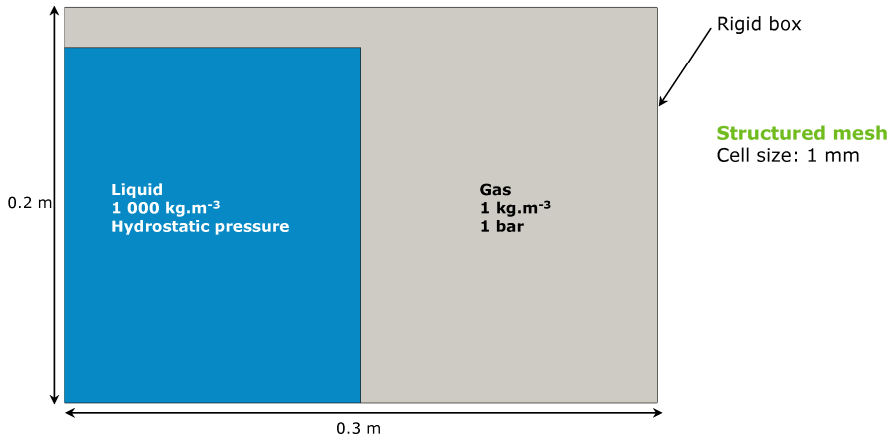
# Exercise 8 – Sloshing under gravity loading

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Geometric data:
Square region occupied by liquid, falls down by gravity within a rigid container. The mesh is made of 160 x 200 elements.
Boundary conditions:
Rigid boundary.
Loading conditions:
Gravity.
Materials
The various fluids are modelled by the ADCR material model: this material models a mixture of gases and liquids.

**SLO01**
This solution uses a coarse mesh without anti-diffusion.
The mesh generation file is:

```
opti echo 1;
opti dime 2 elem qua4;
opti sauv form 'slo01.msh';
opti trac psc ftra 'slo01_mesh.ps';
*
p0 = 0 0;
p1 = 2 0;
p2 = 2 1.6;
p3 = 0 1.6;
*
nx = 200;
ny = 160;
*
c1 = p0 d nx p1;
c2 = p1 d ny p2;
c3 = p2 d nx p3;
c4 = p3 d ny p0;
*
flui = dall c1 c2 c3 c4 plan;
*
blox = c2 et c4;
bloy = c1 et c3;
*
mesh = flui et blox et bloy;
tass mesh noop;
sauv form mesh;
*
trac qual mesh;
*
fin;
```

The input file is:

```
SLO01
ECHO
!CONV win
CAST mesh
DPLA EULE
GEOM CAR1 flui TERM
COMP GROU 2 'liqu' LECT flui TERM COND BOX X0 0 Y0 0 DX 1 DY 1.4
          'gazz' LECT flui DIFF liqu TERM
     COUL bleu LECT liqu TERM
          turq LECT gazz TERM
MATE ADCR RONA 1000. CNA 1500. PNA 1.E5 PSAT 1.E4 ROSAT 0.1
          ROBU 1. GBU 1.4 PBU 1.E5 NBU 1.4
          ROAR 1. GAR 1.4 PARG 1.E5 PREF 1.E5
          BETA 5E-3 PTOT 1.E5
          CAR 0. CBU 0.
          LECT liqu TERM
     ADCR RONA 1000. CNA 1500. PNA 1.E5 PSAT 1.E4 ROSAT 0.1
          ROBU 1. GBU 1.4 PBU 1.E5 NBU 1.4
          ROAR 1. GAR 1.4 PARG 1.E5 PREF 1.E5
          BETA 5E-3 PTOT 1.E5
          CAR 0. CBU 1.
          LECT gazz TERM
LINK COUP BLOQ 1 LECT blox TERM
          BLOQ 2 LECT bloy TERM
CHAR CONS GRAV 0 -9.81 LECT flui TERM
ECRI VITE TFRE 1.E-1 NOPO NOEL
          FICH ALIC TFRE 1.E-2
OPTI PAS AUTO CSTA 0.5 AMOR QUAD 4. DPLG
          LOG 1
CALC TINI 0. TFIN 5.0
FIN
```

The computed densities at some selected instants are shown below: