

Spinx Whitepaper: A Decentralized PVP Casino Marketplace on Solana

1. Abstract

Spinx is a fully decentralized PVP casino marketplace built on Solana. Players challenge each other in games like Coin Flip and Slot Machines. Outcomes are determined by verifiable randomness provided by ORAO VRF. Stakes are held in smart contract escrow and payouts are executed automatically. Spinx addresses fairness, transparency, and custody risks that plague traditional online casinos.

2. Problem Statement

Centralized casinos suffer from opaque odds, custodial risks, unverifiable randomness, and complete control by operators. Players must trust the house, which can refuse payouts or manipulate outcomes.

3. Proposed Solution

Spinx introduces: - Verifiably fair games powered by ORAO VRF. - Non-custodial escrow via Solana smart contracts. - Automated payouts without intermediaries. - Immutable odds and logic published on-chain.

4. ORAO VRF Integration

ORAO VRF provides unbiased randomness with on-chain proof verification. Requests are made via Cross Program Invocation. Randomness is stored in request accounts, verified, and then consumed by Spinx's smart contracts. This ensures outcomes cannot be predicted or manipulated.

5. Game Mechanics

Coin Flip: - Odds: 50/50 - Both players stake into escrow. - Outcome: random % 2. Slot Machine: - Payout target rate (PTR): 92 percent. - Jackpot funded via a Vault created by slot machine creators. - Spin price = staked SPX tokens / 10. - Payouts based on VRF outcome with expected return fixed at 92 percent. - Long-term house edge: 8 percent, though variance can occur in short term.

6. Smart Contract Design

Accounts include ChallengeAccount, SpinAccount, Escrow PDAs, and ORAO Request accounts. Status states include Active, Awaiting VRF, Settled, and Cancelled. Events such as ChallengeCreated, SpinRequested, and SpinSettled provide transparency.

7. Security and Fairness

- VRF proofs prevent manipulation. - All game odds and logic are on-chain and auditable. - Once deployed, programs should be made immutable or governed via time-locked upgrades. - Vault solvency enforced by restricting spin price to vault size ratio.

8. Economics

- Slot machines operate at 92 percent RTP. - Creators fund jackpot vaults with SPX tokens. - Spin price is one-tenth of vault balance. - Over time, vault creators earn 8 percent of total betting volume as profit.

9. Transparency and Verification

All randomness requests and results are public. Any participant can verify randomness, replay the logic, and confirm outcomes. This creates a transparent and trustless environment.

10. Roadmap

- Launch with Coin Flip and Slot Machines. - Expand to new game types (dice, roulette). - Decentralized front-end hosting. - Community governance and DAO treasury. - Formal audits and bug bounty programs.

11. Conclusion

Spinx provides a fair, transparent, and decentralized alternative to centralized casinos. By combining Solana smart contracts with ORAO VRF, Spinx ensures verifiable randomness, automated payouts, and long-term sustainability via jackpot vaults.