```
SOC_LUT = [0 ,0.1, 0.25, 0.5, 0.75, 0.9, 1]';
Temperature_LUT = [293.15, 393.15];

%% Em Branch Properties

% Battery capacity
Capacity_LUT = [27.6250, 31.892]; %Ampere*hours

% Em open-circuit voltage vs SOC rows and T columns
Em_LUT = [
    2.9624   4.2
    3.4558   3.9
    3.4558   3.6
    3.7146   3
    3.8337   3.4
    3.4558   3.2
    3.4558   4.2 ]; %Volts

%% Terminal Resistance Properties

% R0 resistance vs SOC rows and T columns
R0_LUT = [
        0.1376  0.142
        0.14    0.212
        0.1701  0.121
        0.1623  0.32
        0.3899  0.22
        0.2     0.11
        0.3     0.11 ]; %Ohms

%% RC Branch 1 Properties

% R1 Resistance vs SOC rows and T columns
R1_LUT = [
        0.0233  0.033
        0.0089  0.098
        0.0153  0.0998
        0.0045  0.008
        0.2471  0.007
        0.0058  0.006
        0.0065  0.00998]; %Ohms

% C1 Capacitance vs SOC rows and T columns
C1_LUT = [
    0.00032 0.00032
    0.00032 0.00099
    0.00078 0.00065
    0.00098 0.00065
    0.00067 0.00032
    0.00009 0.00034
    0.00045 0.00034]; %Farads
```

```
%% Thermal Properties

% Cell dimensions and sizes
cell_thickness = 0.0084; %m
cell_width = 0.215; %m
cell_height = 0.220; %m

% Cell surface area
cell_area = 2 * (...
    cell_thickness * cell_width +...
    cell_thickness * cell_height +...
    cell_width * cell_height); %m^2

% Cell volume
cell_volume = cell_thickness * cell_width * cell_height; %m^3

% Cell mass
cell_mass = 1; %kg

% Volumetric heat capacity (assumes uniform heat capacity throughout the cell)
cell_rho_Cp = 2.04E6; %J/m3/K

% Specific Heat
cell_Cp_heat = cell_rho_Cp * cell_volume; %J/kg/K

h_conv = 5; %W/m^2/K


%% Initial Conditions

% Charge deficit
Qe_init = 15.6845; %Ampere*hours

% Ambient temperature
T_init = 20 + 273.15; %K
```