```
================================================================
         Steady state solution for a 2D rectangular plate
              with borders at constant temperature
                   Adimensional temperatures
================================================================
                 Author: Dickson Alves de Souza
   Based on lectures by professor Roberto Parreiras Tavares
       and book Numerical Heat Transfer and Fluid Flow
       by Suhas V. Patankar (1980)

             Federal University of Minas Gerais
                   September 21st, 2017
================================================================
                      Input parameters:


Lenght in X direction:      2.500000
Lenght in Y direction:      2.500000
Nodes in X direction:              6
Nodes in Y direction:              6
Temperature T1 (left, right and bottom borders):  1200.000000
Temperature T2 (top border):                       700.000000


SOLUTION of LINEAR SYSTEM: Comparison of four methods
1 - Jacobi Method
2 - Gauss-Seidel Method
3 - TDMA method without ADI
4 - TDMA method with ADI


    No relaxation applied to solution.
Tolerance: 0.100000E-04

Iterations -  Jacobi Method:                 82
Iterations -  Gauss-Seidel Method:           44
Iterations -  TDMA method without ADI:       26
Iterations -  TDMA method with ADI:          33


========================================================================================
                              Calculation Results
                              Adimensional Values
```

====================================================================================================

| I | J | X/L | Y/W | T_Jac | T_Gaus_Sei | T_TDMA | T_TDMA_ADI | Exact Sol |
|---|---|------|------|-------|------------|--------|------------|-----------|
| 0 | 0 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 0 | 1 | 0.000000 | 0.200000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 0 | 2 | 0.000000 | 0.400000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 0 | 3 | 0.000000 | 0.600000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 0 | 4 | 0.000000 | 0.800000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 0 | 5 | 0.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |
| 1 | 0 | 0.200000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 1 | 1 | 0.200000 | 0.200000 | 0.045455 | 0.045455 | 0.045455 | 0.045455 | 0.043659 |
| 1 | 2 | 0.200000 | 0.400000 | 0.109849 | 0.109849 | 0.109848 | 0.109848 | 0.106035 |
| 1 | 3 | 0.200000 | 0.600000 | 0.223485 | 0.223485 | 0.223485 | 0.223485 | 0.217757 |
| 1 | 4 | 0.200000 | 0.800000 | 0.454545 | 0.454545 | 0.454545 | 0.454545 | 0.456341 |
| 1 | 5 | 0.200000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |
| 2 | 0 | 0.400000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 1 | 0.400000 | 0.200000 | 0.071970 | 0.071970 | 0.071970 | 0.071970 | 0.070173 |
| 2 | 2 | 0.400000 | 0.400000 | 0.170455 | 0.170455 | 0.170455 | 0.170455 | 0.168412 |
| 2 | 3 | 0.400000 | 0.600000 | 0.329546 | 0.329545 | 0.329545 | 0.329545 | 0.331588 |
| 2 | 4 | 0.400000 | 0.800000 | 0.594697 | 0.594697 | 0.594697 | 0.594697 | 0.606035 |
| 2 | 5 | 0.400000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |
| 3 | 0 | 0.600000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 3 | 1 | 0.600000 | 0.200000 | 0.071970 | 0.071970 | 0.071970 | 0.071970 | 0.070173 |
| 3 | 2 | 0.600000 | 0.400000 | 0.170455 | 0.170455 | 0.170455 | 0.170455 | 0.168412 |
| 3 | 3 | 0.600000 | 0.600000 | 0.329546 | 0.329545 | 0.329545 | 0.329545 | 0.331588 |
| 3 | 4 | 0.600000 | 0.800000 | 0.594697 | 0.594697 | 0.594697 | 0.594697 | 0.606035 |
| 3 | 5 | 0.600000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |
| 4 | 0 | 0.800000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 4 | 1 | 0.800000 | 0.200000 | 0.045455 | 0.045455 | 0.045455 | 0.045455 | 0.043659 |
| 4 | 2 | 0.800000 | 0.400000 | 0.109849 | 0.109848 | 0.109848 | 0.109848 | 0.106035 |
| 4 | 3 | 0.800000 | 0.600000 | 0.223485 | 0.223485 | 0.223485 | 0.223485 | 0.217757 |
| 4 | 4 | 0.800000 | 0.800000 | 0.454545 | 0.454545 | 0.454545 | 0.454545 | 0.456341 |
| 4 | 5 | 0.800000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |
| 5 | 0 | 1.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 1 | 1.000000 | 0.200000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 2 | 1.000000 | 0.400000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 3 | 1.000000 | 0.600000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 4 | 1.000000 | 0.800000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 5 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 | 1.000000 |