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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.

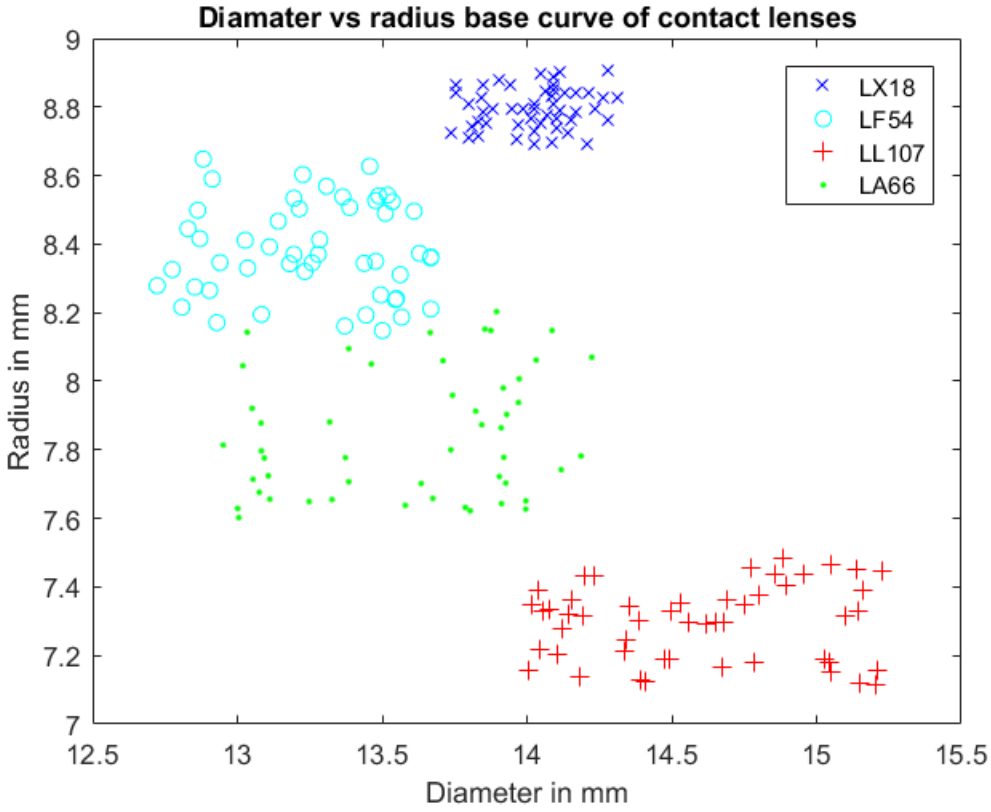
```
all_data = csvread('Data_contactlens.csv',2,0);
LX18rad = all_data(:,1);
LX18dia = all_data(:,2);
```

```
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.
[dec1] = PS09_contactlens_decision_hkolagan(lens_18, mean18rad,
 std18rad, mean18dia, std18dia, threshold);
```

```
[dec2] = PS09_contactlens_decision_hkolagan(lens_54, mean54rad,
 std54rad, mean54dia, std54dia, threshold);
[dec3] = PS09_contactlens_decision_hkolagan(lens_107, mean107rad,
 std107rad, mean107dia, std107dia, threshold);
[dec4] = PS09_contactlens_decision_hkolagan(lens_66, mean66rad,
 std66rad, mean66dia, std66dia, threshold);
```

```
Lens Design LX18 is ACCEPTABLE at a threshold ratio 0.02.
Lens Design LF54 is UNACCEPTABLE at a threshold ratio 0.02.
Lens Design LL107 is UNACCEPTABLE at a threshold ratio 0.02.
Lens Design LA66 is UNACCEPTABLE at a 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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