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```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% ...
%
% Assignment Information
% Assignment:      PS 02, Problem 2
% Author:         Harith Kolaganti, hkolagan@purdue.edu
% Team ID:        005
% Paired Programmer: Michael Andreucci, ,mandreuc@purdue.edu
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

a. Import all the data from both data files using the appropriate MATLAB built-in functions for the provided data file formats (i.e. .csv, .txt). b. Extract each data column into separate vectors, just as you did in Problem 2. Use descriptive variable names and add comments to explain each variable. Include units in the comments, where applicable.

```
csv_file = 'Data_US_airlines.csv';
Fuel=csvread(csv_file, 1, 0);
cost = Fuel(:,3); %Fuel cost in billions $$$
price = Fuel(:,6); % Fuel price in dollars/gallon
year = Fuel(:,1); % Year
consump = Fuel(:,2); % Fuel consumption billions of gallons
passenger = Fuel(:,4); % Total passengers in millions
num_flight = Fuel(:,5); % Number of flights
airfare = Fuel(:,7); % Average Airfare in dollars
txt_file = 'Data_adj_airfare.txt';
adj_fare = dlmread(txt_file);
```

```
year2= adj_fare(:,1) %year
avg_fare= adj_fare(:,2) %adjusted average fare dollars

year2 =

    2000
    2001
    2002
    2003
    2004
    2005
    2006
    2007
    2008
    2009
    2010
    2011
    2012
    2013
    2014
    2015

avg_fare =

    466.6000
    429.1700
    411.5500
    406.3200
    383.2400
    372.9700
    386.2900
    371.8100
    381.3100
    342.8700
    365.8200
    383.3900
    386.9500
    388.6100
    391.0700
    375.6200
```

FUEL COST PLOT

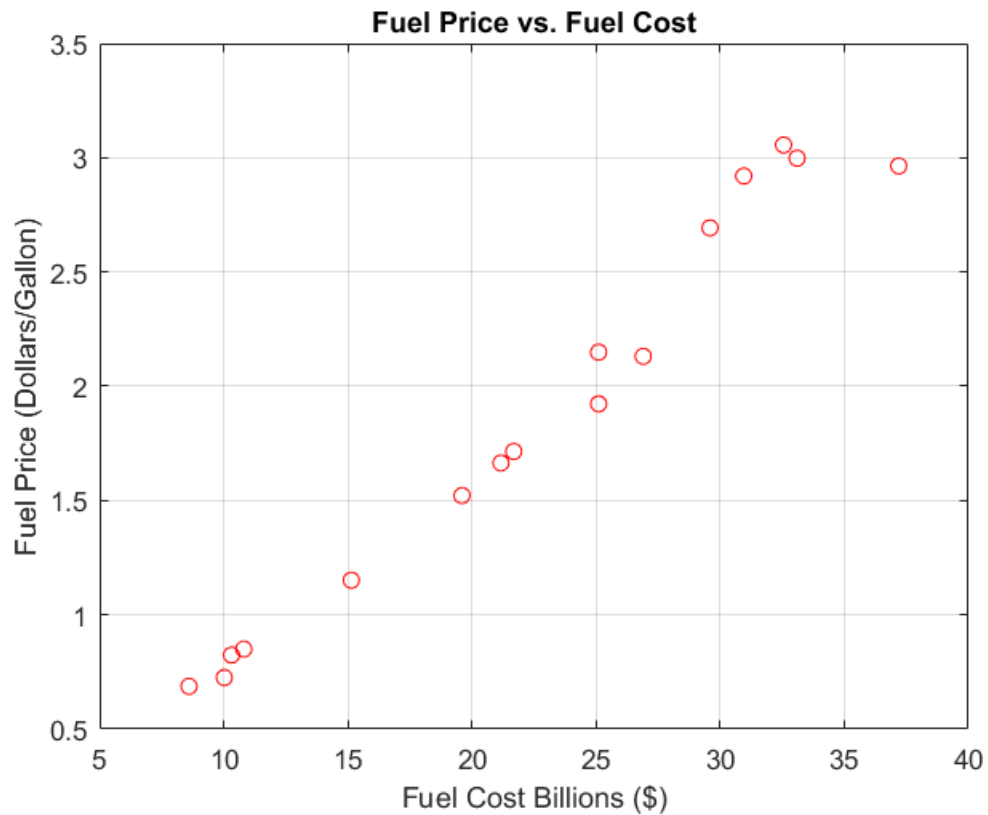
a. Create a scatter plot that you can use to determine what effect fuel price has on fuel costs. b. Format the plot with a descriptive title, useful axes labels with units, and gridlines.

```
Fuel=csvread(csv_file, 1, 0);
```

```

plot(cost,price,'ro')
xlabel('Fuel Cost Billions ($)');
ylabel('Fuel Price (Dollars/Gallon)');
grid
title('Fuel Price vs. Fuel Cost')

```



AIRFARE MODEL CALCULATIONS

```

c = year(:,1)-1999
% a. Calculate the modelled average airfare for each year (by count).
A_nom=(.623* c.^2 - 5.832 * c + 330.57)
% b. Calculate the modelled adjusted airfare for each year (by count).
A_adj=(.956* c.^2 - 19.841 * c + 469.5)

```

```
c =
```

```

1
2
3
4
5
6

```

7
8
9
10
11
12
13
14
15
16

$A_{nom} =$

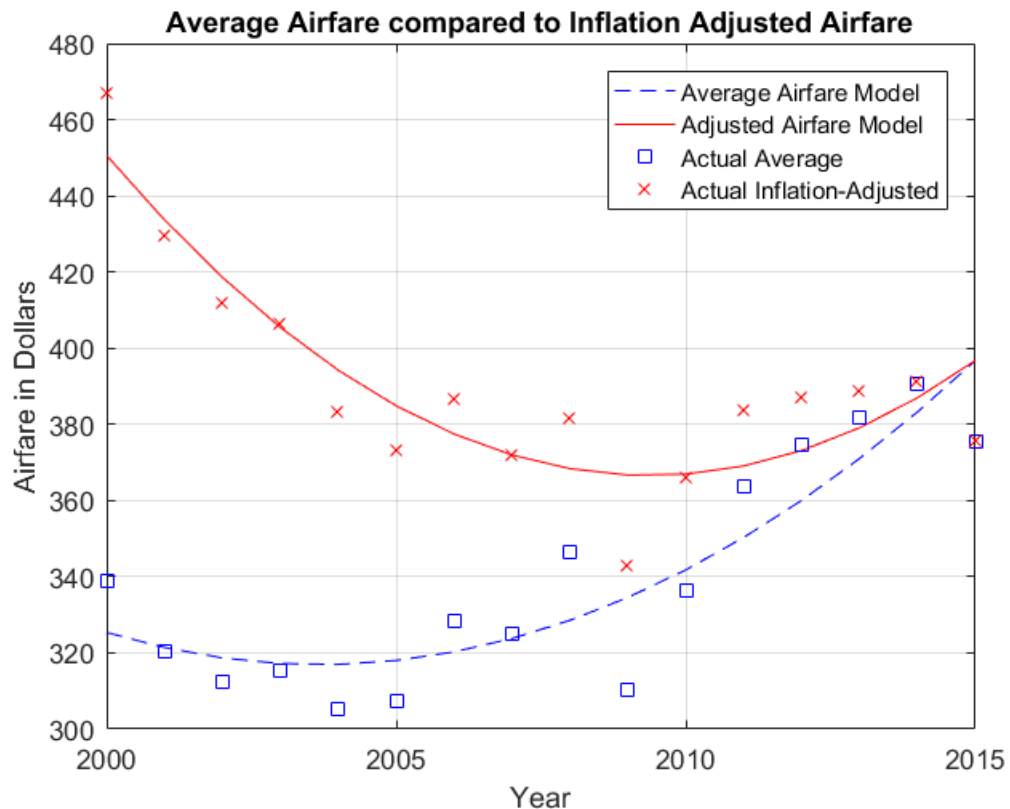
325.3610
321.3980
318.6810
317.2100
316.9850
318.0060
320.2730
323.7860
328.5450
334.5500
341.8010
350.2980
360.0410
371.0300
383.2650
396.7460

$A_{adj} =$

450.6150
433.6420
418.5810
405.4320
394.1950
384.8700
377.4570
371.9560
368.3670
366.6900
366.9250
369.0720
373.1310
379.1020
386.9850
396.7800

AIRFARE MODEL & DATA PLOT

```
%a. Create a second figure that contains a single plot with both
models.
plot(year, A_nom, 'b--')
hold on
plot(year, A_adj, 'r')
% b. Overlay the actual average airfare and inflation-adjusted airfare
provide in the data files.
% c. Format the plot with a descriptive title, useful axes labels with
units, and gridlines.
% Each model must be a different style and color. Each set of data
points must be a different marker
% style but match the color of its model. Add a legend and label the
models and data sets appropriately.
plot(year, airfare, 'sb')
plot(year, avg_fare, 'rx')
xlabel('Year')
ylabel('Airfare in Dollars')
grid
title('Average Airfare compared to Inflation Adjusted Airfare')
legend('Average Airfare Model', 'Adjusted Airfare Model', ...
       'Actual Average', 'Actual Inflation-Adjusted')
```



ANALYSIS

-- Q1

Q1: In Problem 2, Figure 1, what type of trend do you see in the plot? Does fuel cost reflect fuel price?

```
% The trend is a near positive linear slope, which shows that the fuel  
cost  
% and fuel price are a direct relationship to one another
```

-- Q2

%Q2: In Problem 2, Figure 2, what is happening to airfare prices from 2000-2015? Refer to both the average fares and the inflation-adjusted fares in your answer.

```
% The average airfare model shows that the price of airfare started at  
a low rate of $330  
% and then drastically increased to $400 in 2015.
```

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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