Mech103 - Lab 06

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Created by: Erick Valentin Created on: 3/12/21 Last Modified: 3/18/21 Description: This script performes the calculations required to complete the excercises labeled int the Lab06.

Arduino

Last Modified: 3/18/21

```
% Clear Workspace.
clear
%Clear Command Window.
clc

% Name Arduino
a = arduino('com3','Uno');

ledPin = 'D13'; % Establish used pin on board.

%Lets Blink an LED.

%Blink LED by writig 1 ("ON") to a pin, waiting, then turning it off.
% Blink LED 4 times.

writeDigitalPin(a,ledPin, 0);
pause(0.25)
writeDigitalPin(a, ledPin, 1);
pause(0.25)
writeDigitalPin(a,ledPin, 0);
pause(0.25)
writeDigitalPin(a, ledPin, 1);
pause(0.25)
writeDigitalPin(a,ledPin, 0);
pause(0.25)
writeDigitalPin(a, ledPin, 1);
pause(0.25)
writeDigitalPin(a,ledPin, 0);
pause(0.25)
writeDigitalPin(a, ledPin, 1);
pause(0.25)
writeDigitalPin(a,ledPin, 0);

disp('Done')
```

Done

Sending Messages the Old Fashioned Way.

Last Modified: 3/18/21 Matlab script that performs the following functions - A sepparate variable for eah of the letters H, E, L, and P, containing the correct sequence of 0's and 1's for morse code. - Modify the arrays using a sequence of array indeces so that the letter variables conform to the Morse Code specification in the diagram. - A variable called "message" thatcontains the concatation of the individual letters and letter separations.

```
% Clear Workspace.
clear
%Clear Command Window.
clc

% Name Arduino
a = arduino('com3','Uno');

ledPin = 'D13'; % Establish used pin on board.

% Given Letter Arrays.
H = [1,0,0,1,1,0,1];
E = [0];
L = [1,0,1,1,0,1,0,1,];
P = [1,0,0,0,0,1,1,1,0];
S = [0, 0]; % Space between letters.
% Message Letter Array correction.
H(3)=1;
H(4)=0;
E(1)=1;
P(3)=1;
P(4)=1;
P(8)=0;
P(9)=1;

% Message.
message = [H E L P];
```

Cantilever Analysis

Last Modified: 3/18/21

```
%Write a MATLAB script and submit it online to Matlab Grader that
 meets
%the following requirements:
%   -A variable called sixCellLocations that is an array containing
%    x-locations of the centers of the 6 cellsin the diagram above.
 Use the
%    linspace function to generate the array.
%   -A variable called dx600 that contains the dx, the width of each
 cell
%    when we have 600 evenlyspaced cells across the L=1.2m geometry.
%   -A variable called sixHundredCellLocations that is an array
 containing
%    the x-locations of the centersof the 600 cells. Instead of using
%    linspace, use the other array generation method mentioned by your
%    textbook.

% Clear Workspace.
clear
%Clear Command Window.
clc

dx6 = linspace(0,1.2,13); % Divides the beam length into 13 segments,
 including the initial x value of 0 (zero).
sixCellLocations = dx6([2,4,6,8,10,12]) ; % Creates an array with th
 center values between segments of cells.

dx600 = linspace(0,1.2,601); % Finds the value of "dx" for 600
 segments.
sixHundredCellLocations = [0.001:0.002:1.199];
```

Steam Data Overload.

Last Modified: 3/18/21 This script creates matrices out of the getSteamTable file to organize it.

```
% Clear Workspace.
clear
%Clear Command Window.
clc
% Call out Data Table.
[head,data] = getSteamTable();

% Contains data rows 83 and greater, and all columns.
hotProperties = data(58:end,:);

% Contains data rows 13-24 and columns with pressure,temperature,
 specific_volume_liquid, internal_energy_liquid, enthalpy_liquid, and
 entropy_liquid (inthat order).
warmLiquid = data(13:24,[1,2,3,5,7,10]);

% Contains the transposed values of the first 5 data rows and only the
 columns for pressure and temperature.
transposedProperties = data(1:5,1:2)';
```

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