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%Ramon Howe
%Section 3

%                   OVERALL: perfect solution, even using isempty() though
%                   not required. :)


%{
The purpose of this code is to give analysis of the voltage output of a
solar panel and determine weather is it suffucient
%}

clc;
clear;
close all;

fprintf('\n*voltage output of a solar panel*\n'); %**

%Ask the user how many solar panels are used
n_solar_panel=input('How many solar panel are there (whole>=3): ');

%Trap any invalid inputs
while isempty(n_solar_panel)|| n_solar_panel<3||floor(n_solar_panel)~=n_solar_panel
    n_solar_panel=input('ERROR: (whole>=3): ');
end

%ask the user how many volts the robot needs
robot_req_v=input('How many volts deos the robot need (>200 Volts): ');

%Trap any invalid inputs again
while isempty(robot_req_v)||robot_req_v<=200
    robot_req_v=input('ERROR: (>200Volts): ');
end

%Loop to run the code for the amount of solar panels indicated by the user
total_voltage=0; %My running total

for counter=1:n_solar_panel
    cell_voltage=randi([8 14]);

    solar_panel_rows=round(rand*8+2); %**

    fprintf('\nSolar panel #%d\n',counter); %**
    fprintf('One cell provides: %dVolts\n',cell_voltage);
    fprintf('\tThis panel has %d rows of cells.\n',solar_panel_rows);

    ncell_row=input('  How many cell are on each of these rows (5<=whole<10): ');

    %Calculates voltage for each cell
    panel_voltage=cell_voltage*ncell_row;

    %Stores the voltage for each panel in a vector
    database(counter)=panel_voltage; %**

    %Sum of all my voltages
    total_voltage=total_voltage+panel_voltage;
end

%Display the total voltage to the user
fprintf('\n**You have a total of %d volts when all is done.\n',total_voltage);

%Generate if statement fot determine weather the voltage supplied was
%sufficient or not

if total_voltage<robot_req_v
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    fprintf('Need more voltage!!\n');
else
    fprintf('The voltage is sufficient!\n');
end

req_vol_x=[0,n_solar_panel];
req_vol_y=[robot_req_v,robot_req_v];

%Plot the the results so the user can seee
bar(database);      %Generates a bar graph
hold on
plot(req_vol_x,req_vol_y,'--g');
title('Voltage of each panel')
xlabel('Panel Number');
ylabel('Volts');
legend('Each Panel','Voltage required');

%Above are the various commands for labelling the graph
%{
*HI*
How many solar panel are there (whole>=3):
ERROR: (whole>=3): 0
ERROR: (whole>=3): -1
ERROR: (whole>=3): 3.5
ERROR: (whole>=3): 7
How many volts deos the robot need (>200 Volts): -100
ERROR: (>200Volts):
ERROR: (>200Volts): 0
ERROR: (>200Volts): 250

Solar panel #1
One cell provides: 14Volts
    This panel has 6 rows of cells.
  How many cell are on each of these rows (5<=whole<10): 5

Solar panel #2
One cell provides: 13Volts
    This panel has 3 rows of cells.
  How many cell are on each of these rows (5<=whole<10): 6

Solar panel #3
One cell provides: 10Volts
    This panel has 9 rows of cells.
  How many cell are on each of these rows (5<=whole<10): 7

Solar panel #4
One cell provides: 13Volts
    This panel has 10 rows of cells.
  How many cell are on each of these rows (5<=whole<10): 9

Solar panel #5
One cell provides: 12Volts
    This panel has 2 rows of cells.
  How many cell are on each of these rows (5<=whole<10): 15

Solar panel #6
One cell provides: 13Volts
    This panel has 9 rows of cells.
  How many cell are on each of these rows (5<=whole<10): 9

Solar panel #7
One cell provides: 12Volts
    This panel has 8 rows of cells.
  How many cell are on each of these rows (5<=whole<10): 7
```

```
**You have a total of 716 volts when all is done.
The voltage is sufficient!
%}
```