

README

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主程序在"hw7.m"中, hw6.m分别调用了"Gauss_Seidel.m"和"SOR.m", 进行计算

Gauss_Seidel

Gauss_Seidel迭代步数是22次, 结果为

```
x(k) = (-0.2892337551029794, 0.3454357631085859, -0.7128117054250090,  
-0.2206084917720635, -0.4304004137150014, 0.1543087743636601, -0.0578228480265902,  
0.2010538992340034, 0.2902286680179116)
```

SOR

SOR最佳迭代步数为 13次, 在 $w = 1.1800$ 处取得

```
x(k) = (-0.2892338161500276, 0.3454357155035079, -0.7128117311165767,  
-0.2206085103819872, -0.4304004327539567, 0.1543087396965672, -0.0578228733687417,  
0.2010538951436372, 0.2902286619983028)
```

其中程序内部有对不收敛迭代的处理, 所以会有冗余输出

输出结果为:

```
Gauss_Seidel  
GS step = 22  
x(k) = (-0.2892337551029794, 0.3454357631085859, -0.7128117054250090,  
-0.2206084917720635, -0.4304004137150014, 0.1543087743636601,  
-0.0578228480265902, 0.2010538992340034, 0.2902286680179116),  
  
SOR  
w = 0.0200 Can not solve the linear equation Ax = b by SOR method.  
w = 0.0400 Can not solve the linear equation Ax = b by SOR method.  
w = 0.0600 Can not solve the linear equation Ax = b by SOR method.  
w = 0.0800 Can not solve the linear equation Ax = b by SOR method.  
w = 0.1000 Can not solve the linear equation Ax = b by SOR method.  
w = 0.1200 Can not solve the linear equation Ax = b by SOR method.  
w = 0.1400 Can not solve the linear equation Ax = b by SOR method.  
w = 0.1600 Can not solve the linear equation Ax = b by SOR method.  
w = 0.1800 Can not solve the linear equation Ax = b by SOR method.  
w = 0.2000 Can not solve the linear equation Ax = b by SOR method.  
w = 0.2200 Can not solve the linear equation Ax = b by SOR method.  
w = 0.2400 Can not solve the linear equation Ax = b by SOR method.  
w = 0.2600 Can not solve the linear equation Ax = b by SOR method.  
w = 0.2800 Can not solve the linear equation Ax = b by SOR method.  
w = 0.3000 Can not solve the linear equation Ax = b by SOR method.  
w = 0.3200 Can not solve the linear equation Ax = b by SOR method.  
w = 1.8000 Can not solve the linear equation Ax = b by SOR method.  
w = 1.8200 Can not solve the linear equation Ax = b by SOR method.  
w = 1.8400 Can not solve the linear equation Ax = b by SOR method.  
w = 1.8600 Can not solve the linear equation Ax = b by SOR method.  
w = 1.8800 Can not solve the linear equation Ax = b by SOR method.
```

```
w = 1.9000 Can not solve the linear equation Ax = b by SOR method.  
w = 1.9200 Can not solve the linear equation Ax = b by SOR method.  
w = 1.9400 Can not solve the linear equation Ax = b by SOR method.  
w = 1.9600 Can not solve the linear equation Ax = b by SOR method.  
w = 1.9800 Can not solve the linear equation Ax = b by SOR method.  
SOR min step = 13 and w = 1.1800  
x(k) = (-0.2892338161500276, 0.3454357155035079, -0.7128117311165767,  
-0.2206085103819872, -0.4304004327539567, 0.1543087396965672,  
-0.0578228733687417, 0.2010538951436372, 0.2902286619983028), >>
```