MATLAB Code:

clear all, close all;

load sequence1.mat; %I ran this for each sequence 1-5

N = length(test\_sequence);

count1 = sum(1==conv(1 \* [1], test\_sequence));

count2 = sum(1==conv(1/2 \* [1 1], test\_sequence));

count3 = sum(1==conv(1/3 \* [1 1 1], test\_sequence));

count4 = sum(1==conv(1/4 \* [1 1 1 1], test\_sequence));

count5 = sum(1==conv(1/5 \* [1 1 1 1 1], test\_sequence));

p1 = count1/N

p2 = count2/N

p3 = count3/N

p4 = count4/N

p5 = count5/N

Considering the actual probability (pi) of i heads in a row are:

p1 = .5 p2 = .25 p3 = .125 p4 = .0625 p4 = .03125 p5 = .015625

The results of the sequences are:

Sequence 1:

p1 = 0.5003 p2 = 0.2505 p3 = 0.1255 p4 = 0.0629 p5 = 0.0315

Sequence 2:

p1 = 0.5000 p2 = 0 p3 = 0 p4 = 0 p5 = 0

Sequence 3:

p1 = 0.5002 p2 = 0.2916 p3 = 0.1040 p4 = 0.0102 p5 = 0.0052

Sequence 4:

p1 = 0.5000 p2 = 0.4286 p3 = 0.3571 p4 = 0.2857 p5 = 0.2143

Sequence 5:

p1 = 0.5013 p2 = 0.2521 p3 = 0.1265 p4 = 0.0634 p5 = 0.0322

**Sequences 2, 3, and 4 are fraudulent;**