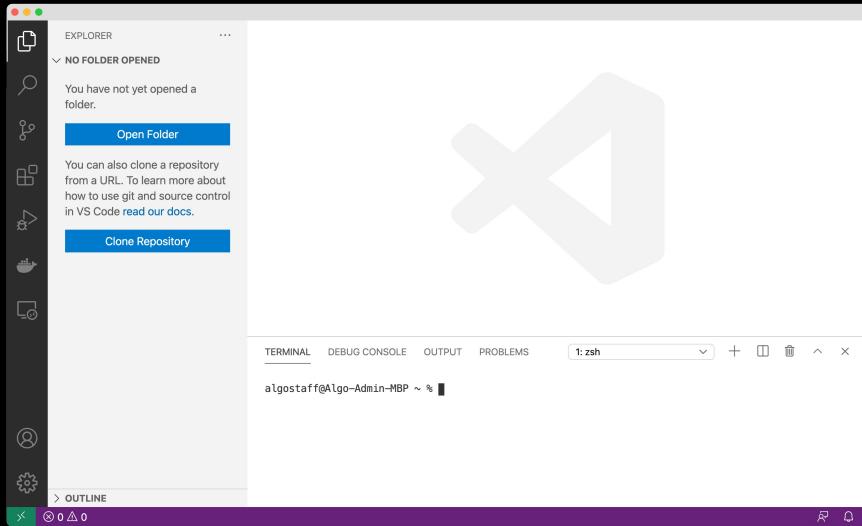
# DevEnv setup



# Developer Environment Setup



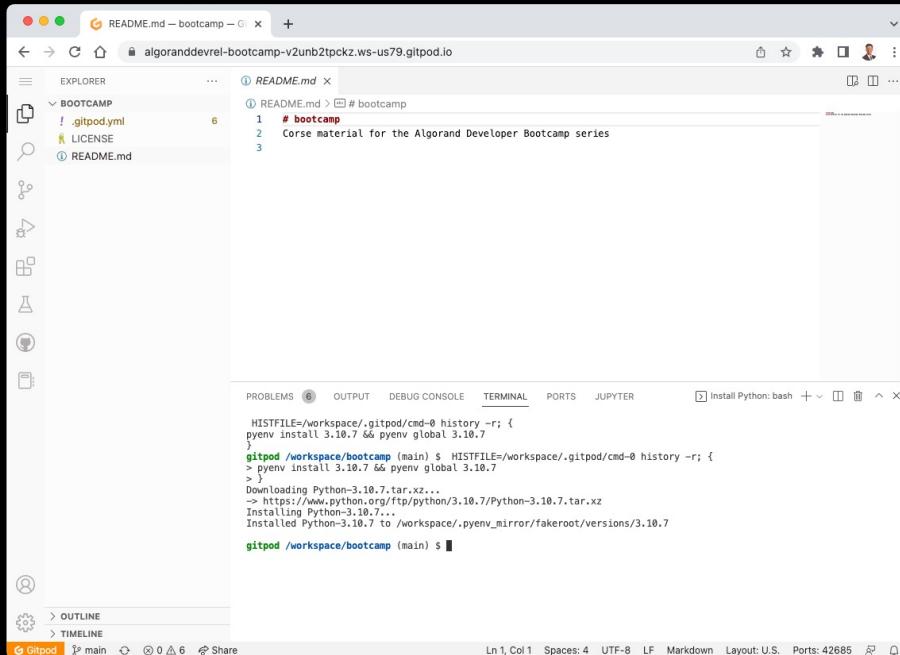
# Optional: VSCode



<https://code.visualstudio.com/Download>



# Recommendation: Gitpod



A screenshot of the Gitpod interface. The top navigation bar shows 'README.md' and 'bootcamp'. The left sidebar has sections for 'EXPLORER', 'BOOTCAMP' (with files '.gitpod.yml', 'LICENSE', and 'README.md'), and various icons for file types like PDF, CSV, and JSON. The main area shows a terminal window with the following content:

```
HISTFILE=/workspace/.gitpod/cmd-0 history -r; {  
pyenv install 3.10.7 && pyenv global 3.10.7  
}  
gitpod /workspace/bootcamp (main) $ HISTFILE=/workspace/.gitpod/cmd-0 history -r; {  
> pyenv install 3.10.7 && pyenv global 3.10.7  
> }  
Downloading Python-3.10.7.tar.xz...  
> https://www.python.org/ftp/python/3.10.7/Python-3.10.7.tar.xz  
Installing Python-3.10.7...  
Installed Python-3.10.7 to /workspace/.pyenv_mirror/fakeroot/versions/3.10.7  
gitpod /workspace/bootcamp (main) $
```

The bottom status bar shows 'Gitpod' and other system information.



<https://gitpod.io>



# Bootcamp content



<https://github.com/algorand-devrel/bootcamp>



# Developer Environment Components

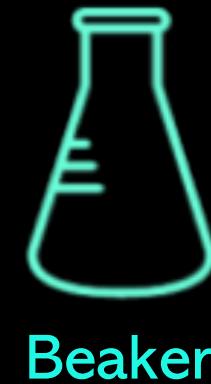
Infrastructure



SDK



Language + Framework



\$ whoami

pc

mac



# macOS prerequisites

Docker Desktop     $\geq 4.8.0$   
Python                 $\geq 3.10$



# Windows prerequisites

WSL2

Docker Desktop  $\geq 4.8.0$

Python

$\geq 3.10$



# Windows System for Linux (WSL2)



<https://learn.microsoft.com/en-us/windows/wsl/install>

# WSL2 Installation

```
> wsl --install  
Installing: Virtual Machine Platform  
Virtual Machine Platform has been installed.  
Installing: Windows Subsystem for Linux  
Windows Subsystem for Linux has been installed.  
Installing: Ubuntu  
Ubuntu has been installed.  
The requested operation is successful.
```



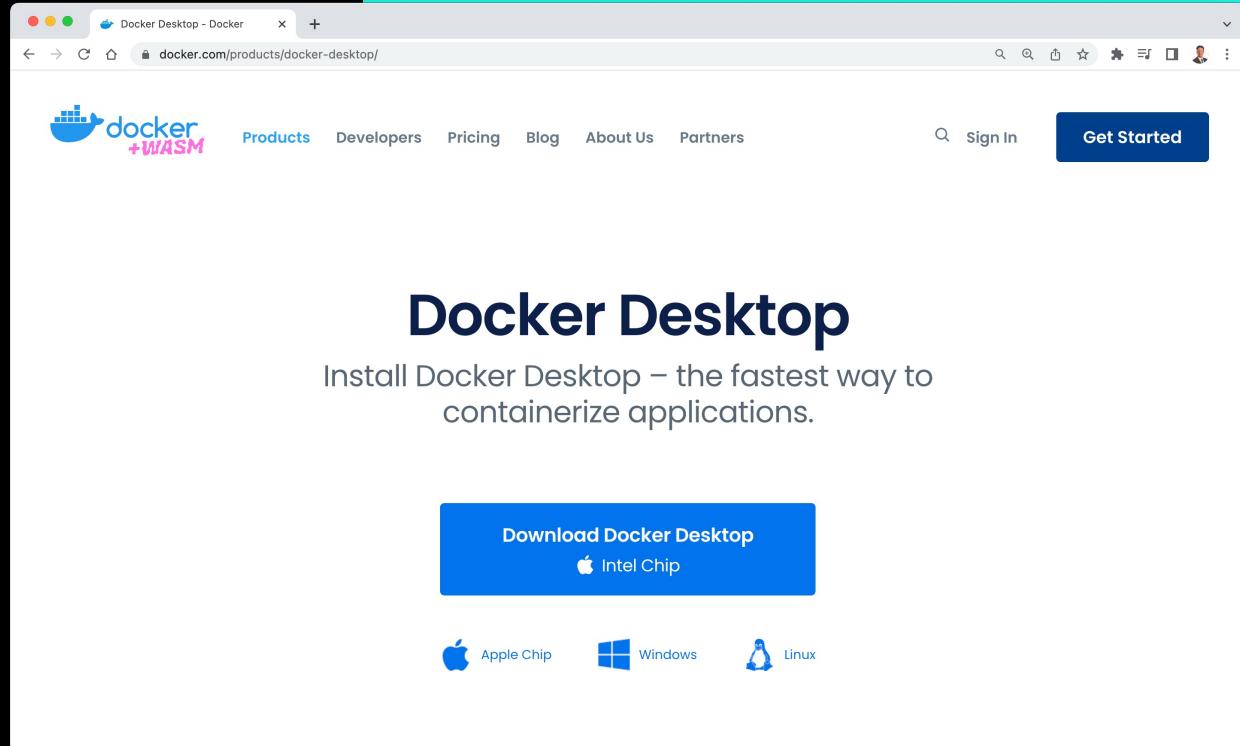
# WSL2 Configuration

1. Reboot Windows
2. Start Ubuntu
3. Prompted to add **username and password**

```
username@hostname:~$
```



# Docker Desktop Installation



The screenshot shows the Docker Desktop product page on the official Docker website. The header includes the Docker logo and navigation links for Products, Developers, Pricing, Blog, About Us, and Partners. A search bar and sign-in options are also present. A prominent blue button labeled "Get Started" is located on the right. The main content features a large heading "Docker Desktop" and a subtext: "Install Docker Desktop – the fastest way to containerize applications." Below this is a blue call-to-action button with the text "Download Docker Desktop" and an "Intel Chip" badge. At the bottom, there are icons for Apple Chip, Windows, and Linux.

Docker Desktop

Install Docker Desktop – the fastest way to containerize applications.

Download Docker Desktop

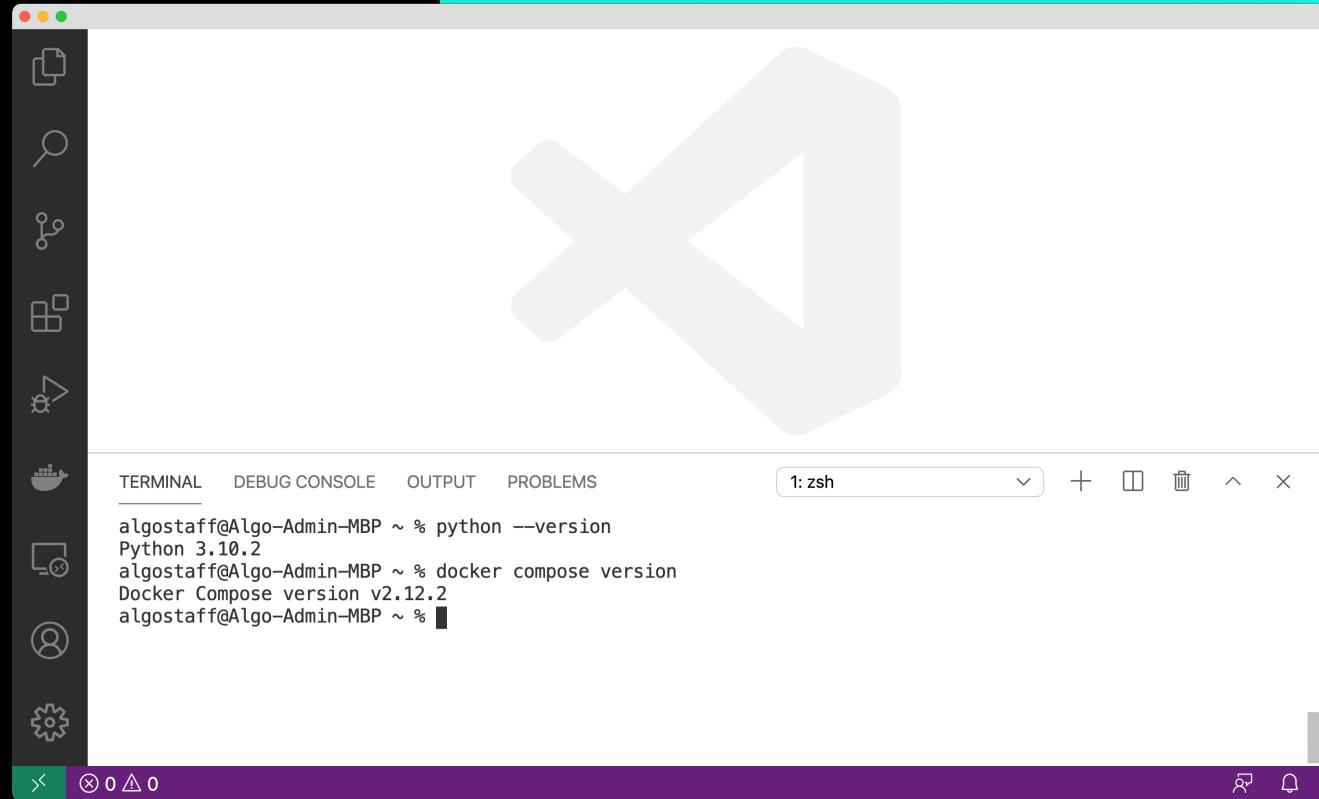
Apple Chip   Windows   Linux

# Python Installation

$\geq 3.10$

The screenshot shows the Python.org website's download section. At the top, there's a navigation bar with tabs for Python, PSF, Docs, PyPI, Jobs, and Community. Below the navigation is the Python logo. To the right of the logo are buttons for Donate, Search, and Go, along with a Socialize link. A secondary navigation bar below the main one includes links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The main content area features a large yellow button labeled "Download Python 3.11.0". Below this button, text encourages users to look for Python on other platforms like Windows, Linux/UNIX, macOS, and others. It also mentions ways to help test development versions. To the right of the text is a whimsical illustration of two wooden crates descending from the sky, each attached to a large, multi-colored parachute (yellow, white, and brown).

# Verify Prerequisites



A screenshot of the Visual Studio Code (VS Code) interface. The main area shows a large gray 'X' icon, indicating an error or that no file is open. On the left is a dark sidebar with various icons: a clipboard, magnifying glass, network, file/folder, terminal, Docker, file with circular arrow, and gear. The bottom of the sidebar has a purple bar with icons for close, refresh, and notifications. The main menu bar at the top includes FILE, EDIT, VIEW, INSERT, REFRESH, SEARCH, and HELP. Below the menu is a toolbar with icons for new file, open file, save, copy, paste, find, replace, and settings. The central workspace is a terminal window titled '1: zsh'. It displays the following command-line output:

```
alostaff@Algo-Admin-MBP ~ % python --version
Python 3.10.2
alostaff@Algo-Admin-MBP ~ % docker compose version
Docker Compose version v2.12.2
alostaff@Algo-Admin-MBP ~ %
```

# Developer Environment Components

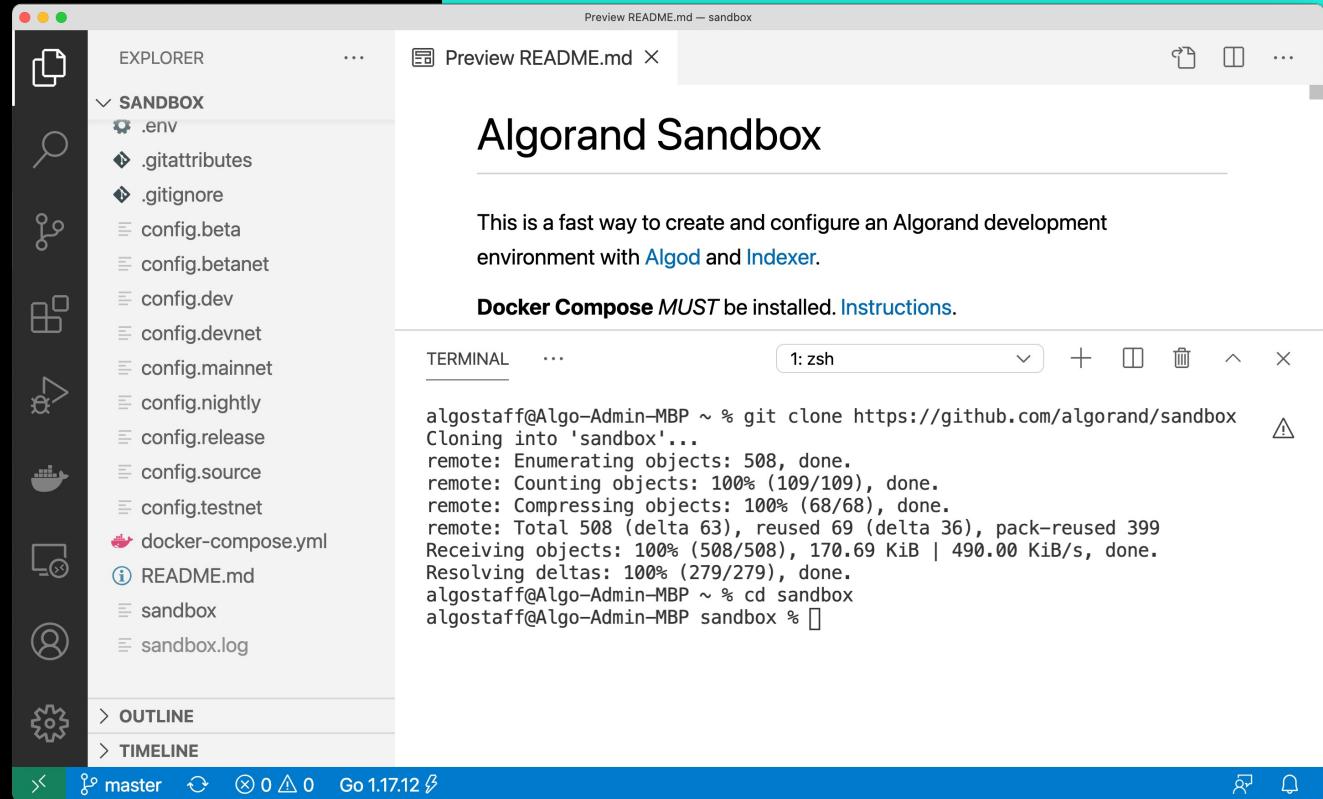
Infrastructure



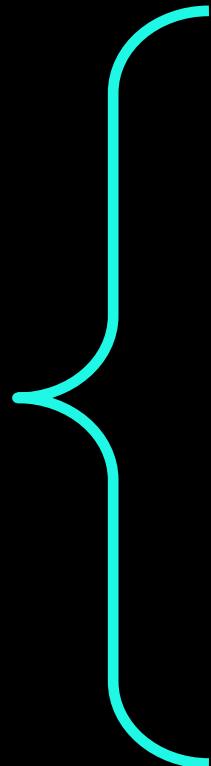
SDK

Language + Framework

# Sandbox Installation



# Sandbox Components



Network(s) 4001

Wallet 4002

Query Tool 8980

APIs ports

# Sandbox Execution



```
$ ./sandbox up dev -v. # start local private net
```

# Sandbox Execution

The screenshot shows a terminal window titled "Preview README.md — sandbox". The terminal displays the contents of a README.md file related to the Algorand Sandbox. The file includes instructions for creating and configuring an Algorand development environment using Docker Compose, a warning about not using it for production environments, and examples of account management commands.

Available accounts

```
~$ ./sandbox goal account list
[online] FJLGXHEFRBSRXWDERLNDJCV4W3YBVBDMNSOK7N4UBVLU5RY6B07KHGEQ FJLGXHEFRBSRXWDERLNDJCV4W
3SYBVBDMNSOK7N4UBVLU5RY6B07KHGEQ 4000000000000000 microAlgos
[online] LBXCK2CEKGKIEWYUK00E6J7QU5FRMR4J6SRVCVPNOCYORM2Z6IID5R5A6I LBXCK2CEKGKIEWYUK00E6J7QU
5FRMR4J6SRVCVPNOCYORM2Z6IID5R5A6I 4000000000000000 microAlgos
[online] 5SE70AU3R0WNLGWWHANBRV4KSGKRA46WRDPT2CMXVGQY6G2GYTYN2M2J4 5SE70AU3R0WNLGWWHANBRV4KS
GRKRA46WRDPT2CMXVGQY6G2GYTYN2M2J4 2000000000000000 microAlgos
```

Example command to send between two accounts:

```
~$ ./sandbox goal clerk send -a 123456789 -f LBXCK2CEKGKIEWYUK00E6J7QU5FRMR4J6SRVCVPNOCYORM2Z6IID5R5A6I
-t 5SE70AU3R0WNLGWWHANBRV4KSGKRA46WRDPT2CMXVGQY6G2GYTYN2M2J4
```

Soon after sending the transaction it will appear in indexer:

```
~$ curl "localhost:8980/v2/transactions?pretty"
algostaff@Algo-Admin-MBP sandbox %
```



# Sandbox Commands



```
$ sandbox help  
$ sandbox status  
$ sandbox stop  
$ sandbox reset
```



# Developer Environment Components

Infrastructure



SDK



Language + Framework

# SDKs

You can use the SDKs to interact with the network by connecting to one of the REST servers and submitting requests for data or submitting transactions. They also contain methods to help construct and sign transactions or deal with encoding/decoding of things like addresses and mnemonics.

**Algorand supported**

**Python**

- [Python Section](#)
- [Python Repository](#)
- [Python Docs](#)

**JavaScript**

- [JavaScript Section](#)
- [JavaScript Repository](#)
- [JavaScript Docs](#)

**Go**

- [Go Section](#)
- [Go Repository](#)
- [Go Docs](#)

**Java**

- [Java Section](#)
- [Java Repository](#)

**Table of contents**

Algorand supported

Python

JavaScript

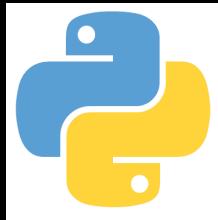
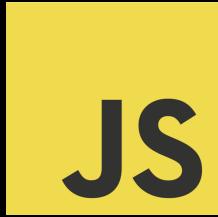
Go

Java

Community Supported



# SDK Installations



```
$ npm install algosdk
```

```
$ pip install py-algorand-sdk
```

# Developer Environment Components

Infrastructure



SDK



Language + Framework



# #BUIL

## Demo Time



<https://github.com/algorand-devrel/bootcamp>

# Developer Portal

The screenshot shows the Algorand Developer Portal homepage. At the top, there's a navigation bar with links for Build, Learn, Discover, Connect, and Challenges. A search bar is also present. On the left side, a large call-to-action section features the text "Build the future on Algorand" and a bulleted list: "Defi at global scale", "Rapidly growing ecosystem", and "Sub 5-second finality, low fees". On the right side, a modal window titled "Welcome to Algorand Developer Portal!" displays the message "Let's get started..." and a breadcrumb trail "(dev-portal) > docs 🚀". Below this, a list of categories is shown with numbered buttons for selection: 1 Blockchain basics, 2 Smart contracts & dApps, 3 Tokenization, 4 Integration, and 5 See all.



<https://developer.algorand.org/>



# Discord

# student-chat

50+ new messages since 10:02 PM on August 21, 2022

Mark As Read

August 21, 2022

Mmemememe 08/21/2022 10:02 PM Seoul?

bitsoko 08/26/2022 10:19 AM any algorand africa events planned? please help with more info! Thanks in advance!! 🎉

Royalty 09/01/2022 8:29 AM Hi

Jokur 09/05/2022 12:03 AM Is this the main chat?

Ga\_briel 09/05/2022 5:03 PM Hey

@Evangelina RM am here! what can i get for you 😊

elmacaco 09/05/2022 5:27 PM Hola Eva! Sobre el webinar que hubo hace 6 días con Doro, el de "Blockchain and the Law, sabes algo del NFT de Tigerchi?

dunsin 09/06/2022 4:27 PM Please I need help with claiming the TigerChi NFT

The wallet address I submitted got into the whitelist, but it was from Trust Wallet. And to claim the TigerChi NFT, you need to have Pera Wallet or MyAlgo, so I downloaded them to

Message #student-chat

Administrator — 1  
barnjo0

Community Admin — 1  
thumpback

ALGORAND FOUNDATION — 5  
Adri

Loedn

MonopolyMan | joe-p

shane-at-algo

Stef | ARC Manager

ALGORAND INC — 9  
bbroderuji

Bianca

chai

Cosimo | Algorand

deanstef

excalq

Ryan R. Fo... #0001

1 Event

14 Boosts >

BROWSE CHANNELS

ALGORAND

WELCOME

rules

ANNOUNCEMENTS

RELEASE-NOTIFICATIONS

FORUM-FEED

INTRODUCTIONS

GENERAL-CHAT

GOVERNANCE

RESEARCH

GENERAL-DASHBOARD

NODE-RUNNERS

REPORT-SCAMS

GENERAL-DEV

BUILDERS-PRIVATE

BITCOIN-BOUNTY

SEARCH

MARK AS READ

NEW

SEARCH

DOWNLOADER

HELP



<https://discord.gg/algorand>



# Homework

1. Spin up Bootcamp DevEnv on Gitpod
2. Execute demo scripts
3. Make a new ASA
4. Swap new ASA for ALGO
5. Change to TestNet (repeat)
6. Configure DevEnv on localhost



# Show me the code



<https://github.com/algorand-devrel/bootcamp>



wen more ser?

Signup NOW →



<https://www.algorand.foundation/events>



# #THANKS

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