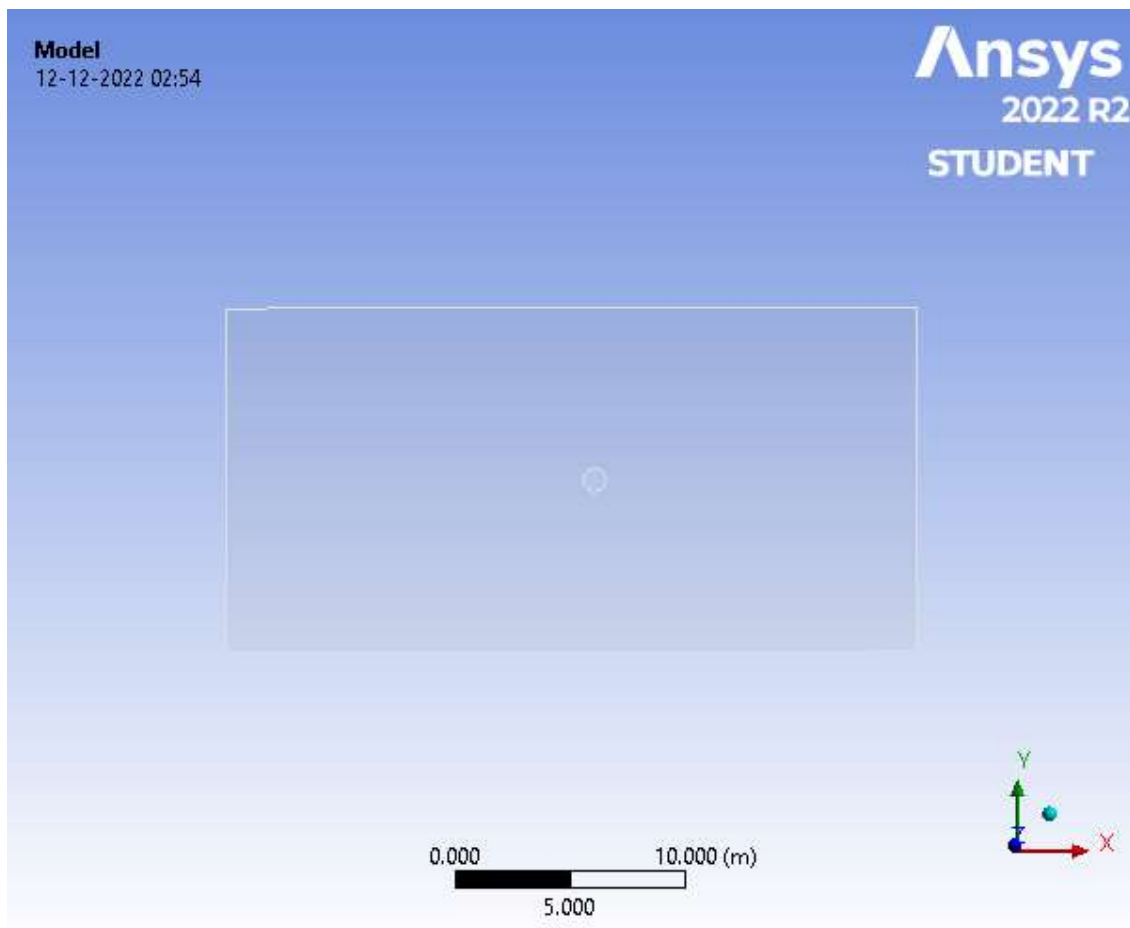




## Project\*

|                              |                           |
|------------------------------|---------------------------|
| First Saved                  | Sunday, December 11, 2022 |
| Last Saved                   | Monday, December 12, 2022 |
| Product Version              | 2022 R2                   |
| Save Project Before Solution | No                        |
| Save Project After Solution  | No                        |



# Contents

- [Units](#)
- [Model \(A3\)](#)
  - [Geometry Imports](#)
    - [Geometry Import \(A2\)](#)
  - [Geometry](#)
    - [Surface Body](#)
  - [Materials](#)
  - [Coordinate Systems](#)
  - [Mesh](#)
    - [Mesh Controls](#)
  - [Named Selections](#)

## Units

TABLE 1

| Unit System         | Metric (m, kg, N, s, V, A) Degrees rad/s Celsius |
|---------------------|--|
| Angle               | Degrees  |
| Rotational Velocity | rad/s  |
| Temperature         | Celsius  |

## Model (A3)

TABLE 2

Model (A3) > Geometry Imports

| Object Name | <i>Geometry Imports</i> |
|-------------|-------------------------|
| State       | Solved                  |

TABLE 3

Model (A3) > Geometry Imports > Geometry Import (A2)

| Object Name               | <i>Geometry Import (A2)</i>   |
|---------------------------|---|
| State                     | Solved  |
| Definition                |   |
| Source                    | D:\Ansys practice\Fluid flow over a cylinder<br>2_files\dp0\FFF\DM\FFF.agdb |
| Type                      | DesignModeler   |
| Basic Geometry Options    |   |
| Parameters                | Independent   |
| Parameter Key             |   |
| Advanced Geometry Options |   |
| Compare Parts On Update   | No  |
| Analysis Type             | 2-D   |

## Geometry

TABLE 4

Model (A3) > Geometry

| Object Name | <i>Geometry</i> |
|-------------|-----------------|
| State       | Fully Defined   |

| Definition                        |  |
|-----------------------------------|--|
| Source                            | D:\Ansys practice\Fluid flow over a cylinder 2_files\dp0\FFF\DM\FFF.agdb |
| Type                              | DesignModeler  |
| Length Unit                       | Meters   |
| 2D Behavior                       | Plane Stress   |
| Bounding Box                      |  |
| Length X                          | 30. m  |
| Length Y                          | 15. m  |
| Properties                        |  |
| Volume                            | 0. m <sup>3</sup>  |
| Surface Area(approx.)             | 449.21 m <sup>2</sup>  |
| Scale Factor Value                | 1.   |
| Statistics                        |  |
| Bodies                            | 1  |
| Active Bodies                     | 1  |
| Nodes                             | 5442   |
| Elements                          | 5664   |
| Mesh Metric                       | None   |
| Update Options                    |  |
| Assign Default Material           | No   |
| Basic Geometry Options            |  |
| Parameters                        | Independent  |
| Parameter Key                     |  |
| Attributes                        | Yes  |
| Attribute Key                     |  |
| Named Selections                  | Yes  |
| Named Selection Key               |  |
| Material Properties               | Yes  |
| Advanced Geometry Options         |  |
| Use Associativity                 | Yes  |
| Coordinate Systems                | Yes  |
| Coordinate System Key             |  |
| Reader Mode Saves Updated File    | No   |
| Use Instances                     | Yes  |
| Smart CAD Update                  | Yes  |
| Compare Parts On Update           | No   |
| Analysis Type                     | 2-D  |
| Import Facet Quality              | Source   |
| Clean Bodies On Import            | No   |
| Stitch Surfaces On Import         | None   |
| Decompose Disjoint Geometry       | Yes  |
| Enclosure and Symmetry Processing | No   |

**TABLE 5**  
**Model (A3) > Geometry > Parts**

| Object Name         | <i>Surface Body</i> |
|---------------------|---------------------|
| State               | Meshed              |
| Graphics Properties |                     |
| Visible             | Yes                 |
| Transparency        | 0.1                 |

| Definition            |                             |
|-----------------------|-----------------------------|
| Suppressed            | No                          |
| Coordinate System     | Default Coordinate System   |
| Thickness             | 0. m                        |
| Thickness Mode        | Refresh on Update           |
| Treatment             | None                        |
| Reference Frame       | Lagrangian                  |
| Material              |                             |
| Assignment            |                             |
| Fluid/Solid           | Defined By Geometry (Fluid) |
| Bounding Box          |                             |
| Length X              | 30. m                       |
| Length Y              | 15. m                       |
| Properties            |                             |
| Volume                | 0. m <sup>3</sup>           |
| Centroid X            | -1.0017 m                   |
| Centroid Y            | 3.1375e-016 m               |
| Centroid Z            | 0. m                        |
| Surface Area(approx.) | 449.21 m <sup>2</sup>       |
| Statistics            |                             |
| Nodes                 | 5442                        |
| Elements              | 5664                        |
| Mesh Metric           | None                        |

**TABLE 6**  
**Model (A3) > Materials**

| Object Name          | <i>Materials</i> |
|----------------------|------------------|
| State                | Fully Defined    |
| Statistics           |                  |
| Materials            | 0                |
| Material Assignments | 0                |

## Coordinate Systems

**TABLE 7**  
**Model (A3) > Coordinate Systems > Coordinate System**

| Object Name          | <i>Global Coordinate System</i> |
|----------------------|---------------------------------|
| State                | Fully Defined                   |
| Definition           |                                 |
| Type                 | Cartesian                       |
| Coordinate System ID | 0.                              |
| Origin               |                                 |
| Origin X             | 0. m                            |
| Origin Y             | 0. m                            |
| Directional Vectors  |                                 |
| X Axis Data          | [ 1. 0. ]                       |
| Y Axis Data          | [ 0. 1. ]                       |

## Mesh

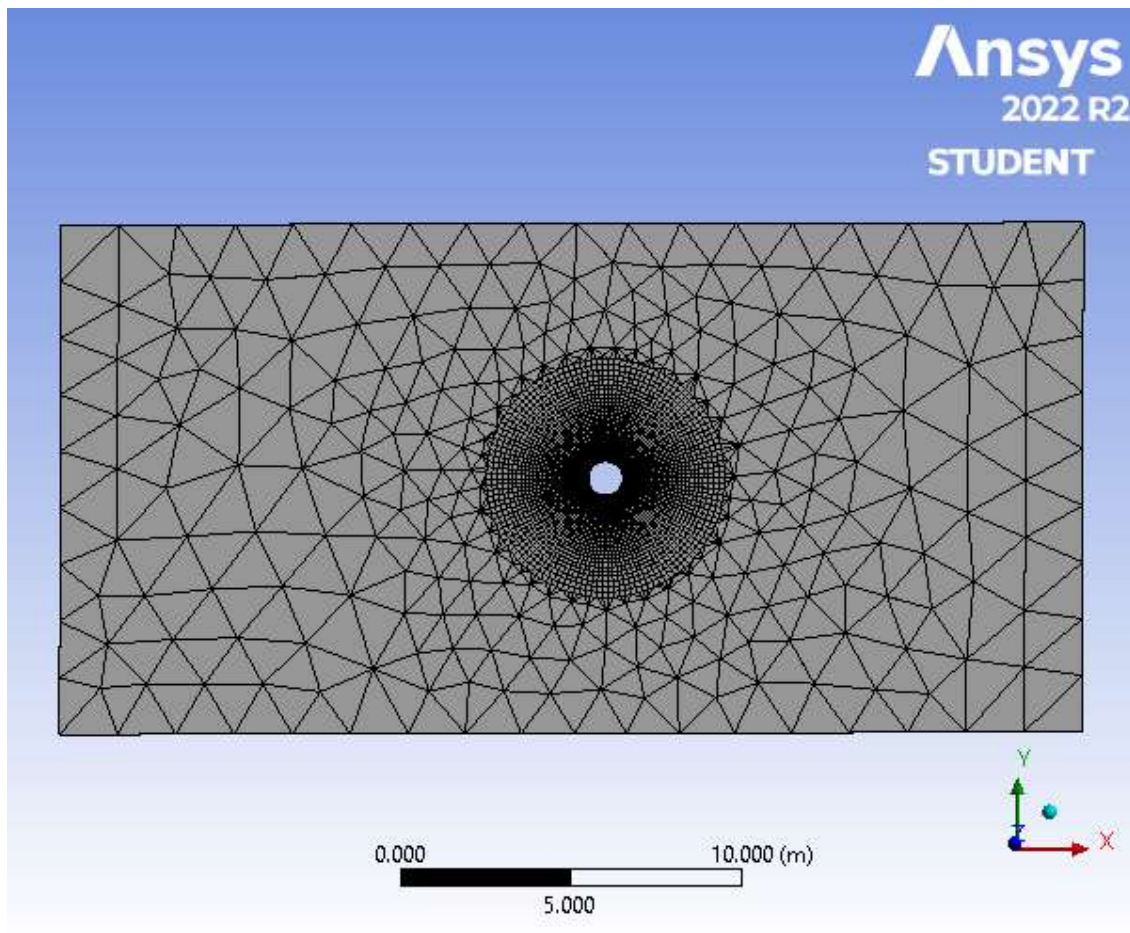
**TABLE 8**  
**Model (A3) > Mesh**

|  |                         |
|--|-------------------------|
| Object Name                              | <i>Mesh</i>             |
| State                                    | Solved                  |
| <b>Display</b>                           |                         |
| Display Style                            | Use Geometry Setting    |
| <b>Defaults</b>                          |                         |
| Physics Preference                       | CFD                     |
| Solver Preference                        | Fluent                  |
| Element Order                            | Linear                  |
| Element Size                             | Default (1.6771 m)      |
| Export Format                            | Standard                |
| Export Preview Surface Mesh              | No                      |
| <b>Sizing</b>                            |                         |
| Use Adaptive Sizing                      | No                      |
| Growth Rate                              | 1.2                     |
| Mesh Defeaturing                         | Yes                     |
| Defeature Size                           | Default (8.3853e-003 m) |
| Capture Curvature                        | No                      |
| Capture Proximity                        | No                      |
| Enable Washers                           | No                      |
| Bounding Box Diagonal                    | 33.541 m                |
| Average Surface Area                     | 449.22 m <sup>2</sup>   |
| Minimum Edge Length                      | 3.1416 m                |
| <b>Quality</b>                           |                         |
| Check Mesh Quality                       | Yes, Errors             |
| Target Skewness                          | Default (0.9)           |
| Smoothing                                | Medium                  |
| Mesh Metric                              | None                    |
| <b>Inflation</b>                         |                         |
| Use Automatic Inflation                  | None                    |
| Inflation Option                         | Smooth Transition       |
| Transition Ratio                         | 0.272                   |
| Maximum Layers                           | 2                       |
| Growth Rate                              | 1.2                     |
| Inflation Algorithm                      | Pre                     |
| View Advanced Options                    | No                      |
| <b>Batch Connections</b>                 |                         |
| Mesh Based Connection                    | No                      |
| <b>Advanced</b>                          |                         |
| Number of CPUs for Parallel Part Meshing | Program Controlled      |
| Straight Sided Elements                  |                         |
| Rigid Body Behavior                      | Dimensionally Reduced   |
| Triangle Surface Mesher                  | Program Controlled      |
| Topology Checking                        | Yes                     |
| Use Sheet Thickness for Pinch            | No                      |
| Pinch Tolerance                          | Default (1.5093e-002 m) |
| Generate Pinch on Refresh                | No                      |
| Sheet Loop Removal                       | No                      |
| <b>Statistics</b>                        |                         |
| Nodes                                    | 5442                    |
| Elements                                 | 5664                    |

**TABLE 9**  
**Model (A3) > Mesh > Mesh Controls**

|                         |                      |               |             |                       |
|-------------------------|----------------------|---------------|-------------|-----------------------|
| Object Name             | All Triangles Method |               | Edge Sizing | Inflation             |
| State                   | Fully Defined        |               |             |                       |
| Scope                   |                      |               |             |                       |
| Scoping Method          | Geometry Selection   |               |             |                       |
| Geometry                | 1 Body               | 1 Edge        | 1 Face      |                       |
| Definition              |                      |               |             |                       |
| Suppressed              | No                   |               |             |                       |
| Method                  | Triangles            |               |             |                       |
| Element Order           | Use Global Setting   |               |             |                       |
| Type                    |                      | Element Size  |             |                       |
| Element Size            |                      | 2.5e-002 m    |             |                       |
| Boundary Scoping Method |                      |               |             | Geometry Selection    |
| Boundary                |                      |               |             | 1 Edge                |
| Inflation Option        |                      |               |             | First Layer Thickness |
| First Layer Height      |                      |               |             | 2.5e-002 m            |
| Maximum Layers          |                      |               |             | 40                    |
| Growth Rate             |                      |               |             | 2.5                   |
| Inflation Algorithm     |                      |               |             | Pre                   |
| Advanced                |                      |               |             |                       |
| Behavior                |                      | Soft          |             |                       |
| Growth Rate             |                      | Default (1.2) |             |                       |
| Capture Curvature       |                      | No            |             |                       |
| Capture Proximity       |                      | No            |             |                       |
| Bias Type               |                      | No Bias       |             |                       |

**FIGURE 1**  
**Model (A3) > Mesh > Figure**

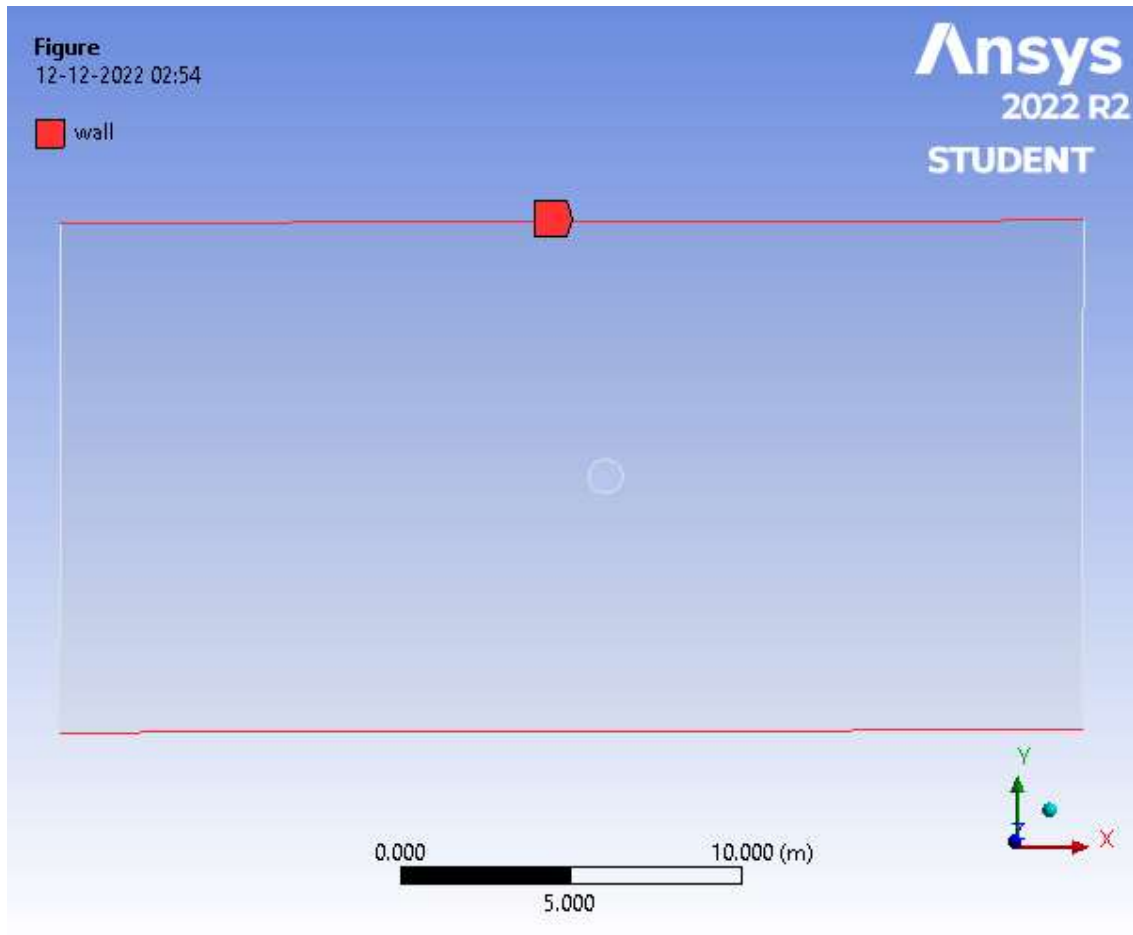


### Named Selections

**TABLE 10**  
**Model (A3) > Named Selections > Named Selections**

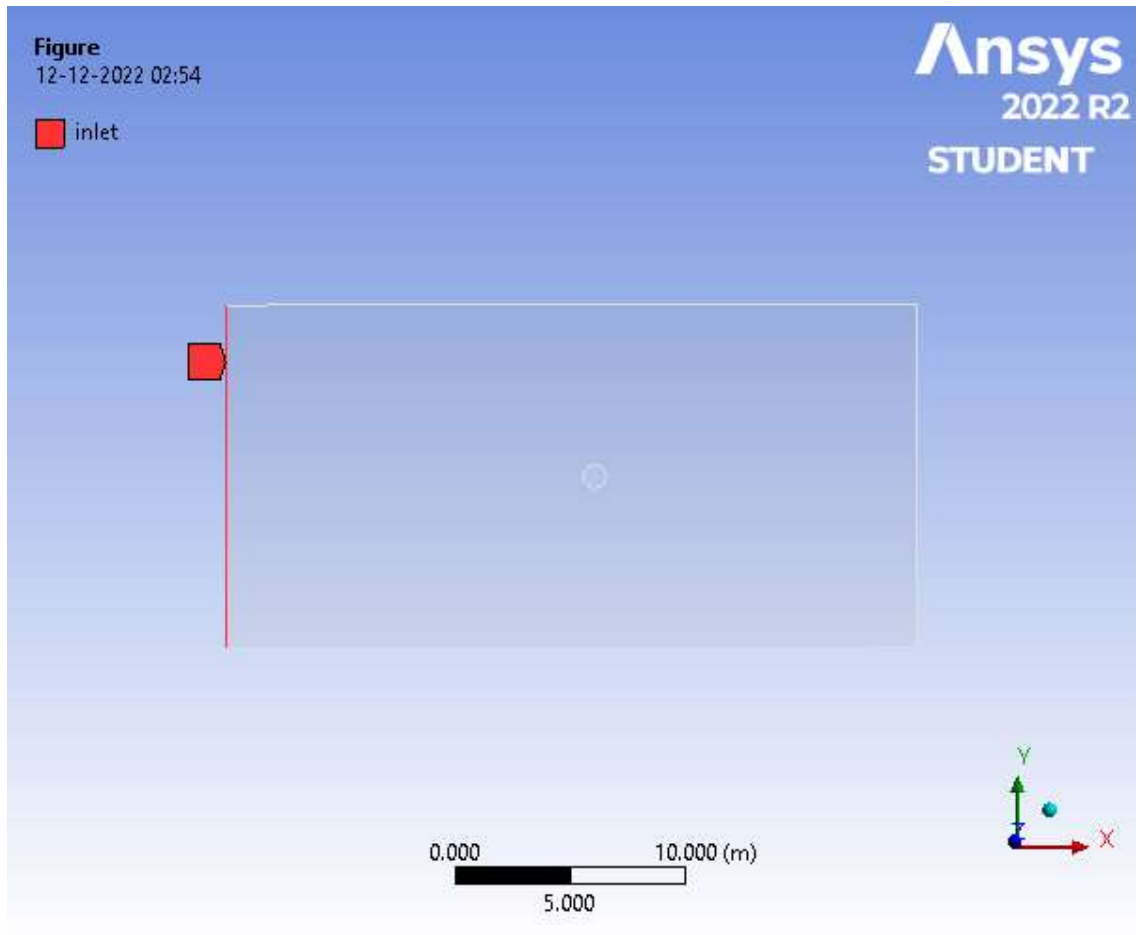
| Model (A5) - Named Selections - Named Selections |                    |        |          |          |
|--|--------------------|--------|----------|----------|
| Object Name                                      | wall               | inlet  | outlet   | cylinder |
| State  | Fully Defined      |        |          |          |
| Scope  |                    |        |          |          |
| Scoping Method                                   | Geometry Selection |        |          |          |
| Geometry   | 2 Edges            | 1 Edge |          |          |
| Definition                                       |                    |        |          |          |
| Send to Solver                                   | Yes                |        |          |          |
| Protected  | Program Controlled |        |          |          |
| Visible  | Yes                |        |          |          |
| Program Controlled Inflation                     | Exclude            |        |          |          |
| Statistics                                       |                    |        |          |          |
| Type   | Manual             |        |          |          |
| Total Selection                                  | 2 Edges            | 1 Edge |          |          |
| Length   | 60. m              | 15. m  | 3.1416 m |          |
| Suppressed                                       | 0                  |        |          |          |
| Used by Mesh Worksheet                           | No                 |        |          |          |

**FIGURE 2**  
**Model (A3) > Named Selections > wall > Figure**

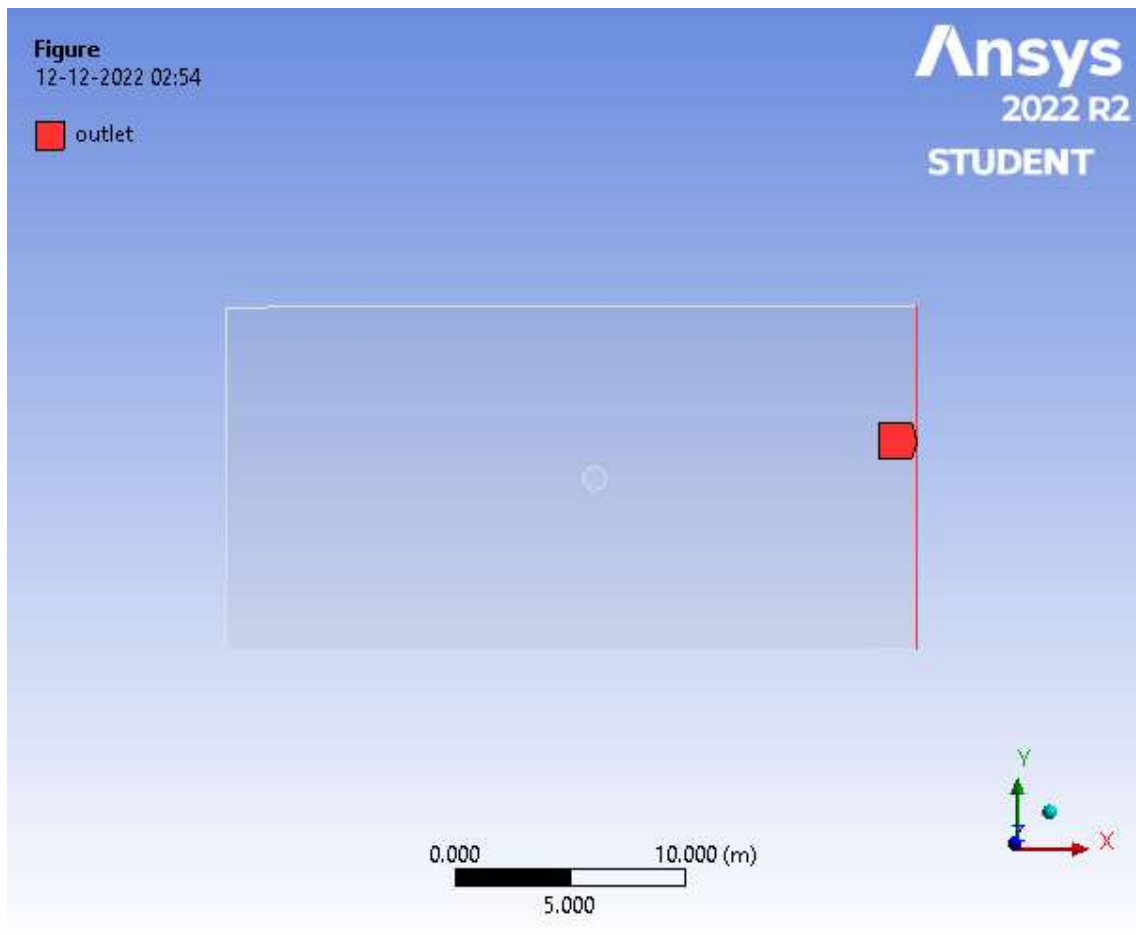


**FIGURE 3**  
**Model (A3) > Named Selections > inlet > Figure**





**FIGURE 4**  
**Model (A3) > Named Selections > outlet > Figure**

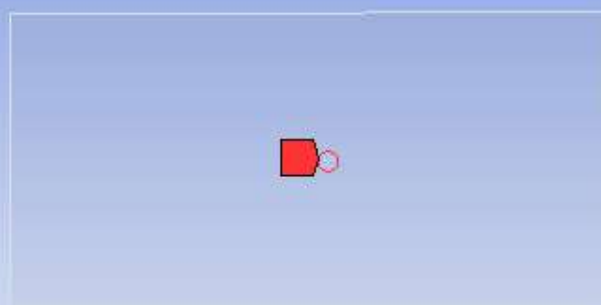


**FIGURE 5**  
**Model (A3) > Named Selections > cylinder > Figure**

Figure  
12-12-2022 02:54

**Ansys**  
2022 R2  
STUDENT

 cylinder



0.000 10.000 (m)  
5.000

