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clc
clear
fprintf('Name and Date:          Jeremy Stark 03/27/2019\n');
fprintf('Course and Section:     ENGR297 and class # 22749\n');
fprintf('Problem:                Matlab Classwork 9\n');
fprintf('Statement:              For-while loops\n\n');

pi = 3.14159;

running = 'y';

running = input('Check for series convergence y or n\n', 's');

while running == 'y'

    term_amount = input('Enter "m" the number series term -->  ');

    summation = 0;

    for n = 0:term_amount
        summation = summation + (-1)^(n) * (1/(2*n+1));
    end

    percent_error = (abs(summation - (pi/4)) / (pi/4)) * 100;

    fprintf('Results\n');

    fprintf('The value of m used = %d\n', term_amount);
    fprintf('The result of the series summation = %0.5f\n', summation);
    fprintf('the %% error between the series value & the convergent value is %0.2f%%↙
\n', percent_error);

    if(percent_error > 0.1)
        fprintf('Your %% error is too high try for results within 0.1%%.\n');
    else
        fprintf('Your Results are within 0.1%%. Good estimating.\n');
    end

    running = input('Check for series convergence y or n\n', 's');

end
```