**DATA FOR THIS LESSON**

| **File** | **Description** |
| --- | --- |
| count.dat | This data file contains traffic measurements from three intersections over a 24-hour period. We assume that these correspond to the following San Antonio intersections:   * IH10 at De Zavala * LP410 at Military * Durango at N. St. Mary's   The data is in text format. |

* **EXERCISE 1: Read data from a file into MATLAB**

load count.dat;

* **EXERCISE 2:** **Plot the data in an informative way (labeled plot in new figure)**

figure

plot(count)

title('Traffic at 3 San Antonio intersections')

xlabel('Hour of day (24 hour format)')

ylabel('Number of vehicles')

legend('DeZavala', 'LP410', 'Durango')

* **EXERCISE 3: Define and output variables averages of the traffic data by hour and by intersection.**

load count.dat;

AverageByIntersection = mean(count,1);

fprintf('AverageByIntersection = [ ');

fprintf('%g ', AverageByIntersection);

fprintf(']\n');

AverageByHour = mean(count,2);

fprintf('AverageByHour = [ ');

fprintf('%g ', AverageByHour);

fprintf(']\n');

* **EXERCISE 4: get the following output**

DeZavala Durango StMarys

Mean: 32.0 46.5 65.6

Median: 23.5 36.0 39.0

Std: 24.8 40.5 66.6

Min: 7.0 9.0 7.0

Max: 114.0 145.0 257.0

>> DeZavala=count(:,1);

>> Durango=count(:,2);

>> StMarys=count(:,3);

>> fprintf(' DeZavala Durango StMarys\n');

fprintf('Mean: %8.1f %8.1f %8.1f\n',...

mean(DeZavala(:)),mean(Durango(:)),mean(StMarys(:)));

fprintf('Median: %8.1f %8.1f %8.1f\n',...

median(DeZavala(:)),median(Durango(:)),median(StMarys(:)));

fprintf('Std: %8.1f %8.1f %8.1f\n',...

std(DeZavala,1,1),std(Durango,1,1),std(StMarys,1,1));

fprintf('Min: %8.1f %8.1f %8.1f\n',...

min(DeZavala),min(Durango),min(StMarys));

fprintf('Max: %8.1f %8.1f %8.1f\n',...

max(DeZavala),max(Durango),max(StMarys));

* **EXERCISE 5:**

**Given the following matrix, a, find and show in matrix form the resulting matrices in each case:**

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* **b=a(:,4:-2:2);**

b =

-1 2

9 5

* **c=a; c(:,3:end)=[];**

c =

1 2

0 5

* **d=a; d(3,5)=1;**

d =

1 2 3 -1 0

0 5 -6 9 0

0 0 0 0 1

* **e=eye(3); e(4,:)=a(7).\*ones(1,3);**

e =

1 0 0

0 1 0

0 0 1

-1 -1 -1