Introduction

This MATLAB based fault study tool can get user inputs and perform AC fault studies. The user will be asked to provide fault data. Then the tool will run the simulation and provide the fault current and bus voltages of each bus for each phase.

Step 1: Go to the tool folder and open and run the code named 'Main.m'. It will ask for fault information.

The following questions will be asked:

1.   How many buses are in the system?

2.   is the fault at a bus (0) or in the line (1) ?

3.   if you have provided location == 0 (bus)
      1.   What is the faulty bus? ... ... ');

4.   If you provided '1' (line) for question 2
      1.   Enter two numbers (connected busses) separated by space (enter small numer first):

      2.   Enter how far (in %) the fault is from first bus:

5.   What is the fault voltage ? ... ... ');

6.   What is the fault impedance? ... ... ');

7.   'What is the fault type? ...answer should be a 4 digit number faulted phase will be 1 nonfaulted phase will be 0. The digit format is ABCG(Phases A,B,C & Ground). EG.: 3Phase to Ground:- 1111 , Phase B to Ground fault:-0101 ', 's');

Step 2: Once you have answered these questions a GUI will popup as shown in the below figure. Here you can enter the data.

From Bus	To Bus	Connection type	zero seq X	Pos. seq X	N

Add Row

Save Data

Type of component	Connection type		Id
Transformer	delta	delta	31
	delta	Grounded Wye	32
	delta	Ungrounded Wye	33
	Grounded Wye	delta	34
	Ungrounded Wye	Ungrounded Wye	35
	Grounded Wye	Grounded Wye	36
Generator	Grounded		21
	Ungrounded		22
Line	-		1

2.1 the first column and second column ask about, "from bus and to bus info". These need to be fill with corresponding values for transmission lines. The connection type would be 1 for lines. For the transformers also from bus and to bus info needs to be updated. The connection type for each transformer can be filled as in the below figure.

Type of component	Connection type		Id
Transformer	delta	delta	31
	delta	Grounded Wye	32
	delta	Ungrounded Wye	33
	Grounded Wye	delta	34
	Ungrounded Wye	Ungrounded Wye	35
	Grounded Wye	Grounded Wye	36
Generator	Grounded		21
	Ungrounded		22
Line	-		1

Step 3: Output

Once you have given all the necessary above data then the final answer will be given in the MATLAB command window.