Register a Log Trigger Upkeep

Create powerful smart contracts that use log data as both trigger and input. This guide explains how to create log-trigger upkeeps.

Testing and best practices

Follow thebest practices when creating a compatible contract and test your upkeep on a testnet before deploying it to a mainnet.

Emit a log

1. OpenCountEmitLog.solin Remix. This contract contains an eventWantsToCountthat keeps track of the address of the message sender. The functionemitCountLogemits this event.

// SPDX-License-Identifier: MITpragmasolidity^0.8.7;contractCountEmitLog{eventWantsToCount(addressindexedmsgSender);constructor()
{}functionemitCountLog()public{emitWantsToCount(msg.sender);}} Open in Remix What is Remix? 1. UnderEnvironment, select the optionInjected Providerto connect to your cryptocurrency wallet. 2. Deploy the contract and confirm the transaction. 3. You can view the contract on Etherscan by clicking the message in the terminal. You an view the address of the created contract and the original contract in Etherscan. 4. Navigate to theContracttab. If the contract is already verified, you will see options toRead ContractandWrite Contract. If your contract isn't verified, follow the prompts in Etherscan to verify the contract. 5. ClickWrite Contractand click theemitCountLogbutton to emit a log. 6. Navigate back to Etherscan and locate theEventstab. You should see the event of emitting a log recorded in this section.

UsingILogAutomationInterface

1. OpenCountWithLog.solin Remix. This contract contains a struct to account for the log structure and uses theILogAutomation interface for log automation. The interface contains thecheckLogandperformUpkeepfunctions. The contract contains an eventCountedBy. Thecountedvariable will be incremented whenperformUpkeepis called.

// SPDX-License-Identifier: MITpragmasolidity^0.8.7;structLog{uint256index;// Index of the log in the blockuint256timestamp;// Timestamp of the block containing the logbytes32txHash;// Hash of the transaction containing the loguint256blockNumber;// Number of the block containing the logbytes32blockHash;// Hash of the block containing the logaddresssource;// Address of the contract that emitted the logbytes32[]topics;// Indexed topics of the logbytesdata;// Data of the
log}interfaceILogAutomation{functioncheckLog(Logcalldatalog,bytesmemorycheckData)externalreturns(boolupkeepNeeded,bytesmemoryperformData);functionperformUpkeep(bytescalldataperformData)
{}functioncheckLog(Logcalldatalog,bytesmemory)externalpurereturns(boolupkeepNeeded,bytesmemoryperformData)
{upkeepNeeded=true;addresslogSender=bytes32ToAddress(log.topics[1]);performData=abi.encode(logSender);}functionperformUpkeep(bytescalldataperformData)externaloverride{counted+=1;addressl
(address));emitCountedBy(logSender);}functionbytes32ToAddress(bytes32_address)publicpurereturns(address){returnaddress(uint160(uint256(_address)));}} Open in Remix What is Remix? 1. Deploy the contract and confirm your transaction. 2. UnderDeployed Contracts, expandCountWithLog. Click thecountbutton to view the value of the count variable. It should be 0. 3. Copy the address of this contract either via Remix or Etherscan to register it on the Chainlink Automation app.

Using the Chainlink Automation App

Open the Chainlink Automation App Click the Register New Upkeep button.

Connecting your wallet

If you do not already have a wallet connected with the Chainlink Automation network, the interface will prompt you to do so. Click theConnect Walletbutton and follow the remaining prompts to connect your wallet to one of theAutomation supported blockchain networks .

Trigger selection

SelectLog Trigger.

Using log triggers

Reorg protection

Your upkeeps will be protected against logs that are emitted during a reorg.

1. Provide the address of yourAutomation-compatible contractthat you want to automate. In this case, we will paste the address ofCountWithLog.sol. This contract must follow the format of theILogAutomation interface to ensure Automation nodes can interact with your contract as expected.
2. Provide the address of the contract that will be emitting the log.In this case, this is the address ofCountEmitLog.sol. If the contract is not validated you will need to provide the ABI.

To find the ABI of your contract in Remix, navigate to the Compiler view using the left side icons. Then, copy the ABI to your clipboard using the button at the bottom of the panel. 3. Use the dropdown to select the triggering event.This isWantsToCount. You can also provide one optional filter per any of the indexed events in the log, but you don't have to. When this combination of filters are matched the upkeep will trigger.

Entering upkeep details

Provide the following information in the Automation app:

- Upkeep name: This will be visible in the Chainlink Automation app.
- Gas limit: This is the maximum amount of gas that your transaction requires to execute on chain. This limit cannot exceed theperformGasLimitvalue configured on theregistry .
- Starting balance (LINK): Specify a LINK starting balance to fund your upkeep. See theLINK Token Contracts page to find the correct contract address and access faucets for testnet LINK. This field is required. You must have LINK before you can use the Chainlink Automation service.

Funding Upkeep

You should fund your contract with more LINK that you anticipate you will need. The network will not check or perform your Upkeep if your balance is too low based on current exchange rates. View theAutomation economics page to learn more about the cost of using Chainlink Automation.ERC-677 Link

For funding on Mainnet, you need ERC-677 LINK. Many token bridges give you ERC-20 LINK tokens. Use PegSwap toconvert Chainlink tokens (LINK) to be ERC-677 compatible. To fund on a supported testnet, getLINK fromfaucets.chain.link . * Check data: Optional input field that you may use depending on whether you are using it in your contract. * Your email address (optional): This email address will be used to send you an email notification when your upkeep is underfunded.

Complete upkeep registration

ClickRegister upkeepand confirm the transaction in MetaMask.

Your upkeeps will be displayed in your list ofActive Upkeeps. You must monitor the balance of your upkeep. If the balance drops below theminimum balance, the Chainlink Automation Network will not perform the Upkeep. SeeManaging Upkeeps to learn how to manage your upkeeps.

Performing upkeep

Navigate back to the Etherscan page forCountEmitLog.sol. UnderWrite Contract, click the button toemitCountLog. Refresh the upkeep details page. You may have to wait a few moments. UnderHistory, you should see the upkeep has been performed.