**Exercise 1**

**Part A – Exploring direct funding VRF**

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Description générée automatiquement**

The contract address is: 0xD1255f135CaBF73821E69eA8D3AAB59D76B762f5

**Part B – Adding a VRF oracle to Coinflip**

The contract address is: 0xA36F098E4B610a7AcFfEADAaCaE83E0d3A160C32

**Part C – Contrast data serving methods**

Subscription and direct funding are 2 methods to obtain VRF values.

On the one hand, with the direct funding method, smart contracts pay a fee to the VRF service for each request. Once the transaction is confirmed, it receives the random number. This method is more appropriate for occasional use; for users willing to pay per usage.

On the other hand, the subscription method allows smart contracts to make a certain amount of requests during the period of subscription. They pay a periodic subscription fee to the VRF service. This second method is more suitable for smart contracts requiring a high volume of random numbers over time.

**Part D – Reflect on the current state of blockchain**

The metamask wallet was not able to estimate properly the gas fee before the transaction. Gas fees are very high (maximal price of transaction is 0.16 SepoliaETH). Users face unpredictable and high gas fees, impacting their overall experience and cost-effectiveness of participating in the coinflip game. Also, the transaction is quite long to run. It took more than XXX minutes.

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**Exercise 2**

**Part A – Meta assessment of DeFi projects through aggregators**

In the Collateralized Debt Positions (CDP) category, MakerDAO stands as the dominant player, holding a substantial market share of around 60%. According to the CDP TVL ranking of [DefiLema](https://defillama.com/protocols/CDP), MakerDAO outpaces its competitors with a total value locked of $6.3 billion. Its competitors are Liquidity, Prisma Finance, crvUSD ... Encompassing over 120 protocols, the CDP category gathers a combined TVL of 10.6 billion, emphasizing MakerDAO’s significant influence in this sector.

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Description générée automatiquement

DefiLema: CDP TVL Rankings

Focusing specifically on the Ethereum blockchain, MakerDAO maintains a robust market share of 64%, as revealed by the graph from Dune Analytics below.

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Description générée automatiquement

Dune Analytics Dashboard

The collateral backed cryptocurrency delivered by MakerDAO, the DAI exhibits a total circulating supply of 4.8 billion, with more than 91% residing on the Ethereum blockchain. DAI is the 3rd largest stablecoin, comprising almost 4% of the market share, far behind Tether (USDT) and USDcoin (USDC). Examining DAI’s stability in Defilema through the month, the deviation from its intended peg of $1 is minimal, with one month average of +0.30% off-peg value. On average, over the past month, the price of DAI has been 0.30% higher than its intended peg of $1. Despite this, DAI has experienced almost a 5% decrease in value over the past month. Although, on average, DAI has been trading 0.30% above its $1 peg over the past month, the overall value of DAI has decreased by 4.96% during the same period.

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Description générée automatiquement

DefiLema: Stablecoins

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Description générée automatiquement

DefiLema: DAI

Stacking DAI returns some profits. With the MakerDAO project, it has an APY (annual % yield) of 5% since September 2023. Users earn some interest of 5% when staking their DAI in MakerDAO. The APY depends on the protocol. For example, the project Compound V2 gives a 6.39 % APY. Comparing Compound V2 and MakerDAO, one might prefer the last one even though it is less profitable because it is less volatile (look at the 2 graphs below).

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Description générée automatiquement

Une image contenant texte, Logiciel multimédia, Logiciel de graphisme, capture d’écran

Description générée automatiquement

DefiLema: Yield DAI MakerDAO and Coumpond V2

Now, looking at liquidation levels for ETH in the DEFI, we notice MakerDAO has the highest liquidatable amount. This amount is the USD value of all the collateral that would be sold if all positions went into liquidation. It is equal to $780 million. The amount within -20% is equal to 0. This suggests that the protocol has set its liquidation threshold in a way that positions are not considered for liquidation until the value of the collateral falls by more than 20%. In other words, the protocol is designed to tolerate a 20% decline in the collateral’s values without triggering liquidation. This could avoid unnecessary liquidations due to short-term market fluctuations.

On the contrary, its competitor Liquidity has a lower liquidatable amount equal to $170 million. However, its amount within the -20% threshold is around $60 million.

**Part B – Examining MKR tokenomics**

https://github.com/vallathortense/Coinflip-VRF/blob/master/Incentive%20Mechanisms%20-%20Evaluating%20Tokenomics.xlsx

**Part C – Personal reflection of the current and future state of MakeDAO**

MakerDAO has implemented significant improvements to mitigate the risks associated with events like Black Thursday, utilizing an enhanced governance security module and a meticulously designed protocol that includes factors such as liquidation ratios and debt ceilings. Despite these advancements, I believe there is no foolproof guarantee of absolute safety. My primary concern stems from the protocol's heavy reliance on incentivization mechanisms, which, in my perspective, must be adaptable to societal changes and evolving attitudes over time.

The efficacy of these mechanisms is contingent on their alignment with societal values and can be subject to shifts as perspectives and innovations progress (example with the development of the AI). While incentivizing active governance through rewards and transparency is a commendable starting point, I contend that merely financial gains may not be sufficient for long-term stability. To truly endure, MakerDAO should foster a sense of belonging among MKR holders, encouraging their sustained engagement and commitment to the protocol. This sense of belonging can serve as a resilient foundation, ensuring the protocol remains robust even amidst changing mentalities and technological advancements.

The endgame of MakerDAO is to establish the most decentralized DAO, aiming for greater efficiency and clarity in governance. The strategy involves creating six specialized SubDAOs to streamline governance processes and reduce complexity. This subdivision allows for a more comprehensible voting system, with each substructure serving a unique role in decision-making. Additionally, MakerDAO plans to introduce AI tools for governance to guide decision-making without relying on centralized leadership. The Governance Participation Incentive Launch involves the Sagittarius Lockstake Engine (SLE), designed to actively incentivize new governance token holders through delegated voting power. The final phase includes the launch of a rebranded new chain to achieve a balanced, decentralized, and sustainable state. This new chain aims to provide governance security through the ability to hard fork in extreme scenarios. Overall, the endgame strategy aims to enhance decentralization, streamline governance, and fortify the MakerDAO ecosystem against potential challenges.