
```

% Exercise 2
% see ChiTest.m for the ChiTest function
% (b), part (i.)
N = 100000; % fix the size of each sample
M = 1000; % number of samples to draw
alpha = 0.95; % confidence level for the test

% first LCG test
a = 16807;
c = 1;
m = 2^32;
bins = 1000;
tests_failed = 0;
for i = 1:M
    x_0 = round(rand*m); % set a random seed for the LCG between 0 and
    m
    sample = LCG(a,c,m,x_0,N);
    if ChiTest(sample,bins) > chi2inv(alpha,bins-1)
        tests_failed = tests_failed + 1;
    end
end
text = ['LCG parameters: a = ',num2str(a),', c = ',num2str(c),', m =
'...
',num2str(m)];
disp(text);
fprintf('\n');
text = ['The LCG routine had a Chi-square test rejection rate of ',...
num2str(tests_failed*100/M),'% versus an expected rejection rate
of '...
',num2str((1-alpha)*100),'%.'];
disp(text);

```

LCG parameters: a = 16807, c = 1, m = 4294967296

The LCG routine had a Chi-square test rejection rate of 5.3% versus an expected rejection rate of 5%.

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