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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% This program uses relational and logical operators to analyze a
% compiled data of students' survey result showing their GPA and
% interest in several engineering departments - Civil Engineering,
% Electrical and Computer Engineering, and Mechanical Engineering -
% which is ranked numerically.
%
% Assigment Information
%   Assignment:     PS 02, Problem 1
%   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

```
%Importing the data file of the student survey
surveyData = csvread('Data_PES_survey_record.csv', 1, 0);

%Setting variables for each department
ECE = surveyData(:,2);  %Electrical and Computer Engineering
ME = surveyData(:,3);   %Mechanical Engineering
CE = surveyData(:,4);   %Civil Engineering

%Other data on the data
GPA = surveyData(:,5);      %the column of the GPA
idenNum = surveyData(:,1);  %the identification numbers on the data
```

```
%table
```

CALCULATIONS

```
%A.
%The row indices of the students who failed to select any school.
failSelect = find(ECE+ME+CE==0);
%another way is failSelect = *****find(ECE==0&ME==0&CE==0)*****
%The number of students who failed to select any school.
numFail = numel(failSelect);


%B.
%The number of students that showed interest to only one school.
oneSelect = find(ECE+ME+CE==1); %the row indices of students that
                                %showed interest to only one
                                %school
%another way is
%***oneSelect =
% find((ECE==1&ME==0&CE==0)|(ECE==0&ME==1&CE==0)|(ECE==0&ME==0
% &CE==1))***
numOneSelect = numel(oneSelect);


%C.
%The minimum GPA of a student that has interest in ECE and CE but not
%ME.
ece_and_ce = find(ECE+CE-ME==3);  %the row indices with students who
                                  %have only interest in ECE and CE
%another way of doing this *****ece_and_ce = find(ECE&CE&~ME)*****
gpaEceCe = GPA(ece_and_ce,:); %the GPA values of the row indices in
                              %the variable ece_and_ce
minGPA = min(gpaEceCe);       %the minimum GPA


%D.
%The survey identification numbers of the students who indicated an
%interest in all three schools.
allSchools = find(ECE&CE&ME);   %the row indices that show students
                                %that have interest in all of the
                                %three schools
%another way is *****allSchools = find(ECE+CE+ME==6)*****
%allSchools = find(ECE+CE+ME=6) another way to find it
idenNumAllSchool = idenNum(allSchools, :);
                                %the identification numbers of
                                %the students that showed
                                %interest in all of the schools


%E.
```

```
%The number of students that chose CE as their first and ME as
%their third
ce1me3 = find((CE==1)&(ME==3));   %the row indices of the
                                  %students that chose CE as
                                  %their first and ME as their
                                  %third
numCE1ME3 = numel(ce1me3);        %the number of students that
                                  %are included in ce1me3


%F.
%The average level of interest within the students that showed
%interest to ECE.
eceIntrst = find(ECE);            %the row indices in the data
                                  %that show students who have
                                  %interest in ECE
eceIntrstVal = ECE(eceIntrst,:);  %the values in each indices
                                  %of eceIntrst
avgLevel = mean(eceIntrstVal);    %the average value for the
                                  %interest level of ECE


%G.
%The average GPA of the students whose GPA is higher than 3.5 and who
%selected either ECE or ME as their first choice
ece_or_me1 = find((ECE==1|ME==1)&GPA>3.5000);
                        %the row indices of students who have a GPA
                        %higher than 3.5 and selected ECE or ME
                        %as their first choice
ece_or_me1Value = GPA(ece_or_me1,:);  %the GPA value of the row
                                      %indices found in the
                                      %previous step
avgOver3point5 = mean(ece_or_me1Value); %the average GPA for the GPA
                                        %values found in the
                                        %previous step
```

FORMATTED TEXT DISPLAYS

```
%B
fprintf("The number of studnets who failed to select any school is %d.
\n", numFail);
%C
fprintf("The number of students that showed interest to only one
 school is %d.\n", numOneSelect);
%D
fprintf("The minimum GPA of a student that has interest in ECE and CE
 but not ME is %d.\n", minGPA);
%G
fprintf("The average level of interest within the students that showed
 interest to ECE is %d.\n",avgLevel);
```

```
The number of studnets who failed to select any school is 5.
The number of students that showed interest to only one school is 54.
The minimum GPA of a student that has interest in ECE and CE but not
 ME is 2.360000e+00.
The average level of interest within the students that showed interest
 to ECE is 1.434783e+00.
```

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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