N = 1000 N = 10000 N = 100000

n = 100 n = 100 n = 100

E = 2.6930 E = 2.7255 E = 2.7176

A screenshot of a cell phone

Description generated with very high confidence

Figure: Expected Value vs e

**1.4 MATLAB CODE**

% Sum of Uniform Random Varibles

N = 1000; % Large Sequence

n = 100;

K = zeros(1,N);

for x = 1:N

% Generate uniformly distribted random numbers

u = rand(1,n);

i = 1;

% Check whether the sum of Ui and Ui+1 <=1

while sum(u(1:i))<=1

i = i+1;

end

% Obtaining the minimum of the sum

K(x) = i;

end

E1 = mean(K)

N = 10000; % Large Sequence

n = 100;

K = zeros(1,N);

for x = 1:N

% Generate uniformly distribted random numbers

u = rand(1,n);

i = 1;

% Check ehether the sum of Ui and Ui+1 <=1

while sum(u(1:i))<=1

i = i+1;

end

% Obtaining the minimum of the sum

K(x) = i;

end

E2 = mean(K)

N = 100000; % Large Sequence

n = 100;

K = zeros(1,N);

for x = 1:N

% Generate uniformly distribted random numbers

u = rand(1,n);

i = 1;

% Check ehether the sum of Ui and Ui+1 <=1

while sum(u(1:i))<=1

i = i+1;

end

% Obtaining the minimum of the sum

K(x) = i;

end

E3 = mean(K)

e = [E1 exp(1); E2 exp(1); E3 exp(1)]

bar(e,0.33)

title('Sum of Uniform Random Variables');

ylabel('Value of E[N]');

legend('Estimated Value','Actual Value');

set(gca, 'XTick', 1:3, 'XTickLabel', {'N = 1000','N = 10000', 'N = 100000'})