Aptos Lottery Smart Contract

This project implements a decentralized lottery system on the Aptos blockchain using the Move programming language. The smart contract allows users to participate in a lottery by buying tickets with AptosCoin, and uses on-chain randomness to select a winner.

Key Features

1. **Lottery Initialization**: Admin can create a new lottery with a specified ticket price and duration.
2. **Ticket Purchase**: Users can buy lottery tickets using AptosCoin.
3. **Random Winner Selection**: Utilizes Aptos' on-chain randomness module for fair winner selection.
4. **Prize Claiming**: The winner can claim the accumulated prize.
5. **View Functions**: Provides functions to check lottery status, prize amount, and participant count.

Learnings Applied

This project demonstrates several key concepts learned from the Move bootcamp:

1. **Struct and Resource Management**: Using `struct Lottery has key` to create a resource that can only exist in one place in global storage.
2. **Access Control**: Implementing `public entry` and `public(friend)` functions to control who can call certain functions.
3. **On-Chain Randomness**: Utilizing the `#[randomness]` attribute and `randomness::u64_range()` for secure random number generation.
4. **Coin Handling**: Managing AptosCoin transfers using the `coin` module.
5. **Error Handling**: Defining and using custom error codes for better error management.
6. **View Functions**: Implementing `#[view]` functions for easy data retrieval without modifying state.
7. **Timestamp Usage**: Using `timestamp::now_seconds()` for time-based operations.

This project showcases the power and flexibility of Move in creating complex, secure, and efficient smart contracts on the Aptos blockchain.