Project Proposal: Building a Decentralized Roulette Game using Blockchain

Group Members: Ayan Deep Hazra, Manmeet Dang, Salman Munaf

Introduction:

The objective of this project is to develop a decentralized roulette game using blockchain technology. The game will be developed as a smart contract that will be deployed on a Ethereum Test blockchain network (most likely GoerliETH). Players will be able to participate in the game using GoerliETH or an associated roulette token, and the outcome of each spin will be determined by a transparent and immutable algorithm.

Background:

Roulette is a popular casino game that is played all over the world. The game involves a spinning wheel that is divided into numbered slots. Players place bets on where they think the ball will land when the wheel stops spinning. Ball should land on any of the 38 slots provided on the wheel. The outcome of each spin is determined using a random function that is built into the game.

Traditional online roulette games are centralized, meaning that the game is controlled by a single entity such as online casinos. This makes the game vulnerable to hacking, fraud, and other forms of cheating. By using blockchain technology, we can create a decentralized roulette game that is transparent, secure, and tamper-proof.

Objectives:

The main objectives of this project are:

1. To develop a decentralized roulette game that is fair and transparent.
2. To create a smart contract that is secure and cannot be manipulated.
3. To provide players with a user-friendly interface that allows them to participate in the game using cryptocurrency.

Implementation details:

The smart contract logic will be developed using Vyper. The smart contract will include the following functions:

Spin: This function will allow players to place their bets and spin the wheel. It will accept a bet amount and a bet type (e.g., red or black, odd or even) as inputs. The function will generate a random number between 0 and 36 using a provably fair algorithm, and then determine the winning bet based on the result.

Payout: This function will distribute the winnings to the players who have won their bets. It will calculate the payout amount based on the bet amount and the odds of winning the bet.

Withdraw: This function will allow players to withdraw their winnings from the smart contract to their wallet.

Methodology:
The project will be developed using the following methodology:

Design and Development:
The first step in the project will be to design and develop the decentralized roulette game. This will involve creating a smart contract that can be deployed on a blockchain network. The smart contract will include the rules of the game, the algorithm for determining the outcome of each spin, and the logic for distributing winnings to players.

Testing and Security:
Once the game has been developed, it will be thoroughly tested with many base and corner cases to ensure that it is secure and free from bugs.

Deployment and Integration:
After the game has been tested and verified, it will be deployed on a test blockchain network. We will choose a blockchain network that is widely used and has a proven track record of security and reliability. The game will be integrated with a user-friendly interface that allows players to participate using cryptocurrency.

Expected Deliverables:
The following deliverables are expected from this project:

A decentralized roulette game that is fair, transparent, and secure.
A smart contract that is tamper-proof and free from vulnerabilities.
A user-friendly interface that allows players to participate using cryptocurrency.

Conclusion:
In conclusion, this project aims to develop a decentralized roulette game using blockchain technology that is transparent, secure, and tamper-proof. By leveraging the benefits of blockchain technology, we can ensure that the game is fair and free from external influence, while providing an engaging and enjoyable experience for players.