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GENERAL LAYOUT

&Version File_Version="VERSION2.0"/

FLUID PROPERTIES (DIMENSIONLESS FORM)

```
&Fluid_Properties Heat_Transfer_Flow = .true. , Reference_Density=
1.0,
                    Reference_Temperature= 1.0 ,
Reference_Dynamic_Viscosity= 0.71D-02 ,
                    Reference_Heat_Capacity= 1.0 ,
                    Prandtl = 0.71 ,
Thermal_Expansion_Coefficient= 1.0 /
```

UNIFORM INITIALIZATION OF THE VELOCITY COMPONENTS AND TEMPERATURE (DIMENSIONLESS FORM)

```
&Velocity_Initialization I_Velocity_Reference_Value = 0.0 ,
J_Velocity_Reference_Value = 0.0 , K_Velocity_Reference_Value
= 0.0 /
&Temperature_Initialization Temperature_Reference_Value = 0.5 /
```

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                GRAVITY
            (DIMENSIONLESS FORM)

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&Gravity Gravity_Enabled= .true. , Gravity_Angle_IJ= 90.0 ,
Gravity_Angle_IK= 90.0 , Reference_Gravity_Constant= 0.71/

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                DOMAIN FEATURES

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&Domain_Features Start_Coordinate_I_Direction= 0.00 ,
End_Coordinate_I_Direction= 1.00,
                    Start_Coordinate_J_Direction= 0.00 ,
End_Coordinate_J_Direction= 1.00,
                    Start_Coordinate_K_Direction= 0.00 ,
End_Coordinate_K_Direction= 0.00,
                    Cells_Number_I_Direction= 64
,Cells_Number_J_Direction=64 ,Cells_Number_K_Direction= 1,
                    Regular_Mesh= .true. /

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DEFINITION OF BOUNDARY CONDITIONS
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WALL BOUNDARY CONDITION SETUP

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Keep in mind that the domain is enclosed by default.
No new boundary conditions are defined at the ends of the domain : the
walls by default are preserved

&Heat_Wall_Boundary_Condition_Setup
    Wall_BC_DataSetName ="Set1",
    West_Heat_BC_Option = 0 , East_Heat_BC_Option = 0 ,
    Back_Heat_BC_Option = 1 , Front_Heat_BC_Option = 1 ,
    South_Heat_BC_Option = 0 , North_Heat_BC_Option = 0,
    West_Wall_BC_Value= 1.0 , East_Wall_BC_Value= 0.0 ,
    Back_Wall_BC_Value= 0.0 , Front_Wall_BC_Value= 0.0 ,
    South_Wall_BC_Value= 0.0 , North_Wall_BC_Value= 0.0 /

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BORDER BOUNDARY CONDITIONS : The walls located by default at the ends

```

of the domain remain unchanged

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```

!--- No new boundary conditions are defined at the ends of the domain : walls by default are preserved, the inlet and outlet previously are defined above)

!--- As "None" is the default setting for this namelist, it can be removed

```
&Border_Domain_Boundary_Conditions West_BC_Name= "None" , East_BC_Name=
"None" , Back_BC_Name= "None" , Front_BC_Name= "None" , North_BC_Name=
"None" , South_BC_Name= "None" /
```

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NUMERICAL METHODS

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```
&Numerical_Methods NS_NumericalMethod= "BDF2-Scheme02"
,      !--- BDF2 + 2nd order centered scheme
      MomentumConvection_Scheme="Centered-02-
Conservative" ,      !--- conservative form for solving the velocity
(momentum) equation
      Poisson_NumericalMethod="Home-SORMultigrid-
ConstantMatrixCoef" / !--- SOR + multigrid method (homemade release)
for solving the Poisson's equation with constant coefficient matrix
```

```
&HomeData_PoissonSolver SolverName="SOR" ,      !---
Successive Over-Relaxation (SOR) method based on the red-black
algorithm
```

```
      Relaxation_Coefficient= 1.7 ,      !---
Relaxation coefficient of the SOR method ( 1 <= Relaxation_Coefficient
< 2)
```

```
      Number_max_Grid= 6,      !---
Number of grid levels
```

```
      Number_max_Cycle= 1,      !---
Number of multigrid cycles
```

```
      Number_Iteration_FineToCoarseGrid= 3, !---
number of SOR iterations applied on any grid level during the
restriction step (before the coarsest grid computation)
```

```
      Number_Iteration_CoarseToFineGrid= 15, !---
number of SOR iterations applied on any grid level during the
prolongation step (after the Coarsest grid computation)
```

```
      Number_Iteration_CoarsestGrid= 15 ,      !---
number of SOR iterations applied on the coarsest grid
```

```
      Convergence_Criterion= 1.D-08 /      !---
convergence tolerance on the residu of the Poisson's equation
```

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```

SIMULATION MANAGEMENT

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The numerical time step is estimated by means of the CFL coefficient

&Simulation_Management      Restart_Parameter= 0 ,
                             Steady_Flow_Stopping_Criterion_Enabled =
.true. , Steady_Flow_Stopping_Criterion = 1.D-16,
                             Temporal_Iterations_Number = 1000000
, Final_Time = 5.D+02 ,
                             TimeStep_Type = 1 ,
                             Timestep_Min = 5.D-02
, Timestep_Max = 5.D-02 ,
                             CFL_Min      = 0.5
, CFL_Max      = 0.5 ,
                             Iterations_For_Timestep_Linear_Progress= 1,
                             Simulation_Backup_Rate      =
1000 , Simulation_Checking_Rate = 101 /

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PROBES MANAGEMENT
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      NO PROBE

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FIELDS RECORDING SETUP
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&Simulation_Management
      InstantaneousFields_RecordingReset=.false. ,
      InstantaneousFields_TimeRecordingRate= 5.0E+00 ,
      InstantaneousFields_RecordingStartTime= 0.D-00 /
&Field_Recording_Setup      Check_Special_Features=
"Heat_Driven_Cavity_Flow", Precision_On_Instantaneous_Fields= 2 /
Here, a special variable devoted to results of heat driven cavity flows
is active

&Instantaneous_Fields_Listing  Name_of_Field = "U      " /      First
velocity component
&Instantaneous_Fields_Listing  Name_of_Field = "V      " /      Second
velocity component
&Instantaneous_Fields_Listing  Name_of_Field = "T      " /
Temperature

END OF FILE

```

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