THD calculator

```
% Prompt user for number of harmonics (excluding the fundamental frequency)
num_harmonics = input('Enter the number of harmonics (excluding the fundamental freque

% Prompt user for peak amplitude of each harmonic in dBm
harmonic_peaks_dBm = zeros(1,num_harmonics+1); % Add one for fundamental frequency
for i = 1:num_harmonics+1 % Add one for fundamental frequency
    if i == 1 % First iteration is for fundamental frequency
        prompt = 'Enter the peak amplitude of the fundamental harmonic in dBm: ';
    else % Subsequent iterations are for harmonic frequencies
        prompt = ['Enter the peak amplitude of harmonic ' num2str(i-1) ' in dBm: '];
    end
    harmonic_peaks_dBm(i) = input(prompt);
end

% Convert dBm to volts
harmonic_peaks_V = sqrt(10.^(harmonic_peaks_dBm/10)*0.001);

% Calculate THD
fund_peak_V = harmonic_peaks_V(1); % Set fundamental peak voltage to peak voltage of f
THD = sqrt(sum(harmonic_peaks_V(2:end).^2))/fund_peak_V;

% Display description of THD and THD value in percentage
disp(['Input Values:']);
```

```
Input Values:
```

```
disp(['Number of harmonics: ' num2str(num_harmonics)]);
```

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Number of harmonics: 3
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```
disp(['Peak amplitude of each harmonic in dBm: ' num2str(harmonic_peaks_dBm)]);
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Peak amplitude of each harmonic in dBm: 71.2        -30.2        -36.4        -43.3
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disp(['']);
disp(['Total Harmonic Distortion (THD) is the ratio of the root-mean-square (RMS) valu
```

```
Total Harmonic Distortion (THD) is the ratio of the root-mean-square (RMS) value of the harmonic content t
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disp(['THD: ' num2str(THD*100) '%']);
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THD: 0.00096628%
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