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```
%%%%%%%%
% ENGR 132
% Program Description
% You are a data processing engineer, who has been tasked to analyze
% data
% about volcanoes to determine how high-altitude imaging data can be
% used
% to help volcanologists determine the state of volcanoes.
%
% Assigment Information
% Assignment: PS 02, Problem 2
% Author: Ethan Hotson, ehotson@purdue.edu
% Team ID: 009-01
% Contributor: None
% 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

```
imageData=csvread('Data_volcano_list.csv',1,3);%Reads the data given
% by the sattelites,
%removing the first line of headings and the first 3 lines of the text
% data
```

CALCULATIONS

```
polarVolc=find(imageData(:,1)>=50);%Finds the volcanoes visible to the  
PoLAR viewer  
  
numPolVolc=numel(polarVolc);%Counts the volcanoes visible to the PoLAR  
viewer  
  
avPolarVolAlt=sum(imageData(polarVolc,3))/numel(polarVolc);%Finds the  
average alt of the visible volcanoes  
  
viiVolc=find((imageData(:,3)>2500)&(imageData(:,1)<=0));%Finds the  
volcanoes visible to VII that had altitudes greater than 2500m  
  
stratoVii=find(121<=viiVolc<=395);%Finds the stratovolcanoes visible  
to VII  
  
numStratVII=numel(stratoVii);%Counts the stratovolcanoes visible to  
VII  
  
stratoMin=min(imageData((viiVolc(stratoVii)),3));%Finds the minimum  
altitude of the stratovolcanoes visible to VII  
  
stratoMax=max(imageData((viiVolc(stratoVii)),3));%Finds the max  
altitude of the stratovolcanoes visible to VII  
  
stratoACP=find((-39.5<=imageData(121:395,1)<=39.5));%Finds the  
stratovolcanoes visible to ACP  
  
nonStratACP=find((-39.5<=imageData(:,1)<=39.5));%Finds the non-  
stratovolcanoes visible to ACP  
  
numStratoACP=numel(stratoACP)%Counts the number of stratovolcanoes  
visible to ACP  
  
numNonStratACP=numel(nonStratACP)%Counts the non-stratovolcanoes  
visible to ACP  
  
mascStrat=find((100<=(imageData(121:395,1))<145)|  
(-140<(imageData(121:395,1)<=-120)));%Finds the stratovolcanoes  
detectable by MASC  
  
numMASC=numel(mascStrat);%Counts how many stratovolcanoes are detected  
by MASC  
  
mascAvg=sum(imageData(find((100<=(imageData(121:395,1))<145)|  
(-140<(imageData(121:395,1)<=-120))),3))/numMASC;%Finds the average  
altitude of  
%the stratovolcanoes detected by MASC
```

```
numStratoACP =  
275  
  
numNonStratACP =  
417  
  
mascAvg =  
1.7897e+03
```

FORMATTED TEXT DISPLAYS

```
%Prints answer to Question A  
fprintf('Question A:\n')  
fprintf('Number of volcanoes visible to PoLAR viewer: %.0f  
\n',numPolVolc)  
fprintf('Average elevation: %.0f\n',avPolarVolAlt)  
  
%Prints answer to Question B  
fprintf('Question B:\n')  
fprintf('Number of stratovolcanoes visible in VII imager: %.0f  
\n',numStratVII)  
fprintf('Minimum elevation: %.0f\n',stratoMin)  
fprintf('Maximum elevation: %.0f\n',stratoMax)  
  
%Prints answer to Question C  
fprintf('Question C: \n')  
fprintf('Number of stratovolcanoes visible to ACP-1: %.0f  
\n',numStratoACP)  
fprintf('Number of non-stratovolcanoes visible to ACP-1: %.0f  
\n',numNonStrataACP)  
  
%Prints answer to Question D  
fprintf('Question D: \n')  
fprintf('Number of stratovolcanoes visible to MASC: %.0f\n', numMASC)  
fprintf('Average elevation: %.0f\n',mascAvg)  
  
Question A:  
Number of volcanoes visible to PoLAR viewer: 81  
Average elevation: 2061  
Question B:  
Number of stratovolcanoes visible in VII imager: 45  
Minimum elevation: 2518  
Maximum elevation: 6887  
Question C:
```

Number of stratovolcanoes visible to ACP-1: 275
Number of non-stratovolcanoes visible to ACP-1: 417
Question D:
Number of stratovolcanoes visible to MASC: 275
Average elevation: 1790

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.

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