

# Challenge 4

## Background

For this challenge you need to further develop the application you created for Challenge 3. We want to make the system more private by allowing private messages.

1. Change your application so that messages and their verification are private.
2. The highest message number per agent can be public
3. We want to extend the state stored to also include the following fields.
  1. Current block height
  2. Transaction sender
  3. Sender's nonce

Use inheritance to extend your existing method that stores state.

4. We also want to query the state.

Write a test to get the details (as above) for a particular block height.

## Deliverables

- An app chain extending the functionality from Challenge 3.
- A means to keep messages private
- Tests for the chain to demonstrate the new functionality

## Submitting your solution

You should send us a link to the github repo containing the solution.

## Deadline

Your solution needs to be submitted by midnight (UTC) on 30th April 2024.

If you have any questions, please ask on Discord.