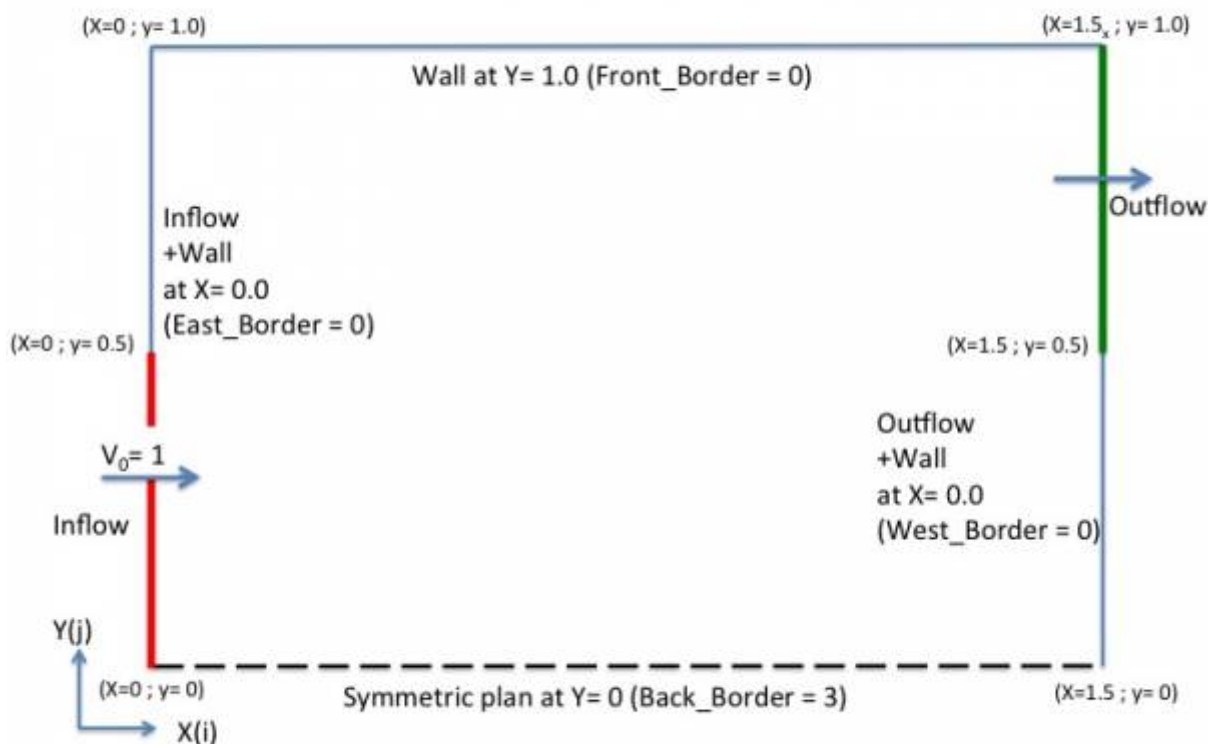


Example of inflow/outflow boundary conditions



- This example is defined for a 2D geometrical configuration. The size of the domain is 1.5×1.0 .
- An inlet is located at the down left side of the domain.
- An outlet is located at the top right side of the domain.
- A symmetrical plan is located at the bottom of the domain ($Y=0$)



- We remind the user **the domain is enclosed by default**. Wall boundary conditions are implicitly defined at the ends of the domain.
- The inlet and the outlet are built from the namelists [Inlet_Boundary_Condition](#) and [Outlet_Boundary_Condition](#), respectively. These boundary conditions replace the wall boundary conditions (default) over the areas defined in the namelists. The inlet and outlets boundary conditions are presented herein for the sake of clarity.
- The border boundary condition in accordance with the described configuration are shown just after the inlet/outlet conditions.

Inflow data



- The flow is homogeneous (no multi-species gas)
- Conditions are constant in time

```
&Inlet_Boundary_Conditions
Type_of_BC= "INLET", Direction_Normal_Plan= 1 ,
Plan_Location_Coordinate= 0.0 ,
Start_Coordinate_of_First_Span = 0.0, End_Coordinate_of_First_Span = 0.5,
Start_Coordinate_of_Second_Span= 0.0 , End_Coordinate_of_Second_Span= 0.0
,
Flow_Direction= 1 ,
Normal_Velocity_Reference_Value= 1.0 ,
Temperature_Reference_Value= 293.0 ,
Density_Reference_Value= 1.2,
Define_Velocity_profile= 0 ,
End_of_Data_Block= .true. /
```

Outflow data



- The outflow is based on the mass flowrate conservation.
- The normal pressure gradient is zero (Neumann boundary condition).

&Outlet_Boundary_Conditions

```
Type_of_BC= "OUTLET", Direction_Normal_Plan= 1 ,
Plan_Location_Coordinate= 1.5 ,
Start_Coordinate_of_First_Span = 0.5 , End_Coordinate_of_First_Span = 1.0 ,
Start_Coordinate_of_Second_Span= 0.0 , End_Coordinate_of_Second_Span= 0.0 ,
Flow_Direction= 1 ,
End_of_Data_Block= .true. /
```

Border boundary conditions



- The "BACK" end of the domain must be a symmetric plan.
- The other ends of the domain must be unchanged :
 - WEST : Inlet + Wall
 - EAST : Outlet + Wall
 - FRONT : Wall (the default boundary condition not modified)

&Border_Domain_Boundary_Conditions

```
West_Border= 0 ,  
East_Border= 0 ,  
Back_Border= 3 ,  
Front_Border= 0 /
```

From:

<https://sunfluidh.lisn.upsaclay.fr/> - Documentation du code de simulation numérique SUNFLUIDH

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