

How To Use SolvNonDif.m

1. Verify that SolvNonDif.m is the appropriate template file to use
 - a. Equations of the following form are to be solved for z:

$$\begin{aligned}0 &= f_1(z_1, z_2, \dots, z_n) \\0 &= f_2(z_1, z_2, \dots, z_n) \\&\vdots \\0 &= f_n(z_1, z_2, \dots, z_n)\end{aligned}$$

2. Save a copy of SolvNonDif.m as *newname.m* in the current MATLAB working directory or in a directory that is in the MATLAB search path ("*newname*" should be some meaningful file name)
3. Change the function declaration statement to match the filename from step 2
 - a. from: `function z = SolvNonDif`
 - b. to: `function z = newname`
4. Find the comment indicating the location of the first required file modification
 - a. Replace the comment that begins as follows
 - i. `% EDIT HERE (Required modification 1 of 4)`
 - b. With statements defining variables and assigning their values for each constant that appears in the problem being solved
5. Find the comment indicating the location of the second required file modification and change the lines that follows the comment
 - a. from:
 - i.

```
f = [  
    % evaluate f1(z1, z2, z3, ..., zn) here  
    % evaluate f2(z1, z2, z3, ..., zn) here  
    % and so on through fn, one per line  
];
```
 - b. so that the first line within the square brackets evaluates the function f_1 in step 1.a, the second line evaluates the function f_2 in step 1.a, and so on.
 - i. notice that values of the independent variables are available in a vector named z and all the constants entered in step 4 are available at this point
6. Find the comment indicating the location of the third required file modification and change the line that follows the comment
 - a. from:
 - i.

```
z_guess = [  
    % insert/calculate guess for z(1) here
```

```
    % insert/calculate guess for z(2) here  
    % and so on, one z(i) per line  
];
```

- b. so that the first line within the square brackets calculates or provides a guess for the value of z_1 that solves the model equations in step 1.a, the second line calculates or provides a guess for the value of z_2 , and so on.
 - i. notice that all the constants entered in step 4 are available at this point
7. Find the comment indicating the location of the fourth and final required file modification and change the lines that follows the comment
 - a. from:

```
    % Enter code to calculate any other desired quantities using the  
    % results contained in z. (Alternatively, z will be returned when this  
    % template file terminates; other quantities can then be calculated  
    % at the MATLAB command prompt using the returned values
```

 - b. so that any additionally needed quantities that depend upon the unknowns are calculated
 - i. Do not use semicolons at the ends of these statements; if you do, they will not appear in the output
8. Save the modified version of newname.m (where newname is the filename chosen in step 2)
9. Execute the file by typing the following at the MATLAB command prompt (again using “newname” to represent the filename chosen in step 2): $z = \text{newname}$
10. The following will appear in the MATLAB command window
 - a. a message indicating whether the equations were successfully solved
 - i. the remaining output will only be valid if this is true
 - b. the values of the functions f evaluated using the solution obtained
 - i. these values should be very close to zero for a good solution
 - c. a set of values for the unknowns, z , that satisfy the equations of step 1.a
 - d. results of the code entered in step 7.b
11. The following will be returned and available within the MATLAB workspace
 - i. z (column vector) from step 10.d
12. To search for a different solution to the equations in step 1.a, repeat from step 6 using a significantly different guess