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```
function[] = PS05_contactlens_hkolagan()

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% Calls a statistics UDF from PS04 Problem 2 to determine mean and
%   standard deviation for the contact lens measurements and calls the
%   p-code to determine the acceptability of the lens designs.
%
% Function Call
%  PS05_contactlens_hkolagan()
%
% Input Arguments
% NONE
%
% Output Arguments
% NONE
%
% Assigment Information
%   Assignment:    PS 05, Problem 1
%   Author:        Harith Kolaganti, hkolagan@purdue.edu
%   Team ID:       005-12
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

3. In the INTIALIZATION section, load all values that need to be hardcoded in the function.

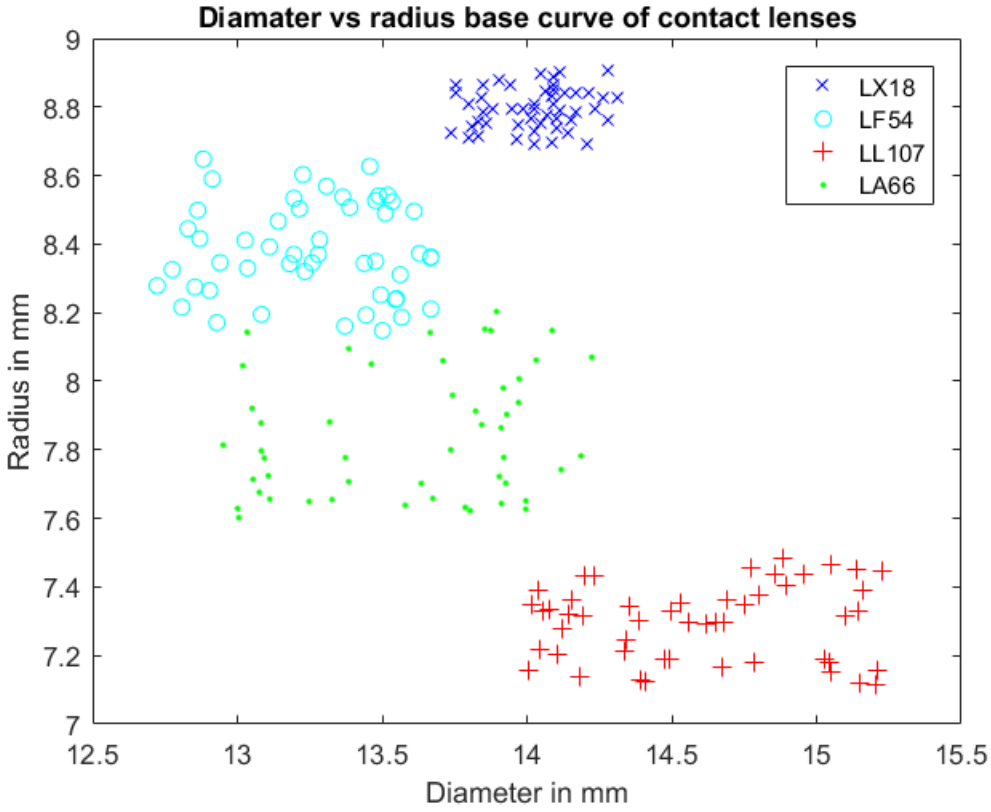
```
all_data = csvread('Data_contactlens.csv',2,0);
LX18rad = all_data(:,1);
LX18dia = all_data(:,2);
```

```
LF54rad = all_data(:,3);
LF54dia = all_data(:,4);
LL107rad = all_data(:,5);
LL107dia = all_data(:,6);
LA66rad = all_data(:,7);
LA66dia = all_data(:,8);

lens_18 = 'LX18';
lens_54 = 'LF54';
lens_107 = 'LL107';
lens_66 = 'LA66';

threshold = 0.02;
```

LENS DESIGN PLOT

4. In the LENS DESIGN PLOT section, create a single plot with multiple datasets on one figure window to show the diameter versus base curve radius for each lens. Plot each lens design with a different color marker.

```
plot(LX18dia, LX18rad,'bx')
xlabel('Diameter in mm')
ylabel('Radius in mm')
title('Diamater vs radius base curve of contact lenses')
hold on;
plot(LF54dia, LF54rad,'co')
plot(LL107dia, LL107rad,'r+')
plot(LA66dia, LA66rad,'g.')
legend('LX18', 'LF54', 'LL107', 'LA66')
```



FUNCTION CALLS

a. Call your input-output stats UDF from PS04 to calculate the required statistics for each lens parameter. Revise this function so that it does not display anything to the Command Window.

```
[mean18rad, mean18dia, std18rad, std18dia] =
 PS04_stats_io_hkolagan(LX18rad, LX18dia);
[mean54rad, mean54dia, std54rad, std54dia] =
 PS04_stats_io_hkolagan(LF54rad, LF54dia);
[mean107rad, mean107dia, std107rad, std107dia] =
 PS04_stats_io_hkolagan(LL107rad, LL107dia);
[mean66rad, mean66dia, std66rad, std66dia] =
 PS04_stats_io_hkolagan(LA66rad, LA66dia);

% b. Call contactlens_decision.p using
% i. the appropriate lens design batch ID value, as a string variable
% ii. the calculated mean and standard deviation of both parameters
 for
% each lens in the dataset
% iii. a threshold value of epsilon = 0.02.
contactlens_decision(lens_18, mean18rad, std18rad, mean18dia,
 std18dia, threshold);
```

```
contactlens_decision(lens_54, mean54rad, std54rad, mean54dia,
 std54dia, threshold);
contactlens_decision(lens_107, mean107rad, std107rad, mean107dia,
 std107dia, threshold);
contactlens_decision(lens_66, mean66rad, std66rad, mean66dia,
 std66dia, threshold);
```

```
Lens Design LX18 is ACCEPTABLE at threshold ratio 0.02.

Lens Design LF54 is UNACCEPTABLE at threshold ratio 0.02.

Lens Design LL107 is UNACCEPTABLE at threshold ratio 0.02.

Lens Design LA66 is UNACCEPTABLE at threshold ratio 0.02.
```

ANALYSIS

-- Q1

For an acceptable lens design, the values should be closer together because the ratio of the threshold vale and standard deviation should be very low, symbolzing a smaller range of values. For and unacceptable lens design, the values would span a longer range because the standard deviation will much higher in these type of designs.

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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