```matlab
rng(4);
% values of N to be tested on
N = [10 10^2 10^3 10^4 10^5 10^6 10^7 10^8];

% Loop through N
for i=1:length(N)
    % get the ith value in N
    n = N(i);
    % sample n random points. This is equal to n*2 random variables.
    sample = single(2*rand(n,2)-1);
    % sample(:,1).^2 + sample(:, 2).^2 is the distance of the point
 from
    % origin. We compare it to 1 to get if it lies inside the circle or
 not.
    % sample(:,1).^2 + sample(:, 2).^2 <=1 will be an array of size n
 and
    % its ith element is 1 if the ith sample point lies inside the
 circle
    % otherwise 0
    % To get the number of points inside circle we sum over this.
    count = single(sum(sample(:,1).^2 + sample(:, 2).^2 <= 1));
    % get the estimated value of pi
    pi = single(4*count/n);
    disp("Estimate at n = " + string(n) + " is " + string(pi));
end
```

Estimate at n = 10 is 1.6
Estimate at n = 100 is 3.12
Estimate at n = 1000 is 3.124
Estimate at n = 10000 is 3.1156
Estimate at n = 100000 is 3.1382
Estimate at n = 1000000 is 3.1423
Estimate at n = 10000000 is 3.1425
Estimate at n = 100000000 is 3.1416

Published with MATLAB® R2020a