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```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% This program manipulates data to utilize the data of weed prevalence
% within the present vegetation which was gathered by dividing the
%field into square field pixels.
%
% Assigment Information
%   Assignment:     PS 02, Problem #3
%   Author:         Tomoki Koike, koike@purdue.edu
%   Team ID:        002-08
%   Contributor:    no contributor
%   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

```
fielddata = load('Data_weed_percent_fieldA152nF.txt');
%the laoding of the text file
```

CALCULATIONS

```
%A. How many field pixels are in the data set?
pixSetSum = numel(fielddata);   %Finds the total number of field
                                %pixels in the data set
```

```
%B. Which column has the highest average weed percent, and what is its
 average weed percent?
avgCol = mean(fielddata);  %Creates a row vector of the mean of each
                           %column in the data set
avgCol(:);                 %Converts the row vector created in the
                           %previous step into a column vector
[maxVal,maxIndex] = max(avgCol(:));
                           %Indicates the maximum value and the
                           %row index of the maximum value in the
                           %column vector
[maxIndex_row, maxIndex_col] = ind2sub(size(avgCol),maxIndex);
                           %Extracts the maximum value found in the
                           %previous step from the original row vector
                           %of the averages and outputs the row and
                           %column indices


%C. Weed percentages of less than 15% at this point in the growing
%cycle mean the crop plants are dominant. How many field pixels are
%in this category, and what is the average weed percentage in the
%crop-dominant pixels?
%How many?
cropDom = fielddata(fielddata<0.15);
                             %The values in the data set that are
                             %crop dominant pixels
cropDomNum = numel(cropDom); %The total numbers of the crop
                             %dominant pixels
%The average?
cropDomAvg = mean(cropDom);  %The average value of the crop
                             %dominant pixel values


%D. Weed percentages in the range of 75-95%, inclusive of both,
%require urgent weed treatment. How many field pixels are in this
%category?
urgWeedTreat = fielddata(0.75<=fielddata & fielddata<=0.95);
            %The values that are categorized as to require
            %urgent weed treatment
urgWeedTreatNum = numel(urgWeedTreat);
            %The number of values that included in the values
            %manipulated from the previous step


%E. Any pixel with a weed percentage greater than 95% require a
%person to visually inspect the pixel. What pixel locations, using
%row and column indices, require visual inspection?
[over95_row,over95_col] = find(fielddata>0.95);
% This indicates the row and column indices
%of the pixel that requires inspection
```

FORMATTED TEXT DISPLAYS

```
%A
fprintf("The total numbere of field pixels in the data set is %d.\n",
 pixSetSum);
%B
fprintf("The column with the highest weed precentage is %d, and its
 average weed precent is %.3f.\n", maxIndex_col, maxVal);
%C
fprintf("The number of pixels in the crop plant dominant category
 is %d, and its average weed precentage is %.3f.\n", cropDomNum,
 cropDomAvg);
%D
fprintf("The number of field pixels with the weed precentage range of
 75-95% inclusive is %d.\n", urgWeedTreatNum);
%E
fprintf("The location of the field pixel with over a 95% weed
 precentage is row index %d and column index %d.\n", over95_row,
 over95_col);
```

```
The total numbere of field pixels in the data set is 400.
The column with the highest weed precentage is 18, and its average
 weed precent is 0.536.
The number of pixels in the crop plant dominant category is 329, and
 its average weed precentage is 0.032.
The number of field pixels with the weed precentage range of 75-95
 6nclusive is The location of the field pixel with over a 95
```

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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