

NFT Raffle Platform

Platform raffle NFT yang transparan, aman, dan adil yang dibangun di Base Network dengan integrasi Farcaster.

Fitur Utama

-  **Transparan & On-chain** - Semua transaksi tercatat di blockchain
-  **Provably Fair** - Menggunakan Chainlink VRF untuk randomness yang adil
-  **Free Daily Tickets** - 1 tiket gratis setiap hari untuk setiap user
-  **Low Cost** - Tiket tambahan hanya \$0.15 + 5% fee
-  **Leaderboard** - Top 100 winner tracking
-  **Multi-Platform** - Web, Mobile (iOS/Android), Desktop
-  **Secure** - Protected against Sybil attacks dan manipulation

Tech Stack

Smart Contracts

- Solidity 0.8.24
- OpenZeppelin Contracts
- Chainlink VRF v2
- Hardhat

Frontend

- React 18
- Vite
- Tailwind CSS
- Framer Motion
- ethers.js v6
- wagmi + RainbowKit

Backend (Optional)

- Node.js 20
- Express
- PostgreSQL

- Prisma ORM

Prerequisites

Sebelum memulai, pastikan Anda memiliki:

- Node.js v20 atau lebih tinggi
- npm atau yarn
- MetaMask atau wallet lain yang support Base Network
- Base Sepolia ETH untuk testing (dari faucet)
- WalletConnect Project ID (gratis dari <https://cloud.walletconnect.com>)

Quick Start Guide

1 Clone & Install Dependencies

```
bash

# Clone repository
cd nft-raffle-app

# Install contract dependencies
cd contracts
npm install

# Install frontend dependencies
cd ../frontend
npm install
```

2 Setup Environment Variables

```
bash

# Copy .env.example
cp .env.example .env

# Edit .env file dengan editor favorit Anda
nano .env
```

Isi file `.env`:

```
env
```

```
# Private key wallet Anda (JANGAN SHARE!)
PRIVATE_KEY=your_private_key_here

# Base RPC URLs (bisa pakai default)
BASE_RPC_URL=https://mainnet.base.org
BASE_SEPOLIA_RPC_URL=https://sepolia.base.org

# Basescan API key untuk verify contract
# Dapatkan gratis di: https://basescan.org/myapikey
BASESCAN_API_KEY=your_basescan_api_key

# Chainlink VRF Subscription ID
# Buat subscription di: https://vrf.chain.link/
VRF_SUBSCRIPTION_ID=your_subscription_id

# Frontend
VITE_CONTRACT_ADDRESS=deployed_contract_address
VITE_CHAIN_ID=84532
VITE_WALLETCONNECT_PROJECT_ID=your_project_id
```

3 Setup Chainlink VRF

1. Kunjungi <https://vrf.chain.link/>
2. Connect wallet Anda
3. Pilih Base Sepolia network
4. Klik "Create Subscription"
5. Fund subscription dengan LINK tokens (minimal 2 LINK)
6. Copy Subscription ID ke file `.env`

4 Deploy Smart Contract

```
bash
```

```
cd contracts
```

```
# Compile contracts
```

```
npm run compile
```

```
# Deploy ke Base Sepolia (testnet)
```

```
npm run deploy:base-sepolia
```

```
# Setelah deploy, copy contract address
```

```
# Lalu tambahkan contract sebagai consumer di Chainlink VRF dashboard
```

PENTING: Setelah deploy, Anda HARUS menambahkan contract address sebagai consumer di Chainlink VRF subscription Anda!

5 Update Frontend Config

Update `frontend/.env`:

```
env
```

```
VITE_CONTRACT_ADDRESS=0xYourDeployedContractAddress
```

```
VITE_CHAIN_ID=84532
```

```
VITE_WALLETCONNECT_PROJECT_ID=your_walletconnect_project_id
```

6 Run Frontend

```
bash
```

```
cd frontend
```

```
# Development mode
```

```
npm run dev
```

```
# Build untuk production
```

```
npm run build
```

```
# Preview production build
```

```
npm run preview
```

Aplikasi akan berjalan di <http://localhost:3000>

Cara Menggunakan Platform

Untuk Users:

1. Connect Wallet

- Klik tombol "Connect Wallet" di header
- Pilih MetaMask atau wallet lain
- Approve connection

2. Claim Free Ticket

- Buka halaman Profile
- Klik "Claim Free Ticket" (tersedia setiap 24 jam)

3. Buy Extra Tickets

- Browse raffles di halaman Raffles
- Pilih raffle yang aktif
- Input jumlah tiket yang ingin dibeli
- Klik "Buy Tickets"
- Approve transaksi di wallet

4. Check Leaderboard

- Lihat top 100 winners
- Track progress Anda

Untuk Raffle Creators:

1. Prepare NFTs

- Pastikan Anda memiliki NFT yang ingin di-raffle
- Approve contract untuk transfer NFT Anda

2. Create Raffle

- Call function `createRaffle` di contract
- Input array of NFT contract addresses
- Input array of token IDs
- Set duration (minimal 1 hari, maksimal 30 hari)

3. Draw Winner

- Setelah raffle berakhir, call `drawWinner`
- Chainlink VRF akan select winner secara random
- Winner bisa claim NFT dengan call `claimPrizes`

🔒 Security Features

- **ReentrancyGuard** - Mencegah reentrancy attacks
- **Pausable** - Emergency stop mechanism
- **Ownable** - Controlled admin functions
- **Chainlink VRF** - Provably fair randomness
- **Input Validation** - Comprehensive checks
- **Safe Math** - Solidity 0.8+ overflow protection

Multi-Platform Support

Web

- Buka di browser: Chrome, Firefox, Safari, Edge
- Responsive design untuk semua ukuran layar

Mobile

1. **Android:** Buka di MetaMask Browser atau WalletConnect supported apps
2. **iOS:** Buka di MetaMask Browser atau WalletConnect supported apps

Desktop

- Windows, Mac, Linux
- Gunakan desktop wallet seperti Frame atau browser extension

Base Network Integration

Platform ini dioptimalkan untuk Base Network:

- **Low Gas Fees** - Transaksi murah dibanding Ethereum mainnet
- **Fast Confirmation** - Block time ~2 detik
- **Ethereum Security** - Rollup secured by Ethereum
- **Easy Bridging** - Bridge dari Ethereum dengan mudah

Add Base Network ke MetaMask:

Network Name: Base Sepolia
RPC URL: <https://sepolia.base.org>
Chain ID: 84532

Farcaster Integration (Coming Soon)

Platform ini juga support Farcaster untuk:

- Social login
- Share raffle results
- Community engagement
- NFT showcasing

Tips untuk Non-Programmers

Mendapatkan Testnet ETH:

1. Kunjungi <https://faucet.quicknode.com/base/sepolia>
2. Connect wallet Anda
3. Request testnet ETH
4. Tunggu beberapa menit

Mendapatkan LINK Tokens:

1. Kunjungi <https://faucets.chain.link/base-sepolia>
2. Connect wallet Anda
3. Request LINK tokens untuk VRF subscription

Deploy Contract Tanpa Coding:

1. Gunakan Remix IDE: <https://remix.ethereum.org>
2. Copy-paste smart contract code
3. Compile dan deploy langsung dari browser
4. Atau gunakan Hardhat seperti di guide ini

Troubleshooting

Contract Deploy Failed

- Pastikan Anda punya cukup Base Sepolia ETH
- Check private key di `.env` benar

- Verify RPC URL works

Transaction Failed

- Check gas price dan limit
- Ensure wallet has enough ETH
- Try increasing gas limit

Frontend Can't Connect

- Check contract address di [.env](#)
- Verify chain ID correct (84532 for Base Sepolia)
- Clear browser cache dan refresh

VRF Not Working

- Ensure contract is added as consumer
- Check subscription has enough LINK
- Verify VRF configuration correct

Cost Breakdown

Development Costs (FREE):

- Code & Setup: FREE (open source)
- Testing: FREE (testnet)
- Frontend Hosting: FREE (Vercel free tier)

Operational Costs:

-  Chainlink VRF: ~~0.5 LINK per draw~~ (\$5)
-  Gas Fees: ~\$0.50-\$2 per transaction on Base
-  Domain (optional): ~\$10-15/year

Revenue Model:

-  5% fee dari setiap ticket purchase
-  Estimasi: 1000 tickets/day × \$0.15 = \$150/day
-  Fee: \$150 × 5% = \$7.50/day profit

- 💰 Monthly: ~\$225/month

🚀 Deployment ke Production

Deploy Contract ke Base Mainnet:

```
bash

cd contracts
npm run deploy:base
npm run verify:base
```

Deploy Frontend ke Vercel:

```
bash

cd frontend

# Install Vercel CLI
npm install -g vercel

# Deploy
vercel --prod
```

Atau connect GitHub repository ke Vercel dashboard untuk auto-deploy.

✓ Scaling & Optimization

Untuk Meningkatkan Volume:

1. Marketing

- Promote di social media
- Partner dengan NFT projects
- Influencer collaborations

2. Features

- Multi-chain support
- Batch raffles
- Premium memberships
- Referral rewards

3. Optimization

- Cache leaderboard data

- Optimize gas usage
- CDN for assets

Support & Community

Jika Anda membutuhkan bantuan:

1. Check dokumentasi ini
2. Review code comments
3. Search GitHub issues
4. Join Discord community
5. Contact support

License

MIT License - Free to use for commercial and personal projects.

Roadmap

-  Phase 1: Core raffle functionality
-  Phase 2: Frontend UI/UX
-  Phase 3: Farcaster integration
-  Phase 4: Multi-chain support
-  Phase 5: Mobile apps (native)
-  Phase 6: DAO governance

Credits

Built with ❤️ using:

- OpenZeppelin
- Chainlink
- Base Network
- React & Vite
- RainbowKit & wagmi

For questions or support, open an issue on GitHub.