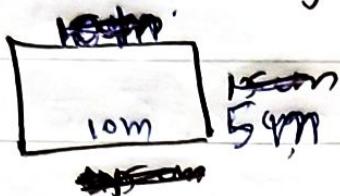


# Flow over flat plate

## Geometry:

XY plane  $\rightarrow$  units  $\rightarrow$  m

XY plane  $\rightarrow$  sketching  $\rightarrow$  rectangle



Concept  $\rightarrow$  surface from sketches  $\rightarrow$  Select Sketch  
 $\rightarrow$  Apply  $\rightarrow$  Generate

## Mesh

Mesh - Generate Mesh

Mesh  $\rightarrow$  insert  $\rightarrow$  Method

Select the geometry as one body  $\rightarrow$  Apply

Method  $\rightarrow$  Multizone Quad / Tri

Mesh  $\rightarrow$  insert  $\rightarrow$  Sizing

Select the vertical edges as geometry  $\rightarrow$  apply

Type  $\rightarrow$  Number of Divisions, no. of div = 120

Bias Type ---

Bias Factor  $\geq 10$

Reverse Bias  $\rightarrow$  select left vertical edge  $\rightarrow$  Apply

Mesh  $\rightarrow$  insert sizing

Select bottom horizontal edge as geometry  $\rightarrow$  apply

Type  $\rightarrow$  Number of Division = 120

Mesh  $\rightarrow$  Update

Create named selection for inlet, outlet, ~~and~~ wall, and symmetry.

Clear Meshing

Set up

Double Precision, Serial

Materials: - air - ~~edit~~  $\rightarrow$  Fluent

Boundary conditions  $\rightarrow$  inlet - velocity inlet

$\rightarrow$  Velocity magnitude = 0.5 m/s.

$\rightarrow$  interior surface ~~body~~

$\rightarrow$  outlet - pressure outlet

$\rightarrow$  Gauge Pressure, 0

$\rightarrow$  OK.

Outlet  $\rightarrow$  Operating conditions

Operating Pressure = 101325 Pa

Solution initialization  $\rightarrow$  Hybrid initialization  $\rightarrow$  Initialization

Run Calculation  $\rightarrow$  No. of iterations 50,  
Refining interval 1

$\rightarrow$  Calculate

Close setup

### Results

Tick everything below 'surface body'  
Contour  $\rightarrow$  ~~ok~~ rename to velocity  $\rightarrow$  ok

Locations  $\rightarrow$  symmetry 1

variable  $\rightarrow$  velocity

$\rightarrow$  Dpby.

Streamline  $\rightarrow$  OK

Domains  $\rightarrow$  All Domains

Start from inlet, # of points  $\rightarrow$  50, Sampling  $\rightarrow$   
vertices  
 $\rightarrow$  Dpby.

Unlink symmetry 1 and symmetry 2 in tree

Animation  $\rightarrow$  select Streamline 1  $\rightarrow$  Set speed slow  
 $\rightarrow$  Play.