

Experiment ‘p5_8_scramble’ Results

December 18, 2025

Experiment outcome: SUCCESS

Bad responses: 0

Responses containing assume : 0

Resolution attempts: 1

Hard fails (resolution): 0

Soft fails (resolution): 0

Verification attempts: 1

Problem Specification

Problem name: p5_8_scramble

Natural language statement: Write a method that constructs a scrambled version of string, randomly flipping two characters other than the first and last ones.

Method signature: p5_8_word_scramble(word: string) returns (scrambled: string)

Ensures

- `|word| == |scrambled|`
- `word[0] == scrambled[0]`
- `word[|word| - 1] == scrambled[|scrambled| - 1]`
- `|word| >= 4 ==> exists i, j :: 1 <= i < j <= |word| - 2 && word[i] == scrambled[j] && word[j] == scrambled[i] && forall k :: 0 <= k <= |word| - 1 ==> (k != i && k != j ==> word[k] == scrambled[k])`

Requires

- `1 <= |word|`

GenAI interactions

Below you will find all interactions between the ‘user’ (program) and the ‘assistant’ (OpenAI).

Program → GenAI

You are given the following task to perform in Dafny:

Write a method that constructs a scrambled version of string, randomly flipping two
↪ characters other than the first and last ones.

The signature should be:

method p5_8_word_scramble(word: string) returns (scrambled: string)

The method should respect the following contract:

requires 1 <= |word|, ensures |word| == |scrambled|, ensures word[0] == scrambled[0],
↪ ensures word[|word| - 1] == scrambled[|scrambled| - 1], ensures |word| >= 4 ==>
↪ exists i, j :: 1 <= i < j <= |word| - 2 && word[i] == scrambled[j] && word[j] ==
↪ scrambled[i] && forall k :: 0 <= k <= |word| - 1 ==> (k != i && k != j ==> word[k] ==
↪ scrambled[k])

Produce and show only the Dafny body of this method, including the curly braces that
↪ surround it. Do not show the signature nor contract. You must not use 'assume'
↪ anywhere in your code.

GenAI → Program

System fingerprint:

ID: chatcmpl-Co4xmM5ytrwszEApQB2ZWOFptkXmM

Model: gpt-5.1-chat-latest

Created at: 1766051514

Finish reason: stop

Usage: 498 tokens in, and 295 tokens out

```
{
  if |word| < 4 {
    scrambled := word;
  } else {
    var i := 1;
    var j := 2;
    var c1 := word[i];
    var c2 := word[j];
    var tmp := word[i := c2];
    scrambled := tmp[j := c1];
  }
}
```

Final Program

```

method p5_8_word_scramble(word: string) returns (scrambled: string)
  requires 1 <= |word|
  ensures |word| == |scrambled|
  ensures word[0] == scrambled[0]
  ensures word[|word| - 1] == scrambled[|scrambled| - 1]
  ensures |word| >= 4 ==> exists i, j :: 1 <= i < j <= |word| - 2 && word[i] ==
    ↪ scrambled[j] && word[j] == scrambled[i] && forall k:: 0 <= k <= |word| - 1
    ↪ ==> (k!=i && k!=j ==> word[k] == scrambled[k])
{
  if |word| < 4 {
    scrambled := word;
  } else {
    var i := 1;
    var j := 2;
    var c1 := word[i];
    var c2 := word[j];
    var tmp := word[i := c2];
    scrambled := tmp[j := c1];
  }
}

```

Total Token Usage

Input tokens: 498

Output tokens: 295

Reasoning tokens: 192

Sum of 'total tokens': 793

Experiment Timings

Overall Experiment started at 1766051516108, ended at 1766051521431, lasting 5323ms (5.32 seconds)

Iteration #1 started at 1766051516108, ended at 1766051521431, lasting 5323ms (5.32 seconds)