



Specifications are as follows:

1. Borders have a constant temperature:

- a) West temperature, TW (100 C),
- b) South temperature, TS (50 C),
- c) East temperature, TE (25 C), and
- d) North temperature, TN (0 C)

2. Corners are the average of the neighboring border temperatures. For instance: North East Temperature,  $TNE=(TN+TE)/2=(0+25)/2$   
Also note that the corner North East Temperature (TNE), and the other three must be computed within the code

3. Initialize interior nodes with a random value between [0,100]. Initialization can be done in many different sequences, for this assignment it must be done row by row, left to right, from top to bottom. Please note that interior nodes have indices (ii,jj) within the following range:  $ii=2,3,\dots,13$ , ( $i_{max}-1$ ) and  $jj=2,3,\dots,8$ , ( $j_{max}-1$ )

MATLAB have a random function named rand. The rand function must be bounded within the expected number of results (<http://www.mathworks.com/help/matlab/math/floating-point-numbers-within-specific-range.html>)

4. Print the T array as the table above. Use a print command as: `%7.1f` where 7 is the field width and .1 is the number of desired decimals for each array element value.

5.- After the program is running on the Command Window. Store the resulting T values on an external file named To.m. Add the following instructions to your code:

```
FID=fopen('To.m', 'w');    % After the clc, clear instructions at the top of the code
                          % 'w' is the file external 'mode' operation: stand for 'writing'
                          % FID is a function handler to locate the file To.m
```

% for each fprintf add the argument FID, e.g.,

```
fprintf(FID, '%7.1f %7.1f ..... \n', list of variables <e.g.> To(i,j)); % writes to FID pointed file: To.m
```

% Need to close the file at the end of the code:

```
fclose(FID) % closes the FID pointed file: To.m
```

6. Hint: For a beginner the best way to success in this exercise will be to implement programming structures: sequence, loops and if statements (if needed).

Hand in over the MATLAB code and the output