Subject: Code
From: "Kuckuk, Sebastian" <sebastian.kuckuk@fau.de>
Date: 29.08.2017 14:40
To: Theresa Pollinger <theresa.pollinger@fau.de>

Layer 2:

```
// for non-mg:
//  delete @finest; delete everything with @(all but finest) modifier

Domain global< [ 0, 0 ] to [ 1, 1 ] >

Field Solution with Real on Node of global = 0.0

Field Solution@finest on boundary = vf_boundaryCoord_x ** 2 - vf_boundaryCoord_y ** 2
Field Solution@(all but finest) on boundary = 0.0

Field RHS with Real on Node of global = 0.0

Operator Laplace from kron ( Laplace_1D, Laplace_1D )

Operator Laplace_1D from Stencil {
        [ 0] =>  2.0 / ( vf_gridWidth_x ** 2 )
        [-1] => -1.0 / ( vf_gridWidth_x ** 2 )
        [ 1] => -1.0 / ( vf_gridWidth_x ** 2 )


Equation solEq@finest {
        Laplace * Solution == RHS
}
Equation solEq@(all but finest) {
        Laplace * Solution == 0.0
}

// Alternative für Laplace:

Operator Laplace from Stencil {
        [ 0,  0] =>  2.0 / ( vf_gridWidth_x ** 2 ) + 2.0 / ( vf_gridWidth_y ** 2 )
        [-1,  0] => -1.0 / ( vf_gridWidth_x ** 2 )
        [ 1,  0] => -1.0 / ( vf_gridWidth_x ** 2 )
        [ 0, -1] => -1.0 / ( vf_gridWidth_y ** 2 )
        [ 0,  1] => -1.0 / ( vf_gridWidth_y ** 2 )
}
```

Layer 3:

```
generate solver for Solution in solEq
```

Layer 4:

```
Function Application ( ) : Unit {
        startTimer ( 'setup' )
```

```
        initGlobals ( )
        initDomain ( )
        initFieldsWithZero ( )
        initGeometry ( )
        InitFields ( )

        stopTimer ( 'setup' )

        startTimer ( 'solve' )

        Solve@finest ( )

        stopTimer ( 'solve' )

        printAllTimers ( )

        destroyGlobals ( )
}
```

Knowledge

```
dimensionality              = 2

minLevel                    = 1
maxLevel                    = 7

discr_type                  = "FD"

l3tmp_generateL4            = false

experimental_layerExtension    = true
```

Settings

```
user             = "Guest"

basePathPrefix     = "./"
l1file           = "Configs\Sebastian\ExaStokes_2D.exa1"
l2file           = "Configs\Sebastian\ExaStokes_2D.exa2"
l3file           = "Configs\Sebastian\ExaStokes_2D.exa3"
l4file           = "Configs\Sebastian\ExaStokes_2D.exa4"

outputPath         = "generated/"

buildfileGenerators = { "MakefileGenerator" }
```

Platform

```
targetOS                          = "Linux"
targetCompiler                    = "GCC"
targetCompilerVersion             = 5
targetCompilerVersionMinor        = 4

simd_instructionSet               = "AVX"
```

LG, Sebastian

Sebastian Kuckuk, M. Sc.
Friedrich-Alexander-Universität Erlangen-Nürnberg, Lehrstuhl für Informatik 10 - Systemsimulation (LSS)
Cauerstraße 11
91058 Erlangen, GERMANY

E-Mail: sebastian.kuckuk@fau.de
Phone: +49 9131 85 67294
Internet: www10.cs.fau.de/~kuckuk/
