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STUDENT DETAILS:

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```

Import data from spreadsheet

Script for importing data from the following spreadsheet:

```
Workbook: C:\Users\Pavilion\Downloads\Telegram Desktop\28BusLineData.xlsx  
Worksheet: Sheet1
```

Auto-generated by MATLAB on 31-Oct-2022 14:39:44

Set up the Import Options and import the data

```
opts = spreadsheetImportOptions("NumVariables", 4);  
  
% Specify sheet and range  
opts.Sheet = "Sheet1";  
opts.DataRange = "A2:D34";  
  
% Specify column names and types  
opts.VariableNames = ["BusFrom", "BusTo", "R", "X"];  
opts.VariableTypes = ["double", "double", "double", "double"];  
  
% Import the data  
BusLineData = readtable("C:\Users\Pavilion\Downloads\Telegram Desktop\28BusLineData.xlsx", opts, "UseExcel", false);
```

Convert to output type

```
BusLineData = table2array(BusLineData);
```

CODE: YBus28.m

```
f = BusLineData(:, 1); % first vector column of the bus number (e.g bus from 1 -...)  
t = BusLineData(:, 2); % second vector column of the bus number(e.g bus to ... - 2)  
r = BusLineData(:, 3); % third vector column of the bus number  
x = BusLineData(:, 4); % fourth vector column of the bus number  
nL = length(f); % length of row (branches)  
nBUS_length_column = max(max(f), max(t)); % no of buses; note: branches X bus  
% Z = R+jX  
  
Z = r + 1j*x; %1j and j are the same
```

```

y = 1./Z;
Y_bus = zeros(nL, nBUS_length_column);
%initialize Y_bus to Z;
for k = 1:nL
    Y_bus(f(k), t(k)) = Y_bus(f(k),t(k))-y(k); % use of f(index) for indexing
    Y_bus(t(k), f(k)) = Y_bus(f(k),t(k));
end

for n = 1:nBUS_length_column
    for k = 1:nL
        if f(k) == n
            Y_bus(n,n) = Y_bus(n,n) + y(k);
        else
            if t(k) == n
                Y_bus(n,n) = Y_bus(n,n) + y(k);
            end
        end
    end
end
Y_bus

```

$$Y_{bus} =$$

1.0e+02 *

Columns 1 through 4

[illegible]

Columns 5 through 8

Columns 9 through 12

Columns 21 through 24

Columns 25 through 28

0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
-0.0789 + 0.2711i	-0.1409 + 0.1690i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	-0.0710 + 0.5281i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
-0.0177 + 0.1324i	0.0000 + 0.0000i	-0.0916 + 0.7076i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
-0.0187 + 0.1414i	-0.1128 + 0.8322i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	-0.0135 + 0.1412i

0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	-0.0393 + 0.3379i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	-0.0318 + 0.2453i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.1153 - 0.5450i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.2538 - 1.0012i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.1626 - 1.2357i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0846 - 0.7243i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i
0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i	0.0000 + 0.0000i