🏗️ Building Decentralized Forums

Complete gno.land Boards Tutorial

Create Reddit-like communities on-chain
Manage content with crypto payments

🌐 What is gno.land Boards?

Decentralized Bulletin Board System
Like Reddit/Forum but:

- 🔒 On blockchain

- 💰 Crypto-native

- 🧩 Fully programmable

Core Features:

- 🗂️ Create topic boards

- 📝 Post threads & replies

- 💸 Tip with $GNOT

- 👥 Community moderation

💡 Why blockchain forums?

- Censorship-resistant

- User-owned content

- Monetization built-in

- Transparent moderation

🧩 How It Works

Technical Foundation

- 🧬 Built on Gno blockchain

- 📜 Smart contracts (realms)

- 🔑 Managed with `gnokey` CLI

Key Components:

1. `boards.gno` - Core contract

2. `boards_test.gno` - Tests

3. Banker module - Handle payments

```go
// Sample contract structure
package boards

type Board struct {
    Name        string
    Moderators []Address
}

type Thread struct {
    ID       int
    Title    string
    Content  string
    Author   Address
    Tips     int // in uGNOT
}
```

🧰 Setup Requirements

🛠️ Tools

```
# Install gnokey
git clone https://github.com/gnolang/gno
make install
```

💰 Testnet Funds

```
# Get testnet GNOT
https://gno.land/faucet
```

🔐 Account Setup

```
# Create test account
gnokey add myacc --recover
```

🌐 Environment

```
# Testnet endpoint
https://testnet.gno.land
```

📁 Board Management

Create Board

```
gnokey maketx call \
  --pkgpath "gno.land/r/demo/boards" \
  --func "CreateBoard" \
  --args "CryptoNews" \
  --gas-fee 1gnot
```

Add Moderator

```
gnokey maketx call \
  --func "AddModerator" \
  --args "CryptoNews" "g1xyz..."
```

💡 Only board creator can add moderators

💡 Board names are case-sensitive

📝 Content Creation

Create Thread

```
gnokey maketx call \
  --func "CreateThread" \
  --args "CryptoNews" "Market Update" \
      "BTC surged 10% today..." \
  --gas-fee 1gnot
```

Reply with Tip

```
gnokey maketx call \
  --func "CreateReply" \
  --args "CryptoNews" "1" "Great analysis!" \
  --send "500gnot"
```

✅ 1 GNOT fee prevents spam

Tips go directly to author

🛠️ Content Management

Edit Thread

```
gnokey maketx call \
  --func "EditThread" \
  --args "CryptoNews" "1" \
        "Updated Market Analysis" \
        "Revised data..."
```

Delete Reply

```
gnokey maketx call \
  --func "DeleteReply" \
  --args "CryptoNews" "1" "3"
```

⚠️ Only original authors can edit

Moderators can delete any content

🔍 Querying Data

List Boards

```
gnokey query "vm/qeval" \
  --data "gno.land/r/demo/boards"
```

View Thread

```
gnokey query "vm/qrender" \
  --data "gno.land/r/demo/boards/CryptoNews/1"
```

User Activity

```
gnokey query "vm/qeval" \
  --data 'GetUserPosts("g1myaddress...")'
```

Transaction History

```
gnokey query txs --tags boards
```

⚙️ Advanced Customization

Change Board Policy

```
gnokey maketx call \
  --func "SetBoardPolicy" \
  --args "CryptoNews" \
  '{"MinThreadFee":"2gnot"}'
```

Karma System

```
// In boards.gno
func CreateReply( ... , reward int) {
  userKarma[author] += reward
}
```

💡 Implement custom logic in realm
Modify contract for unique features

🚨 Troubleshooting Guide

❌ **"insufficient fee"**

```
# Solution:
--gas-fee 5gnot --gas-wanted 2000000
```

❌ **"invalid board"**

```
# Solution:
gnokey query boards
# Verify exact name
```

❌ **"permission denied"**

```
# Solution:
1. Check moderator status
2. Verify post ownership
```

❌ **"render failed"**

```
# Solution:
Verify thread exists:
gno.land/r/demo/boards/BoardName/ID
```

🚀 Next Level Enhancements

NFT Avatars User profile pictures

Voting Upvote/downvote system

Staking Premium board access

Web UI React frontend

Bots Automated moderation

Notifications Activity alerts

✅ Verification Checklist

1. ☐Board created and visible

2. ☐Thread posted with fee deduction

3. ☐Reply with successful tip transfer

4. ☐Edit/delete operations working

5. ☐Custom policies applied

6. ☐All queries returning valid data

💻 **Live Demo:** gno.land/r/demo/boards
📚 **Source Code:** github.com/gnolang/gno/tree/master/examples/gno.land/r/demo/boards

🌐 Resources & Next Steps

Essential Links - [📚 Boards Contract] (https://github.com/gnolang/gno/blob/master/examples/gno.land/p/demo/boards/boards.gno)
- [⚙️ gno.land API] (https://github.com/gnolang/gno/tree/master/cmd/gnoland/docs/api)
- [💬 Discord Community] (https://discord.gg/gnoland)

Continue Learning 1. Add user profiles 2. Implement spam filters 3. Create board categories 4. Build notification system

🎉 **You've built a decentralized Reddit!**