Test Task: Implement a Blockchain-based Lottery System

Objective: Develop a simple, lottery-like smart contract game that uses on-chain randomness to determine the winner.

Task Details:

Ticket Purchase: Implement a function to let users buy lottery tickets. Each ticket costs a set amount of ether.

Random Number Generation: After a certain number of tickets have been sold, the contract should generate a random number in a secure and fair manner. This is the challenging part, as generating random numbers in a deterministic system like Ethereum is non-trivial.

Selecting a Winner: Based on the random number, the contract should select a winner from the ticket holders.

Prize Distribution: The contract should then distribute the prize, which is the sum of the ticket sales, to the winner.

Starting a New Lottery: After a winner is chosen and the prize is distributed, the contract should allow for a new lottery to start.

Expected Deliverables:

The Solidity source code for the lottery contract.
Test cases that demonstrate your contract functions as expected.
Documentation explaining how the contract works, including how you generate a random number on-chain and any potential security considerations.
Avoid GPT usage. If found (which we definitely can), you will be disqualified.