

L4 D4

P1- Try to understand what the contract does. Can you explain it?

It stores (and allows for read/write of) a positive integer value.

P2- Why do you think it's important to validate inputs (e.g value > 0)?

In general, it's used to enforce requirements for the execution of the contract (e.g. an account has enough of an asset to spend).

P3- Write down the block parameters you obtained.

JavaScript

```
{
  number: 2,
  hash: '0xa9400ecd2cb046bdf2cf6db2cea0366ad20e0f72fd8f741a7cde6db77813155b',
  timestamp: 1764920070,
  parentHash: '0x8452ece34fb1da0a539a592bcc24cdb6c5c36aa9b3f13b79d4eeb58d9d1f6be8',
  parentBeaconBlockRoot: undefined,
  nonce: '0x0000000000000000',
  difficulty: 0n,
  gasLimit: 30000000n,
  gasUsed: 44938n,
  stateRoot: undefined,
  receiptsRoot: undefined,
  blobGasUsed: undefined,
  excessBlobGas: undefined,
  miner: '0xC014BA5EC014ba5ec014Ba5EC014ba5Ec014bA5E',
  prevRandao: null,
  extraData: '0x',
  baseFeePerGas: 766928583n
}
```

P4- Explain what Gas is and why transactions in Ethereum consume Gas. Which type of attack does it help to mitigate?

Gas is a unit of cost for the operations of the EVM. Transactions consume gas because they require some operations to be executed within Ethereum nodes. The gas is (partly) used to reward them for their work.

The gas mechanism helps mitigate DoS attacks. If a malicious user wanted to collapse the network by broadcasting huge amounts of requests, this would have a high economical cost.

P5- How much gas do you estimate will be used to deploy the contract? How much ETH will it cost?

None

Estimated gas: 53793

Current gas price: 0.00100001 gwei

Estimated deployment cost: 0.00000005379353793 ETH

P6- Include the contract address in the Lab report

Contract address: 0x7a928B88Cf0Ea41763f8335ABC6b1c1A4482baB5

Creation transaction hash:

0xd539f6b760b3af36a0570717c8342d00698c3379855f9e70bd9dcfdcf6f26853

P7- How much SepoliaEth will the transaction cost? Explain how transaction cost is computed.

It costs 0.000000000001500024 SepoliaEth

The transaction cost is computed as $\text{gas} \times \text{gasPrice}$, where gas is the amount of gas consumed by the transaction, and the gas price is a parameter set by the sender (according to the network busyness).

P8- Is the transaction persisted immediately? Why? Explain the consensus protocol currently used in Ethereum networks.

No. The transaction first enters the mempool, where validator nodes can select it (if the offered gas price is acceptable). A chosen validator proposes a block including the transaction, broadcasts it, and other validators attest to its validity. The transaction considered persisted once the block is accepted by the network.

Ethereum currently uses a Proof-of-Stake consensus protocol. Validators stake ETH to participate in proposing and vouching for blocks, earning rewards for honest behavior and risking slashing if they act maliciously.

P9- Retrieve the transaction information associated to the Store function call. Also, write down the information of the block where the transaction is registered. Add some screenshots to the report

Transaction

(0x4685ef4fad8990f9e79dfe01cf40c27317baadb0d556b722a390218bd31a4e68):

Transaction Hash:	0x4685ef4fad8990f9e79dfe01cf40c27317baadb0d556b722a390218bd31a4e68
Status:	Success
Block:	9773297 66558 Block Confirmations
Timestamp:	9 days ago (Dec-05-2025 08:31:48 AM UTC)
From:	0xE089aB95D28aCA5804a2F99c2cc259A88d3Be799
To:	0x7a928B88Cf0Ea41763f8335ABC6b1c1A4482baB5
Value:	0 ETH
Transaction Fee:	0.000067407000584194 ETH
Gas Price:	1.500000013 Gwei (0.000000001500000013 ETH)

Block (9773297):

Block Height:	9773297
Status:	Finalized
Timestamp:	9 days ago (Dec-05-2025 08:31:48 AM +UTC)
Proposed On:	Block proposed on slot 9099159, epoch 284348
Transactions:	39 transactions and 5 contract internal transactions in this block
Withdrawals:	16 withdrawals in this block
Fee Recipient:	0x4dF6EB2EC570B58cC64f540247A8AdFA11F1Cf63 in 12 secs
Block Reward:	0.084137344364607829 ETH (0 + 0.084137344364607829 - 0)
Total Difficulty:	0
Size:	17,005 bytes
Gas Used:	5,263,833(8.78%) -82% Gas Target
Gas Limit:	59,941,351
Base Fee Per Gas:	13 wei (0.000000013 Gwei)
Burnt Fees:	0 ETH
Extra Data:	erigon-3.4.0-dev-70e65ef3 (Hex:0x657269676f6e2d332e342e302d6465762d3730653635656633)

P10- Do you think 51% attacks are possible in Ethereum mainnet today? Justify your answer.

No, a 51% attack on Ethereum mainnet is effectively impossible today. With PoS, an attacker would need to own more than half of the total staked ETH, which is about 100 billion dollars ([source](#)).

Also, such an attack would likely make the value of ETH crash, thus causing a massive loss to the attacker.