

The program was running with two-byte sequence arrays generated randomly between 0 and the size of the sequence which is 5.

```

mahlet@mahlet-virtual-machine:~/Documents$ spin lcs.prom
Sequence1:
2      0      2      0      1
Sequence2:
0      2      0      2      2

LCS Computed table:
0      0      0      0      0      0
0      0      1      1      1      1
0      1      1      2      2      2
0      1      2      2      3      3
0      1      2      3      3      3
0      1      2      3      3      3
The LCS:      0      2      0
The length of LCS: 3
1 process created
mahlet@mahlet-virtual-machine:~/Documents$

```

```

mahlet@mahlet-virtual-machine:~/Documents$ spin lcs.prom
Sequence1:
0      1      1      0      1
Sequence2:
0      0      1      1      0

LCS Computed table:
0      0      0      0      0      0
0      1      1      1      1      1
0      1      1      2      2      2
0      1      1      2      3      3
0      1      2      2      3      4
0      1      2      3      3      4
The LCS:      0      1      1      0
The length of LCS: 4
1 process created

```

A small fake error was put in LCS() function to experience if it is hard to find in testing. The fake error made was to change condition of the inequality inside the loop to be not equal and the results has shown that the code didn't detect the error, and instead it produced a wrong LCS showing as it is the longest one. However, after running the verification process using spin, the verification could detect the error. The following figure shows the incorrect

```

mahlet@mahlet-virtual-machine:~/Documents$ spin lcs.prom
Sequence1:
0      0      0      0      2
Sequence2:
0      0      0      0      4

LCS Computed table:
0      0      0      0      0      0
0      0      0      0      0      1
0      0      0      0      0      1
0      0      0      0      0      1
0      0      0      0      0      1
0      1      1      1      1      1
The LCS:      0
The length of LCS: 1
1 process created
mahlet@mahlet-virtual-machine:~/Documents$ spin -a lcs.prom
mahlet@mahlet-virtual-machine:~/Documents$ gcc -o pan pan.c

```

```

mahlet@mahlet-virtual-machine:~/Documents$ ./pan
pan:1: assertion violated - invalid array index (at depth 560)
pan: wrote lcs.prom.trail

(Spin Version 6.5.2 -- 6 December 2019)
Warning: Search not completed
+ Partial Order Reduction

Full statespace search for:
never claim      - (none specified)
assertion violations +
acceptance cycles - (not selected)
invalid end states +

State-vector 108 byte, depth reached 560, errors: 1
561 states, stored
0 states, matched
561 transitions (= stored+matched)
0 atomic steps
hash conflicts:      0 (resolved)

Stats on memory usage (in Megabytes):
0.073    equivalent memory usage for states (stored*(State-vector + overhead))
0.273    actual memory usage for states
128.000  memory used for hash table (-w24)
0.534    memory used for DFS stack (-m10000)
128.730  total actual memory usage

pan: elapsed time 0 seconds
mahlet@mahlet-virtual-machine:~/Documents$

```