

Smart Contract for Car Pricing and Selling Service

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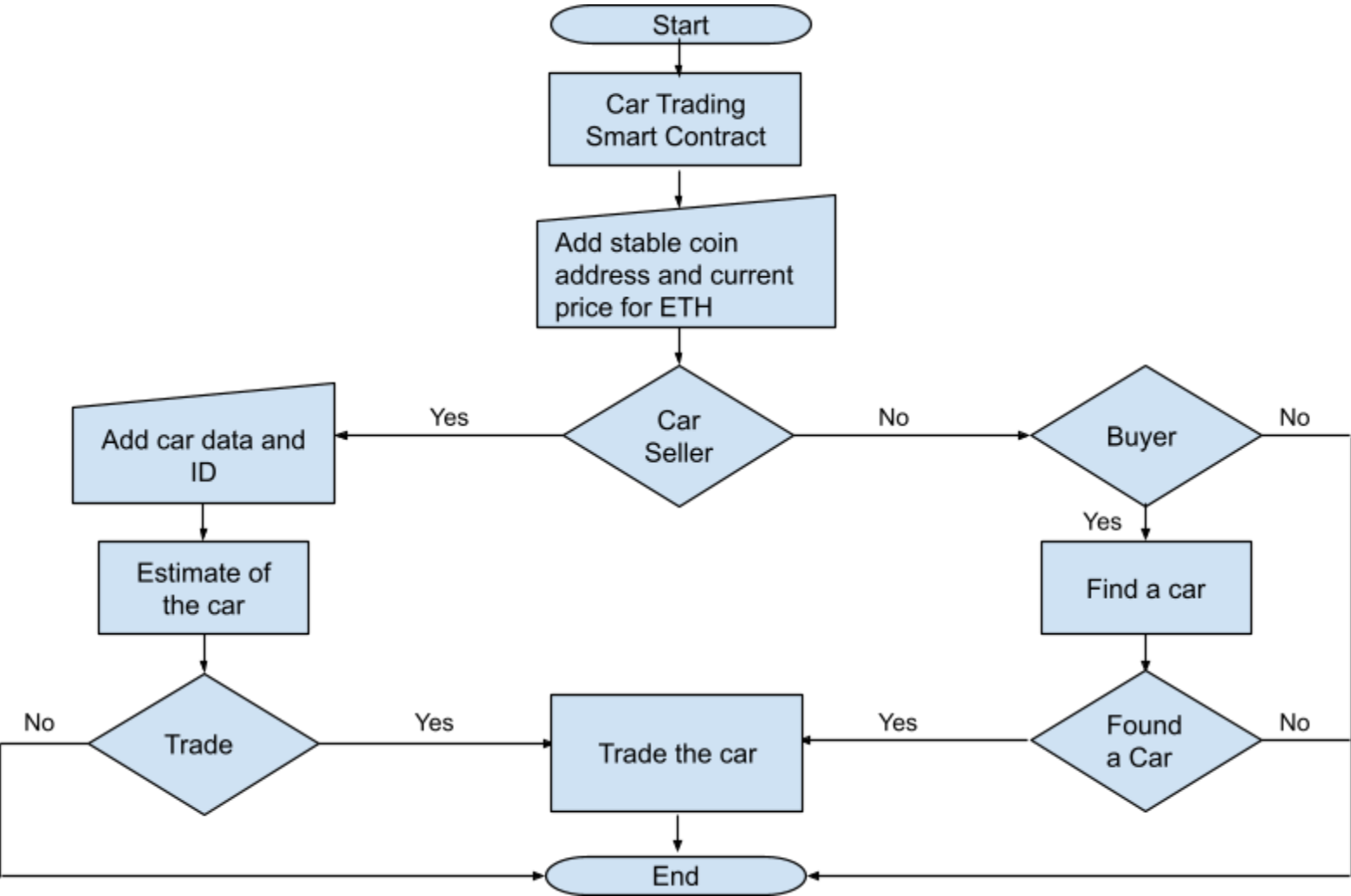
Introduction:

Smart contracts have become a hot topic in recent years, particularly after the collapse of SVB and two other major banks in the US. Cryptocurrency now appears to be a safer option for people to store money and invest simultaneously. Smart contracts, as a critical application of cryptocurrency, have been widely adopted across various industries. A growing number of transactions are being facilitated through cryptocurrency platforms, changing the trading landscape.

For this project, our team aims to develop a smart contract specifically designed for car trading. The primary advantage of using smart contracts in car trading compared to traditional methods lies in its enhanced security, anonymity, and speed. Conventional car trading typically involves a significant amount of paperwork and time spent verifying the information of both the seller and buyer. This process could take days to complete. By employing smart contracts for car trading, we can streamline the process, ensuring that transactions are secure, transparent, and efficient for all parties involved. As the market for crypto car trading continues to expand, smart contracts will play a pivotal role in shaping the future of asset transactions. By focusing on the development and implementation of smart contracts in car trading, we aim to improve on the traditional ways of car trading and make the process safer and faster.

In this report, we present a comprehensive overview of our smart contract by providing a detailed flowchart that illustrates its functionality. We also discuss each component of the flowchart and include screenshots of our contract and address the scalability of the smart contract, exploring its potential for growth and adaptability.

Flowchart for the smart contract:

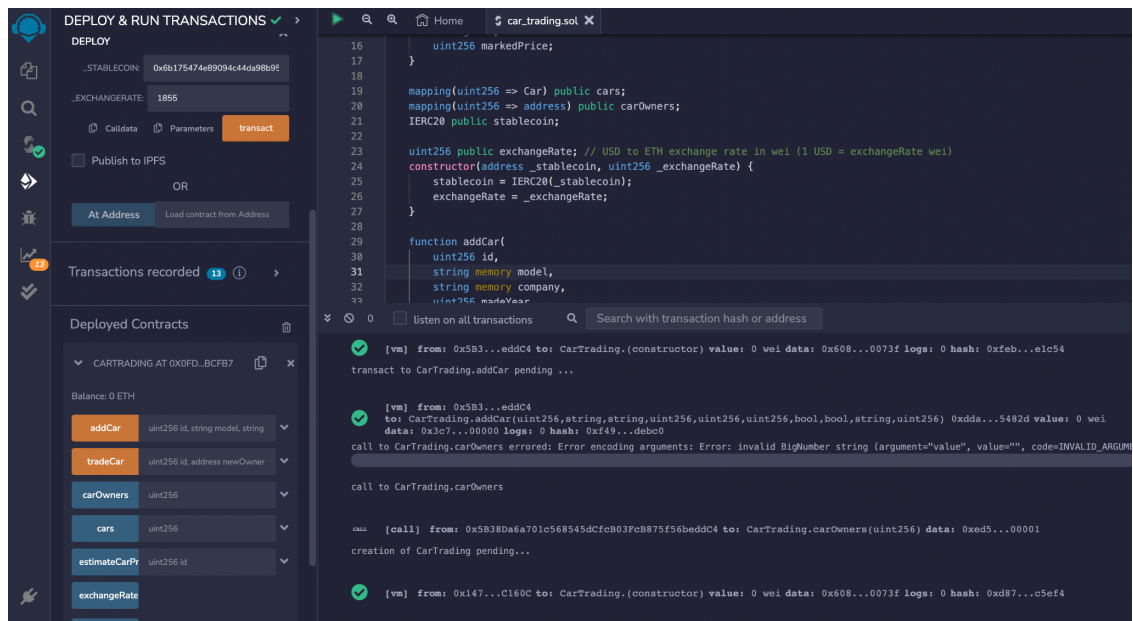


Component of the smart contract:

This smart contract is tailored to send and receive all the necessary information for the process of buying and selling a car. This contract is able to receive information of various cars which are discoverable with the help of their ID. Some of the attached attributes of this contract are: We can receive a current estimated price of the car, View the current owner of the car, Trade cars between the owners, get exchange rate for USD to ETH and more. Furthermore, the main component/variable of this contract is “ID” as most of the functions highly depend on knowing the “ID” of the car in order to use any functionalities.

All the components for the contract are listed below with their functionalities.

1. **Stable Coin** - This function allows the owner of the contract/ Initial Deployer to set up the current stock price of Ether. They would need to input their address and the value, which would be seen by all the users of the smart contract. In our test example, we used DAI token as our stable coin.



2. **Add Car** - This Function would allow the owner of the car to add details of the cars. These details include:
 - a. ID - Car id, which can be used to locate the car in various other functions.
 - b. Model: Model of the car(Ex - Civic, Q7,...)
 - c. Company: Car Company(Ex - Audi, Tesla,...)
 - d. Made Year: Defines the year the car was manufactured.
 - e. Bought Year: The year car was purchased.
 - f. Miles: Denotes the number of miles on the car’s odometer.
 - g. Clean Title - Boolean used to define if the car has been in an accident before or not.

- h. Repacking: Boolean used to define if the car has been renovated/Modified to add new features.
- i. VIN: Vehicle Identification Number(VIN), is a unique identification code given to a vehicle when it's manufactured, for example 4Y1SL65848Z411439.
- j. Marked Price: The current price the owner of the Vehicle feels would be appropriate for the car.

In our test, the current owner address is 0x14723A09ACff6D2A60DcdF7aA4AFf308FDDC160C.

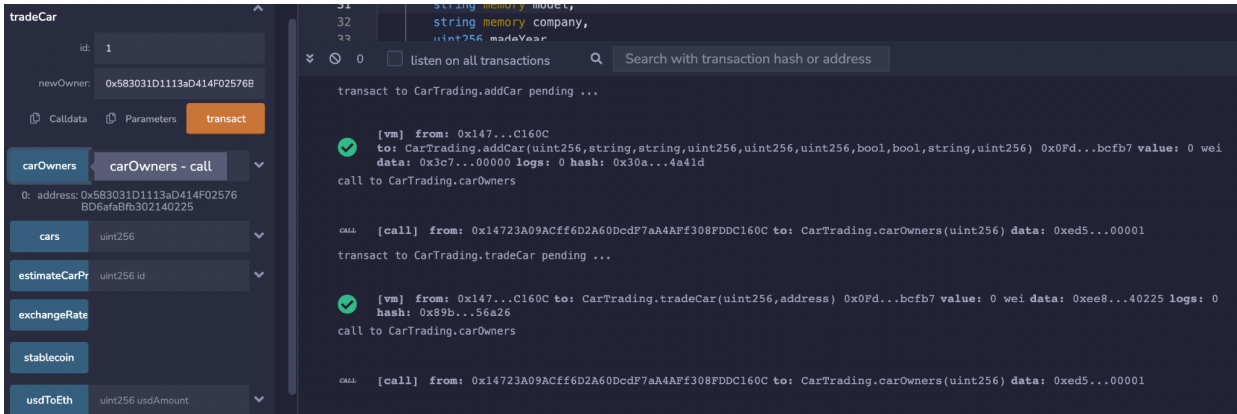
- ID: 1
- Model: Q7
- Company: Audi
- Made Year: 2020
- Bought Year: 2022
- Miles: 28763
- Clean Title: 1(Yes)
- Repacking: 0(No)
- VIN: 4Y1SL65848Z411439
- Marked Price: \$35000

The screenshot shows a web application interface for a car trading platform. On the left, there is a sidebar with a form titled 'addCar' containing fields for: id (1), model (Q7), company (Audi), madeYear (2020), boughtYear (2022), miles (28763), cleanTitle (1), repacking (0), VIN (4Y1SL65848Z411439), and markedPrice (35000). Below the form are buttons for 'Caldata', 'Parameters', and 'transact'. The main area on the right shows the car's details and a list of transactions. The transactions list includes a call to 'CarTrading.addCar' and a subsequent call to 'CarTrading.carOwners'.

3. Trade Car

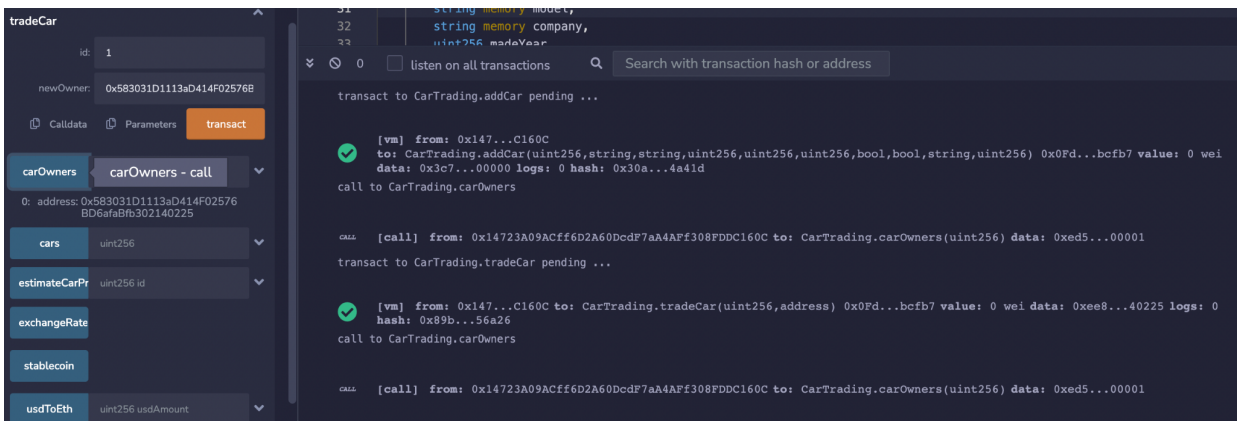
- a. ID: Unique ID for the vehicle, where it is used to transfer the ownership.
- b. New Owner: This is the address of the new owner of the car, once the new owner has selected the vehicle and is ready to pay the price, only the current owner of the vehicle can transfer ownership of the vehicle to the new owner.

In our test, the new owner address is 0x583031D1113aD414F02576BD6afaBfb302140225.



4. **CarOwners:** Once we feed in Car ID, it would retrieve the address of the car's owner.

5. **Cars:** It will provide the car details in reference to its ID.

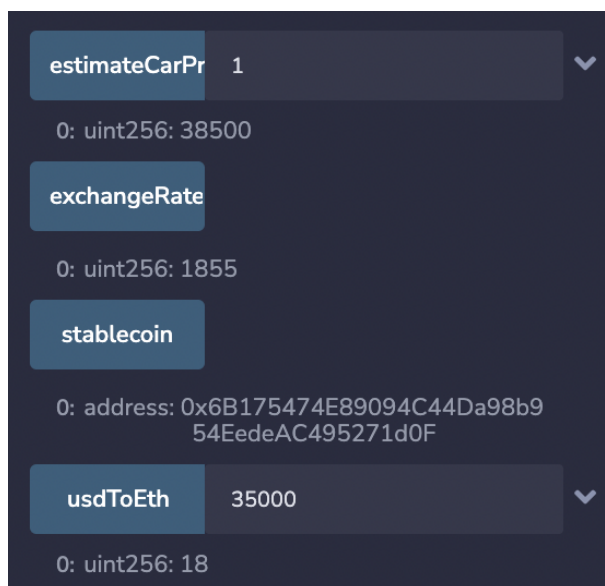


6. **Estimate Car Price:** This function will either appreciate or depreciate the asked value of the car on the basis of if it has been Repacked or has a Clean Title respectively.

7. **Exchange Rate:** This is the rate of exchange between USD and ETH. It would suggest the price of 1 ETH in USD Currency.

8. **Stablecoin:** This function retrieves the address of the stable coin that we used.

9. **USDtoETH:** This function will give the value in ETH when exchanged from USD (If 1 ETH = 1855 \$, then if we feed 7420\$ is how much, this function will return with 4 ETH.)

**Scalability:**

Our smart contract, though is now only used on car tradings, can be expanded to exchanging all other physical assets. This adaptability could be very beneficial to governments and other organizations seeking a more efficient and secure method for asset transfers. By utilizing smart contracts, governments can improve the asset exchange process, significantly reducing the time and resources required for document exchanging and reduce signatures required. Instead of spending days exchanging documents and signing paperwork, parties involved in the transaction can quickly provide their digital signatures, enabling the secure exchange of related information in mere minutes. Organizations such as auction company can also use our smart contract to exchange physical assets and insure the security of assets.

The smart contract we have developed can be further adapted for exchanging other physical assets like real estate, business ownership, or government documents, ensuring safety and anonymity while speeding up the exchange process. It would be beneficial for individuals who are looking to quickly buy or sell assets.

Conclusion:

Overall, as explained above, our smart contract can be beneficial in trading cars among two parties and the process has been shown above. The development and implementation of our smart contract for car trading has the potential to help the government improve on document exchanging processes and be expanded into exchanging all physical assets. By providing a secure, transparent, and efficient platform for exchanging assets, our smart contract can save time and resources for all parties involved.