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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% Using the given data, I was asked to anyalze the volcanos under the
 all
% the different condications and answering all the questions such as
% how many volcanoes are visible in the PoLAR Viewer images and what
% is their average elevation
% Assigment Information
%   Assignment:     PS 02, Problem 2
%   Author:         Ranjan Behl, rbehl@purdue.edu
%   Team ID:        014
%   Contributor:    Name, login@purdue [repeat for each]
%   My contributor(s) helped me:
%     [ ] understand the assignment expectations without
%         telling me how they will approach it.
%     [ ] understand different ways to think about a solution
%         without helping me plan my solution.
%     [ ] think through the meaning of a specific error or
%         bug present in my code without looking at my code.
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

```
volcanodata = csvread('Data_volcano_list.csv',1,3);% loading the
given data into a data array called volcanodata
elevation  = volcanodata(:,3);% the elevation data is turned into a
column vector
startoelevation = volcanodata(121:395,3);% the elevation data for
only the startoelevation
```

CALCULATIONS

```
%Part A
volcanos_polar = find(volcanodata(:,1) >= 50);% finding volcanos who
 are visiable in the POLAR viewer images
numvolcanos_polar = numel(Volcanos_polar); % counting and finding the
 total number of volcanos that are visiable
averageelevation = mean(elevation(volcanos_polar)); % finding the
 average elevation for the volcanos that are visiable in the POLAR
 viewer images

%Part B
 stratovolcanoes_visible_VIIimages = find(volcanodata(121:395,3) >
 2500 & volcanodata(121:395,1) <=0);% finding the stratovolcanoes that
 will show up using Vll
 numstratovolcanoes_visible_VIIimages =
 numel(stratovolcanoes_visible_VIIimages);% counting the number of
 stratovolcanoes that meet the pervious condications
 minelevation =
 min( startoelevation(stratovolcanoes_visible_VIIimages));% finding
 the  minimum elevation of the stratovolcanoes
 maxelevation =
 max( startoelevation(stratovolcanoes_visible_VIIimages));% finding
 the  maximum elevation of the stratovolcanoes

%Part C
stratovolcanoes_visible_ACP1 = find(volcanodata(121:395,1) >= -39.5 &
 volcanodata(121:395,1) <= 39.5);% finding the stratovolcanoes that
 will show up using  ACP-1
numstratovolcanoes_visible_ACP1 =
 numel(stratovolcanoes_visible_ACP1); % counting the number of
 stratovolcanoes that meets the pervious condications
nonstratovolcanoes_visible_ACP1_1 = find(volcanodata(1:120,1) >= -39.5
 & volcanodata(1:120,1) <= 39.5); % finding the nonstratovolcanoes
 that will show up using  ACP-1
nonstratovolcanoes_visible_ACP1_2 = find(volcanodata(396:end,1) >=
 -39.5 & volcanodata(396:end,1) <= 39.5);% finding the stratovolcanoes
 that will show up using  ACP-1
numnonstratovolcanoes_visible_ACP1 =
 numel(nonstratovolcanoes_visible_ACP1_1) +
 numel(nonstratovolcanoes_visible_ACP1_2);% counting the total number
 of nonstratovolcanoes that meets the pervious condications

%Part D
stratovolcanoes_visible_MASC_postive = find(volcanodata(121:395,2)
 >= 100 & volcanodata(121:395,2) < 145);% finding the stratovolcanoes
 that are visible for MASC for postive longitude
stratovolcanoes_visible_MASC_negative = find(volcanodata(121:395,2) <=
 -120 & volcanodata(121:395,2) > -140);% finding the stratovolcanoes
 that are visible for MASC for negative longitude
```

```
stratovolcanoes_visible_MASC =
 numel(stratovolcanoes_visible_MASC_postive) +
 numel(stratovolcanoes_visible_MASC_negative); %finding the total
 number of visiable stratovolcanoes for MASC
averageelevation_postive =
 mean(startoelevation(stratovolcanoes_visible_MASC_postive));% finding
 the average elevation for the postive longitude values
averageelevation_negative =
 mean(startoelevation(stratovolcanoes_visible_MASC_negative));%
 finding the average elevation for the negative longitude values
averageelevation_stratovolcanoes = mean(averageelevation_postive +
 averageelevation_negative)/2;% finding the overall average elevation
 for startovolcanoes
```

FORMATTED TEXT DISPLAYS

```
fprintf('%d volcanoes are visible in the PoLAR Viewer images with a
 average elevation of %.2f\n',numvolcanos_polar,averageelevation);
fprintf('%d  stratovolcanoes are visible in the  VII images,
 the minimum elevation is %d, and the maximum elevation is %d
\n',numstratovolcanoes_visible_VIIimages,minelevation,maxelevation);
fprintf('%.d  stratovolcanoes and %f non-
stratovolcanoes are visible in the  ACP-1 images
\n',numstratovolcanoes_visible_ACP1,numnonstratovolcanoes_visible_ACP1);
fprintf('%d  stratovolcanoes are visible in the
   MASC images with a average elevation of %.f
\n',stratovolcanoes_visible_MASC,averageelevation_stratovolcanoes);
```

```
81 volcanoes are visible in the PoLAR Viewer images with a  average
 elevation of 2060.93
40  stratovolcanoes are visible in the  VII images, the minimum
 elevation is 2518, and the maximum elevation is 6887
174  stratovolcanoes and 95.000000 non-stratovolcanoes are visible in
 the  ACP-1 images
85  stratovolcanoes are visible in the   MASC images with a average
 elevation of 2684
```

ACADEMIC INTEGRITY STATEMENT

I have not used source code obtained from any other unauthorized source, either modified or unmodified. Neither have I provided access to my code to another. The code I am submitting is my own original work.

Published with MATLAB® R2018b