

test

September 22, 2026

```
[1]: import sys  
  
sys.version
```

```
[1]: '3.14.0 (main, Oct 28 2025, 12:13:17) [Clang 20.1.4 ]'
```

```
[2]: import numpy  
  
numpy.__version__
```

```
[2]: '2.5.3'
```

```
[3]: import scipy  
  
scipy.__version__
```

```
[3]: '1.18.1'
```

```
[4]: import gmsh  
  
gmsh.__version__
```

```
[4]: '4.15.2'
```

```
[5]: import matplotlib  
  
matplotlib.__version__
```

```
[5]: '3.11.2'
```

```
[6]: import matplotlib.pyplot as plt  
  
import src  
  
mesh = src.rectangle((0, 0), (1, 1), 0.5)  
mesh.print_info()  
  
_, ax = plt.subplots(figsize=(6, 4), layout="constrained")
```

```

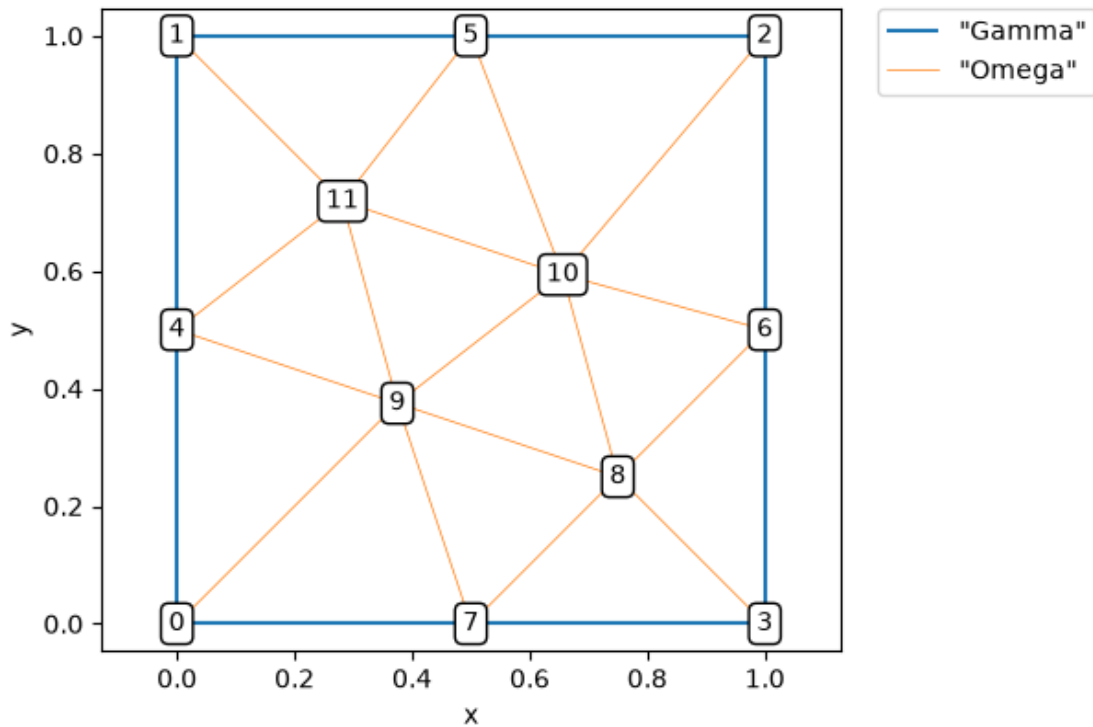
ax.axis("equal")
ax.set_xlabel("x")
ax.set_ylabel("y")
src.plot2d_mesh(ax, mesh, show_nodes_indices=True)
plt.show()

```

Info : Increasing process stack size (8192 kB < 16 MB)
nodes: 12 nodes with 2 coordinates
domains:

"Gamma": line, 8 elements, 2 nodes per element

"Omega": triangle, 14 elements, 3 nodes per element



```
[7]: print(mesh.nb_nodes)
```

12

```
[8]: print(mesh.nodes)
```

```

[[0.    0.    ]
 [0.    1.    ]
 [1.    1.    ]
 [1.    0.    ]
 [0.    0.5   ]
 [0.5   1.    ]

```

```

[1.      0.5    ]
[0.5     0.     ]
[0.75    0.25   ]
[0.375   0.375  ]
[0.65625 0.59375]
[0.28125 0.71875]]

```

```
[9]: print(mesh.domains["Omega"]["triangle"])
```

```

[[ 5  2 10]
 [ 7  0  9]
 [ 0  4  9]
 [ 2  6 10]
 [ 4  1 11]
 [ 1  5 11]
 [ 6  3  8]
 [ 3  7  8]
 [ 5 10 11]
 [ 8  7  9]
 [ 8  9 10]
 [ 9  4 11]
 [10  9 11]
 [ 6  8 10]]

```

```
[10]: print(mesh.nb_elements("Omega", "triangle"))
```

```
14
```

```
[11]: print(mesh.domains["Gamma"]["line"])
```

```

[[0 4]
 [4 1]
 [1 5]
 [5 2]
 [2 6]
 [6 3]
 [3 7]
 [7 0]]

```

```
[12]: print(mesh.nb_elements("Gamma", "line"))
```

```
8
```

```
[13]: print(mesh.domain_node_indices("Gamma", "line"))
```

```
[7 3 6 2 5 1 4 0]
```

Question - Essayez d'expliquer avec des mots quelle est la signification des structures de données suivantes ?

- `mesh.nb_nodes`

- `mesh.nodes`
- `"Omega"`
- `mesh.domains["Omega"]["triangle"]`
- `mesh.nb_elements("Omega", "triangle")`
- `"Gamma"`
- `mesh.domains["Gamma"]["line"]`
- `mesh.nb_elements("Gamma", "line")`
- `mesh.domain_node_indices("Gamma", "line")`

À noter que les noms des structures de données du maillage définies dans les TPs Python seront différentes de celles introduites dans le cours magistral à savoir `Nbpt`, `Nbtri`, `Coorneu`, `Refneu`, `Numtri`, `Nbaretes`, `Numaretes`. Cependant, leurs significations restent les mêmes.