

```
1  # coding: utf-8
2
3  print 'EXPLICIT'
4  print
5  '===== '
6
7  n = 10
8  m = 400
9  tau = .5/m
10 h = 1./n
11 sigma = tau / h**2
12
13 def phi(x):
14     return 1.0 / (1 + x**2)**2
15
16 u_cur = [phi(i*h) for i in range(n+1)]
17 u_up = [0 for dummy_idx in range(n+1)]
18
19 for k in range(m):
20     for i in range(1,n):
21         u_up[i] = sigma * (u_cur[i+1] + u_cur[i-1]) + (1 - 2*sigma - tau) * u_cur[i]
22     u_up[0] = (4 * u_up[1] - u_up[2]) / 3.0
23     u_up[n] = (4 * u_up[n-1] - u_up[n-2]) / 3.0
24
25     u_cur = [u_up[i] for i in range(n+1)]
26
27     if ((k+1) % (m / 10) == 0):
28         print 'the ', k+1, "th layer is: ", u_cur
29         print
30
31 print
32 '===== '
```

EXPLICIT

the 40 'th layer is: [0.813092694137338, 0.8036013161763729, 0.7751271822934778, 0.730553025387067, 0.6743403156696959, 0.6120403137618626, 0.5497488176009196, 0.49355655968031176, 0.44900417404250925, 0.4205449797691763, 0.41105858167806536]

the 80 'th layer is: [0.6983688958359977, 0.6928985534352781, 0.6764875262331194, 0.6507584179834803, 0.6182545590822693, 0.582188094664413, 0.5461225035049017, 0.5136209191640586, 0.48789458802758034, 0.47148574396676324, 0.4660161292798242]

the 120 'th layer is: [0.6209538642899758, 0.6177911497559552, 0.6083030061538934, 0.5934270532641241, 0.5746333186137671, 0.5537789520396574, 0.5329246948005247, 0.5141312449808855, 0.4992556399436722, 0.4897677698562286, 0.48660514649374736]

the 160 'th layer is: [0.5655958324755122, 0.5637671274807181, 0.5582810124963359, 0.5496796046795621, 0.5388128611148765, 0.526754587477183, 0.5146963275339951, 0.5038296196451493, 0.49522825539789606, 0.4897421746720103, 0.487913481096715]

the 200 'th layer is: [0.5235073555781395, 0.5224499746542846, 0.5192778318827196, 0.514304384101996, 0.5080210847972195, 0.5010488206628508, 0.4940765582437579, 0.48779326340748136, 0.4828198210839637, 0.4796476826033725, 0.478590303109842]

the 240 'th layer is: [0.48958332246982555, 0.4889719299397809, 0.48713775234964696, 0.4842620345665719, 0.48062894157389335, 0.47659747858639256, 0.4725660158137348, 0.4689329233807486, 0.46605720628120406, 0.46422302922852676, 0.46361163687763435]

the 280 'th layer is: [0.4608479679923188, 0.46049445208089823, 0.4594339043466364, 0.45777112312974333, 0.4556704166484196, 0.4533393668298813, 0.4510083170382526, 0.44890761062703205, 0.44724482949575317, 0.4461842818288094, 0.4458307659398282]

the 320 'th layer is: [0.43555783920580754, 0.43535343122775233, 0.43474020729358664, 0.43377876330447956, 0.43256410462710204, 0.4312162581102912, 0.4298684115968508, 0.4286537529282539, 0.4276923089498703, 0.4270790850241365, 0.42687467704889187]

the 360 'th layer is: [0.41268312886221326, 0.4125649372307857, 0.4122103623365029, 0.4116544415999664, 0.41095210848929475, 0.410172764253549, 0.40939342001822526, 0.40869108690865347, 0.40813516617346013, 0.4077805912802335, 0.40766239964915796]

the 400 'th layer is: [0.39160772865766313, 0.3915393885569911, 0.39133436825497514, 0.3910129268919105, 0.3906068277888235, 0.39015619974573335, 0.38970557170269604, 0.38929947259974684, 0.3889780312368503, 0.38877301093496663, 0.38870467083433874]

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