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```
function [Sqrt_2Value, Abs_difference] = PS11_sqrt2_nloop_hkolagan(n)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
%   Accepts the number of terms to sum the in the taylor series to
%   compute square root 2, returns the square root two approximation
%   as
%   well as the absolute differene
%
% Function Call
%   PS11_sqrt2_asartor_hkolagan(n)
%
% Input Arguments
%   1. "n"- number of terms to summate
%
% Output Arguments
%   1. [Sqrt_2Value, Abs_difference]
%
% Assignment Information
%   Assignment:      PS10 Problem 2
%   Author:          Andrew Sartorio, asartor@purdue.edu
%   Team ID:         005-12
%   Paired Programmer: Harith Kolaganti, hkolagan@purdue.edu
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

```
%Initializes acceptable "n" inputs, cannot be a negative number
if n < 0

    disp('Error: Invalid "n" value')
```

CALCULATIONS

```
%For acceptable inputs, the for loop will run, and calculate an
%approxomation of root 2 according to a taylor series, summing "n"
  number
%of terms

else
    k = 0:1:(n-1);

    Sqrt_2value = sum((factorial(2*k + 1)./(2.^(3*k
+1)).*factorial(k).^2)));

    Abs_difference = abs(sqrt(2) - Sqrt_2value);
end
```

FORMATTED TEXT DISPLAYS

```
fprintf('Our Square Root 2 value is %.10f\nAbsolute Difference is
%.10f\n', Sqrt_2value, Abs_difference)

Our Square Root 2 value is 1.4142135623
Absolute Difference is 0.0000000001
```

COMMAND WINDOW OUTPUTS

```
PS11_sqrt2_nloop_hkolagan(10) Our Square Root 2 value is 1.4104420692 Absolute Difference is
0.0037714932

% PS11_sqrt2_nloop_hkolagan(15)
% Our Square Root 2 value is 1.4140727379
% Absolute Difference is 0.0001408245

% PS11_sqrt2_nloop_hkolagan(37)
% Our Square Root 2 value is 1.4142135623
% Absolute Difference is 0.0000000001
```

ACADEMIC INTEGRITY STATEMENT

I/We have not used source code obtained from any other unauthorized source, either modified or unmodified. Neither have I/we provided access to my/our code to another. The project I/we am/are submitting is my/our own original work.

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