

Introduction to Blockchain Ecosystem: Assignment 2

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Question 3

On Sui Move, Aptos Move, and Solidity implement the following contract: Alice wants to sell a NFT and deploys this contract. Participants Eve and Cat and Edward want to bid by depositing a currency value greater than the other highest bidder. Whoever deposits the highest bid becomes the new owner of NFT. Alice receives this amount following the sale. Try to implement and deploy this contract in each of the 3 ecosystems. Summarize your findings from the perspective of the programming languages used.

Solidity vs. Move. In Solidity, each contract is an account on the blockchain to which one can transfer money. Also, it is possible to transfer money from the contract account to another (e.g., NFT seller). However, the contract model in Move (Aptos Move and Sui Move) differs from what is in Solidity. In Move, contracts are resource-based, not account-based. The blockchain has accounts, but these accounts own resources, and smart contracts manage the creation, transfer, and mutation of these resources. In Solidity, a **payable** function allows a contract to receive Ether, allowing the contract account to hold and manage funds. When Ether is sent to the contract, it is stored in the contract's balance. However, in Move, I needed to manually create a **balance** field for a contract. In this way, I can withdraw coins from the account of the bidder, store it into the contract resource **balance**, and then transfer from the contract resource into the seller account.

Aptos Move vs. Sui Move. There are some differences between Sui Move and Aptos Move. For example, in Aptos Move, the contract can withdraw a specific amount from the bidder's account and merge the coins withdrawn with the contract's **balance**. However, in Sui, the bidder should send a coin to the contract, and the contract can split the coin into two parts: the bid amount and its remaining. Then, it allows the bid amount to join the contract's **balance**. Moreover, for transferring money to the seller's account, in Sui, I use **public_transfer** function, while in Aptos, I use **coin::deposit**.