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```
function [] = PS06_enplanements_exec_hkolagan()
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% Calls the two sub-UDFs to perform the regression analysis
%   Plots the data with its least squares regression for each season
 in the data set.
%
% Function Call
%  PS06_enplanements_exec_hkolagan()
%
% Input Arguments
% NONE
%
% Output Arguments
% NONE
%
% Assigment Information
%   Assignment:         PS 06, Problem 3
%   Author:             Harith Kolaganti, hkolagan@purdue.edu
%   Team ID:            005-12
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

```
allData = csvread('Data_airpassengers_seasons.csv',8,0);
dataYear = allData(:,1);
dataWinter = allData(:, 2);
dataSpring = allData(:, 3);
dataSummer = allData(:, 4);
dataFall = allData(:, 5);
```

```
winter = 'Winter';
spring = 'Spring';
summer = 'Summer';
fall = 'Autumn';
```

CALCULATIONS

Calls the two sub-UDFs to perform the regression analysis

```
[slopeW, y_intW] = PS06_enplanements_coefs_hkolagan(winter, dataYear,
 dataWinter);
[slopeSp, y_intSp] = PS06_enplanements_coefs_hkolagan(spring,
 dataYear, dataSpring);
[slopeSu, y_intSu] = PS06_enplanements_coefs_hkolagan(summer,
 dataYear, dataSummer);
[slopeF, y_intF] = PS06_enplanements_coefs_hkolagan(fall, dataYear,
 dataFall);

[predValW, rsqW] = PS06_enplanements_predict_hkolagan(slopeW, y_intW,
 dataYear, dataWinter, winter);
[predValSp, rsqSp] = PS06_enplanements_predict_hkolagan(slopeSp,
 y_intSp, dataYear, dataSpring, spring);
[predValSu, rsqSu] = PS06_enplanements_predict_hkolagan(slopeSu,
 y_intSu, dataYear, dataSummer, summer);
[predValF, rsqF] = PS06_enplanements_predict_hkolagan(slopeF, y_intF,
 dataYear, dataFall, fall);
```

```
The linear model equation for Winter is passengers = (0.57) * year +
 (-1121.10).
The linear model equation for Spring is passengers = (0.63) * year +
 (-1241.27).
The linear model equation for Summer is passengers = (0.61) * year +
 (-1201.41).
The linear model equation for Autumn is passengers = (0.52) * year +
 (-1032.43).
The R squared value for the Winter linear model is 0.8880.
The R squared value for the Spring linear model is 0.9114.
The R squared value for the Summer linear model is 0.9303.
The R squared value for the Autumn linear model is 0.9561.
```

FORMATTED TEXT & FIGURE DISPLAYS

Plots the data with its least squares regression for each season in the data set.

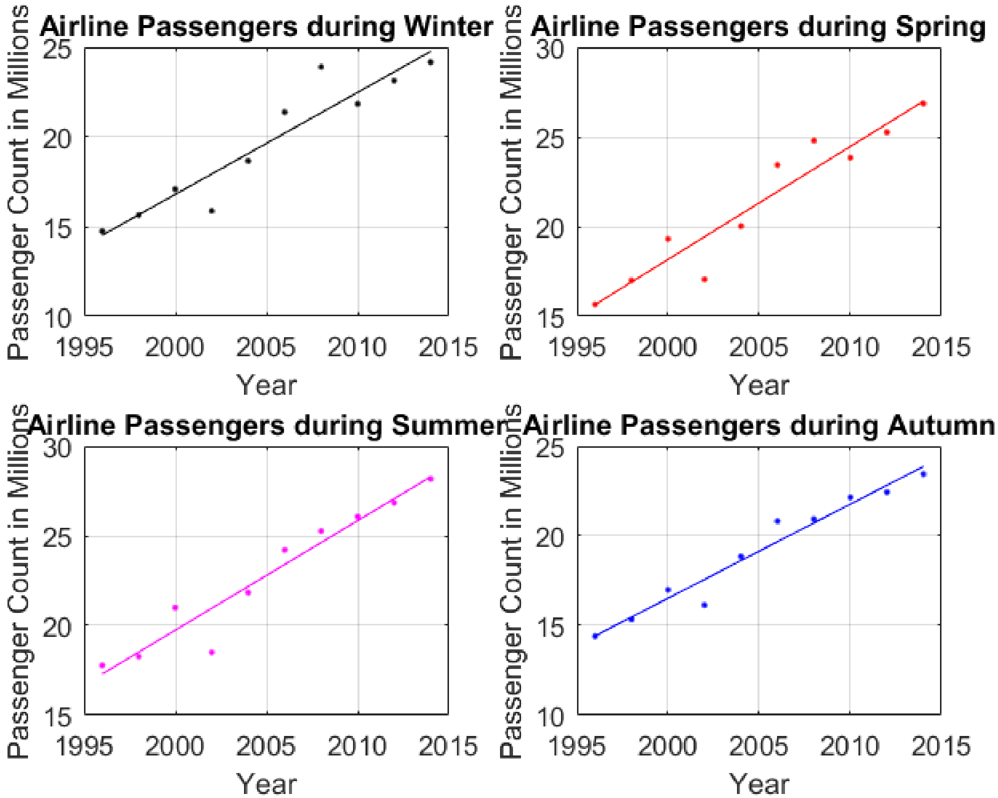
```
subplot(2,2,1)
plot(dataYear, dataWinter, 'k.')
hold on;
plot(dataYear, predValW,'k')
```

```
xlabel('Year')
ylabel('Passenger Count in Millions')
title('Airline Passengers during Winter')
grid on;

subplot(2,2,2)
plot(dataYear, dataSpring, 'r.')
hold on;
plot(dataYear, predValSp, 'r')
xlabel('Year')
ylabel('Passenger Count in Millions')
title('Airline Passengers during Spring')
grid on;

subplot(2,2,3)
plot(dataYear, dataSummer, 'm.')
hold on;
plot(dataYear, predValSu, 'm')
xlabel('Year')
ylabel('Passenger Count in Millions')
title('Airline Passengers during Summer')
grid on;

subplot(2,2,4)
plot(dataYear, dataFall, 'b.')
hold on;
plot(dataYear, predValF, 'b')
xlabel('Year')
ylabel('Passenger Count in Millions')
title('Airline Passengers during Autumn')
grid on;
```



ANALYSIS

-- Q1

The linear model for Autumn best explains the variation in the data because it has a higher R squared value than the other linear models

-- Q2

Spring has the greatest growth rate in number of passengers because it has agreater slope in comparison to the other seasons. Autumn has the lowest growth rate because it has the smallest slope.

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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