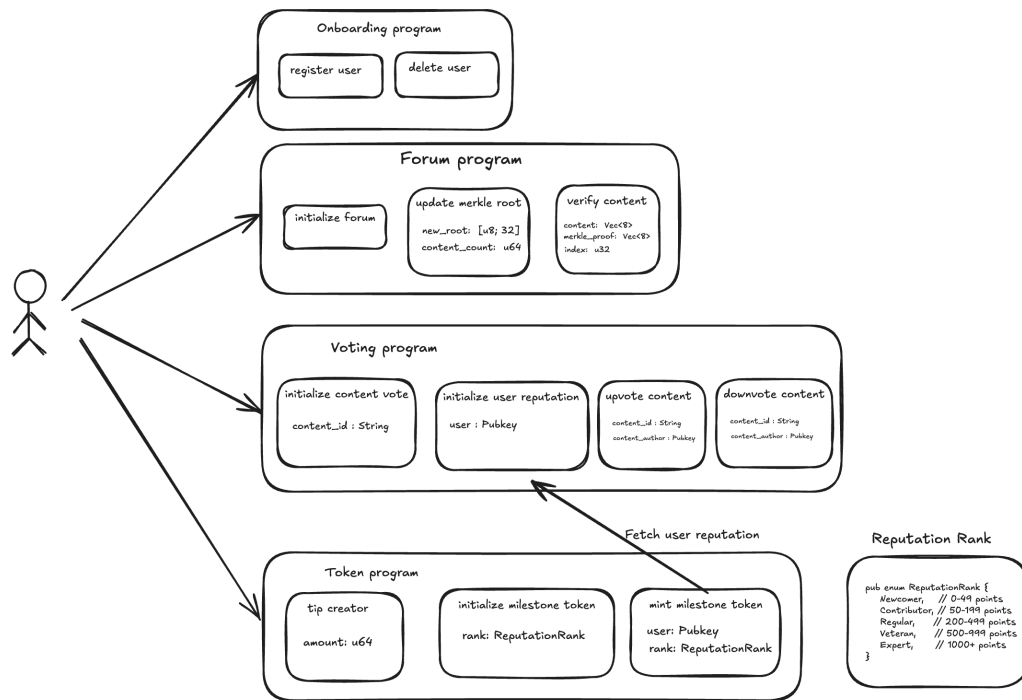


Protocol POC Requirements

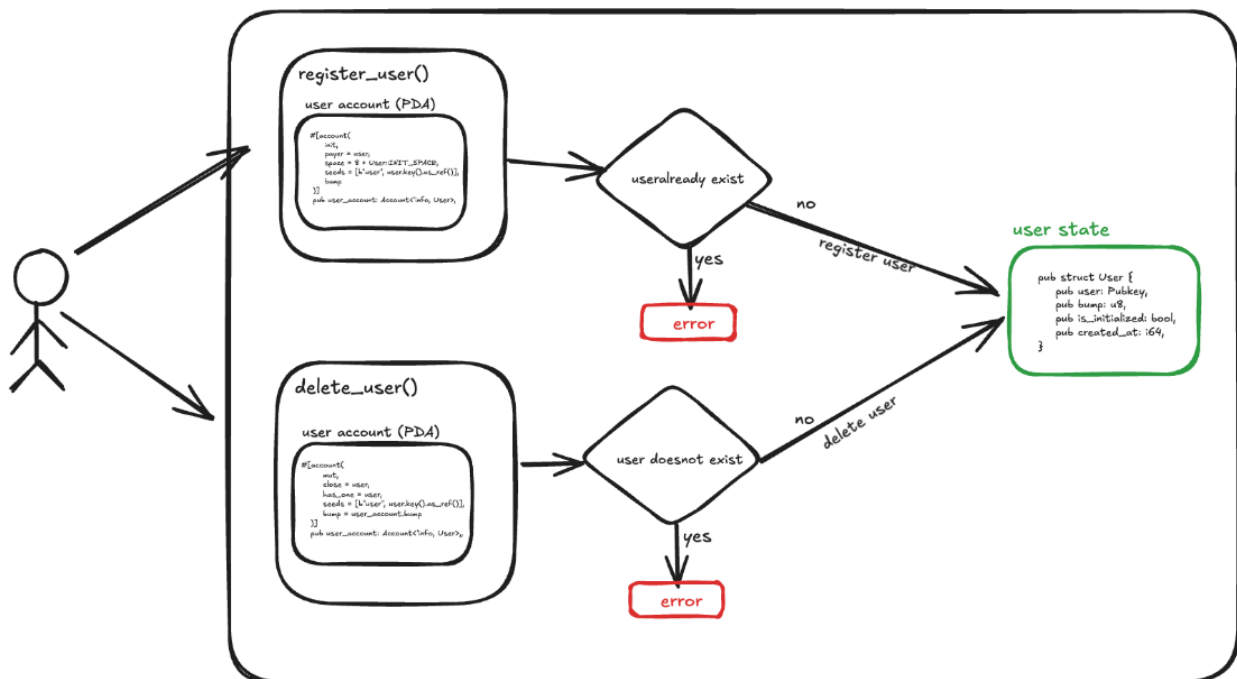
- The protocol allows users to register by creating a User Profile PDA (owned by the Onboarding Program) using their wallet public key as the seed, with basic profile information including creation timestamp. The protocol allows users to delete their profiles, closing the User Profile PDA and returning rent to the user after validating ownership.
- The protocol enables initialization of forum state with authority control, maintaining a Merkle root for content verification, total content item count, and last updated timestamp.
- The protocol allows authorized users to update the Merkle root with new content batches, validating that the new content count is not less than the current count, and emitting MerkleRootUpdated events.
- The protocol enables content verification using Merkle proofs, accepting flexible hash lengths and using Keccak hashing algorithm to verify content authenticity against the on-chain Merkle root, emitting ContentVerified events upon successful verification.
- The protocol allows initialization of voting records for specific content items using content IDs as seeds, tracking upvotes, downvotes, net scores, and voter statistics.
- The protocol enables initialization of user reputation systems, starting users at Newcomer rank with zero scores and tracking various reputation metrics including votes given/received and posts created.
- The protocol allows users to upvote content after validating they haven't already voted and aren't voting on their own content, updating content vote counts, awarding +2 reputation to voters and +5 to content authors, and calculating dynamic reputation ranks.
- The protocol allows users to downvote content with the same validation checks, updating downvote counts, deducting -2 reputation from voters (with floor protection) and -5 from authors (with floor protection).
- The protocol enables SOL tipping between users with amount validation (minimum 0.001 SOL, maximum 1 SOL), preventing self-tipping, tracking tip history in TipRecord PDAs, and emitting TipCreatorEvent for transparency.
- The protocol allows initialization of milestone tokens for different reputation ranks (Contributor, Regular, Veteran, Expert), creating SPL token mints with Metaplex metadata, custom symbols, and setting mint authority to milestone token PDAs.
- The protocol enables cross-program integration with the voting program to mint milestone tokens to eligible users based on their reputation ranks, preventing duplicate minting, awarding rank-specific token amounts, and automatically creating associated token accounts.
- The protocol prevents duplicate voting through VoteRecord PDAs, self-voting on content, self-tipping, duplicate milestone token minting, and invalid reputation ranks for token creation, reverting with explicit error messages when these checks fail.
- The protocol uses Merkle tree verification with flexible hash handling to validate content authenticity, matching submitted proofs against the on-chain Merkle root stored in the Forum State PDA.

Overview



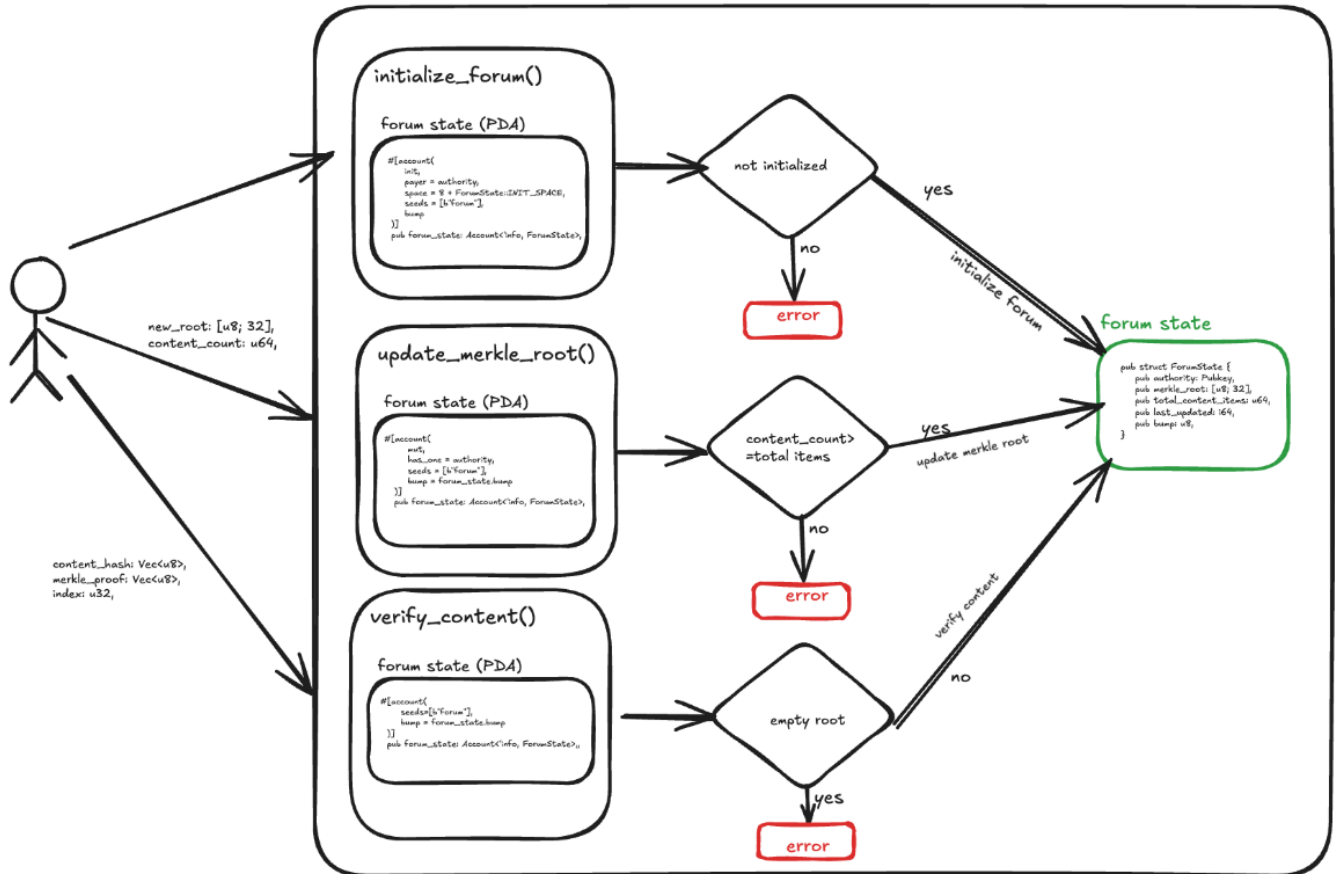
Onboarding Program

Onboarding program



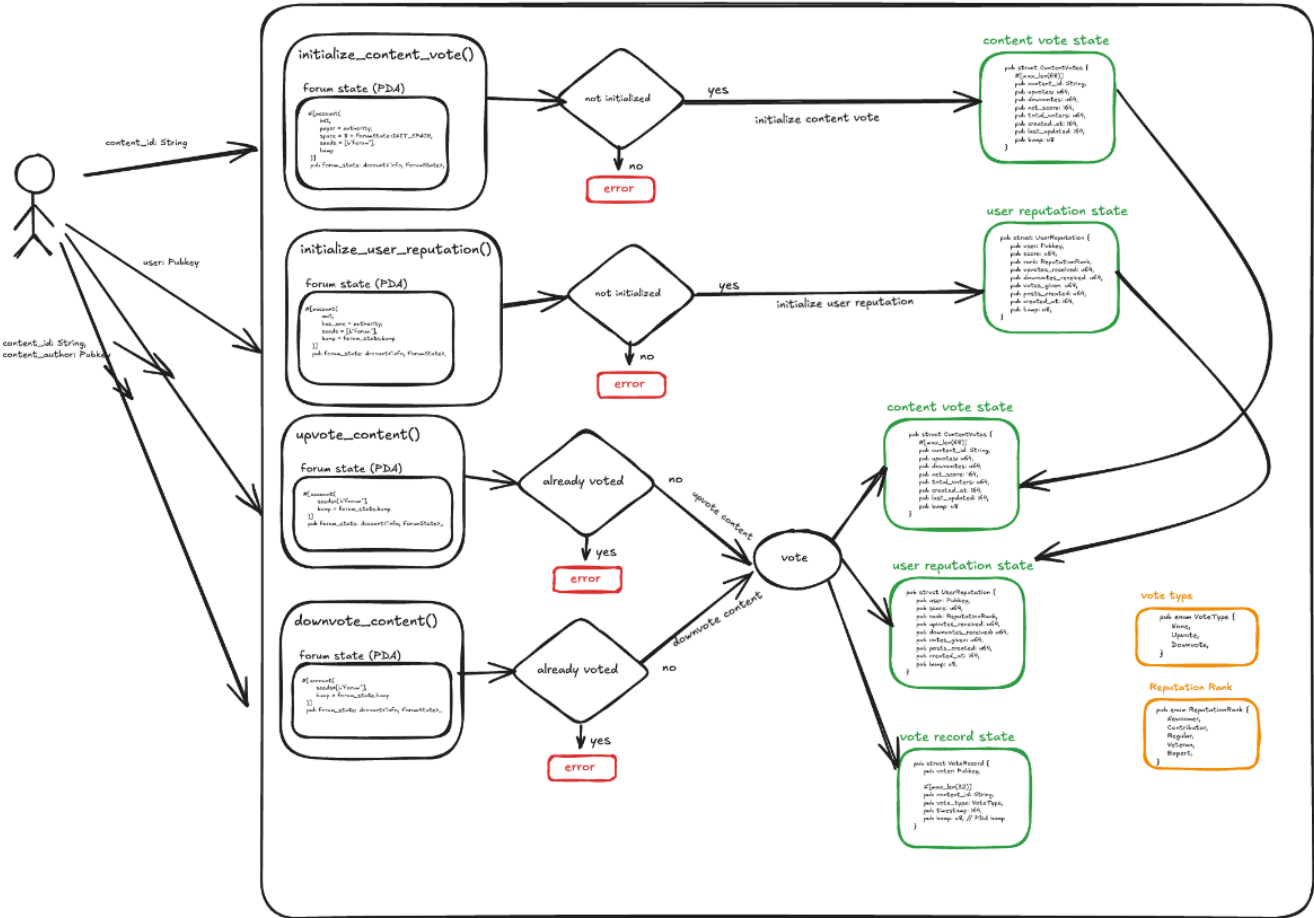
Forum Program

forum program



Voting & Reputation Program

Voting program



Token Program

