

# Experiment ‘p6\_2\_b\_shift\_right’ 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:** p6\_2\_b\_shift\_right

**Natural language statement:** Write a method to shift all elements of an array by one to the right and move the last element into the first position. For example, [1, 4, 9, 16, 25] would be transformed into [25, 1, 4, 9, 16].

**Method signature:** p6\_2\_b\_shift\_right(arr: seq<int>) returns (result: seq<int>)

### Ensures

- $|result| == |arr|$
- $result[0] == arr[|arr| - 1]$
- $\forall i :: 1 \leq i < |arr| \Rightarrow result[i] == arr[i - 1]$

### Requires

- $|arr| \geq 1$

## 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 to shift all elements of an array by one to the right and move the last  
↳ element into the first position. For example, [1, 4, 9, 16, 25] would be  
↳ transformed into [25, 1, 4, 9, 16].

The signature should be:

```
method p6_2_b_shift_right(arr: seq<int>) returns (result: seq<int>)
```

The method should respect the following contract:

```
requires |arr| >= 1, ensures |result| == |arr|, ensures result[0] == arr[|arr| - 1],  
↳ ensures forall i :: 1 <= i < |arr| ==> result[i] == arr[i - 1]
```

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: chatmpl-Co55v8juI9vcrfoEhcFQ1AutFF23i

Model: gpt-5.1-chat-latest

Created at: 1766052019

Finish reason: stop

Usage: 444 tokens in, and 116 tokens out

```
{  
    var n := |arr|;  
    result := arr[n - 1 .. n] + arr[0 .. n - 1];  
}
```

### Final Program

```
method p6_2_b_shift_right(arr: seq<int>) returns (result: seq<int>)  
    requires |arr| >= 1  
    ensures |result| == |arr|  
    ensures result[0] == arr[|arr| - 1]  
    ensures forall i :: 1 <= i < |arr| ==> result[i] == arr[i - 1]  
{  
    var n := |arr|;  
    result := arr[n - 1 .. n] + arr[0 .. n - 1];  
}
```

## Total Token Usage

**Input tokens:** 444

**Output tokens:** 116

**Reasoning tokens:** 64

**Sum of ‘total tokens’:** 560

## Experiment Timings

**Overall Experiment** started at 1766052020688, ended at 1766052024297, lasting 3609ms (3.61 seconds)

**Iteration #1** started at 1766052020688, ended at 1766052024297, lasting 3609ms (3.61 seconds)