12.1.15 Editors - Geometry Nodes Editor - Header - Add Menu - Mesh

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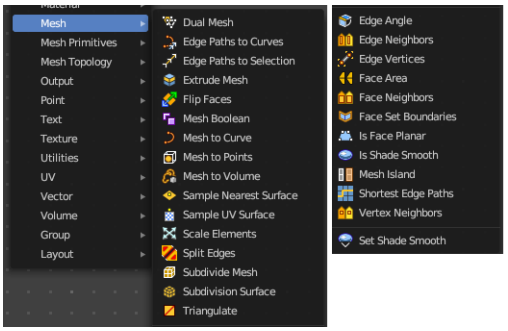
Add menu - Mesh

Nodes to modify the mesh geometry.



Dual Mesh

The Dual Mesh node calculates the dual of the input mesh. This means that faces get replaced with vertices and vertices with faces.

Inputs

Mesh

The input mesh.

Keep Boundaries

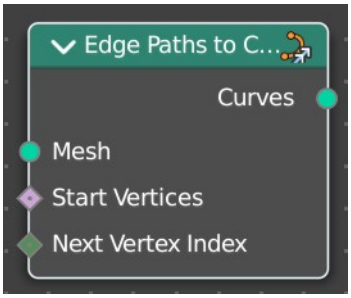
Keep the (non-manifold) boundaries of the mesh intact.

Outputs

Dual Mesh

The output mesh.

Edge Paths to Curves



Converts Edge Paths to Curves.

Inputs

Mesh

The input mesh.

Start Vertices

The start vertices of the edge path.

Next Vertex Index

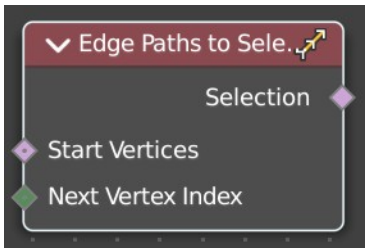
The edge path by index.

Outputs

Curves

The output curve.

Edge Path to Selection



Calculates an edge path, and converts it to a selectoin

Inputs

Start Vertices

The start vertices of the edge path.

Next Vertex Index

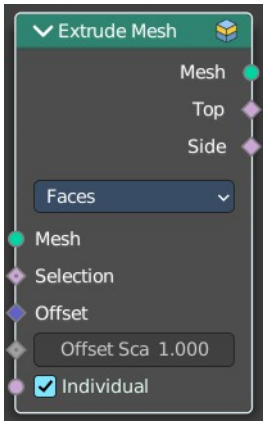
The edge path by index.

Outputs

Selection

The selection

Extrude Mesh



Extrudes out geometry at the selection by a given amount.

Inputs

Mesh

The input mesh.

Selection

A selection of the mesh.

Offset

The offset amount.

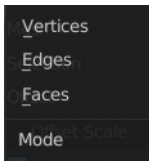
Offset Scale

The offset scale. Without an offset this is equal the amount.

Individual

Just Faces mode. Extrude out individual faces.

Properties



Mode

What kind of elements to extrude out. Vertices, Edges or Faces.

Outputs

Mesh

The output mesh.

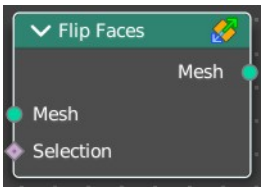
Top

The top elements of the extrusion.

Side

The side elements of the extrusion.

Flip Faces



Flips the winding order of the selected faces.

Blender developers decided not to call it Flip Normals. Since "normals are derived data, changing them is only a side effect." However, what the node does is in fact to flip the normals.

Inputs

Mesh

The input mesh.

Selection

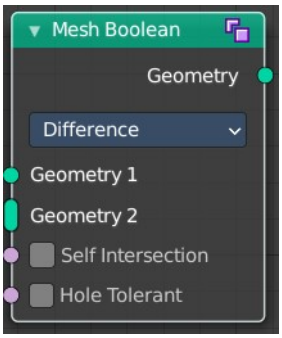
A selection of the input mesh.

Outputs

Dual Mesh

The output mesh.

Mesh Boolean



The Boolean Node allows you to cut, subtract, and join the geometry of two inputs. This node offers the same operations as the Boolean modifier.

Inputs

Geometry 1, 2

Standard geometry input.

Self Intersect

Allow self intersection.

Hole Tolerant

Allow holes.

Properties

Operation

The boolean operation.

Intersect

Produce a new geometry containing only the volume inside of both geometry 1 and geometry 2.

Union

The two input pieces of geometry are joined, then any interior elements are removed.

Difference

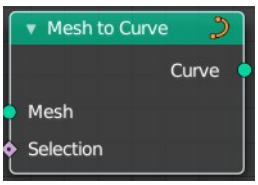
Geometry 2 is subtracted from geometry 1 (everything outside of geometry 2 is kept).

Output

Geometry

Standard geometry output.

Mesh to Curve



Converts a mesh geometry to a curve geometry.

Inputs

Mesh

Input mesh.

Selection

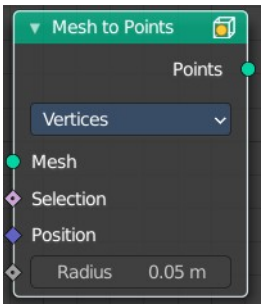
A selection of the input mesh.

Outputs

Curve

Standard curve output.

Mesh to Points



Converts a mesh geometry to a point geometry.

Inputs

Mesh

Input mesh.

Selection

A selection of the input mesh.

Position

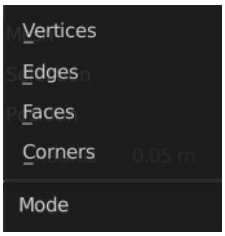
The position of the points.

Radius

The radius of the points

Properties

Mode



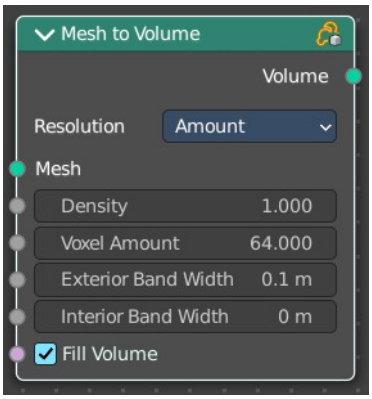
What geometry to convert to points.

Outputs

Curve

Standard curve output.

Mesh to Volume



Converts a mesh geometry to a Volume.

Inputs

Mesh

Input mesh.

Density

The density of the volume

Voxel Amount / Voxel Size

The voxel amount / the voxel size

Exterior Bandwidth

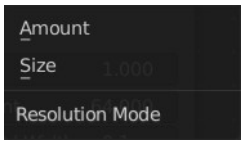
How much exterior bandwidth is calculated outside of the mesh. The larger the value the more unnecessary ray calculations happens.

Interior Bandwidth

Where to start the calculation inside of the volume.

Properties

Resolution



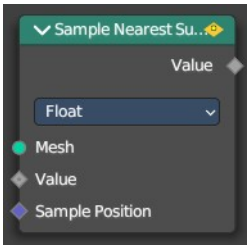
How to calculate the volume. Based of the size or based at the amount.

Outputs

Volume

The volume output.

Sample Nearest Surface



Calculate the interpolated value of a mesh attribute on the closest point of its surface.

Inputs

Mesh

Input mesh.

Value

The value to calculate.

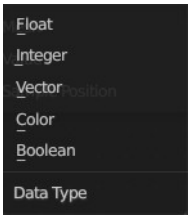
Sample Position

The sample position to calculate.

Properties

Data Type

Which data to calculate.

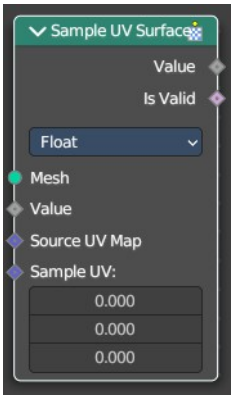


Outputs

Value

The output value.

Sample UV Surface



Calculate the interpolated value of a mesh attribute at a UV coordinate.

Inputs

Mesh

Input mesh.

Value

The value to calculate.

Source UV Map

The input UV map.

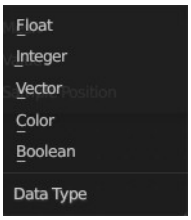
Sample UV

The sample position to calculate.

Properties

Data Type

Which data to calculate.



Outputs

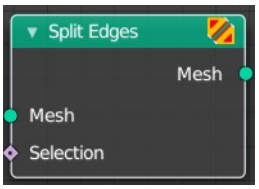
Value

The output value.

Is Valid

Wether the node could find a single face to sample at the uv coordinate.

Split Edges



Splits the edges of the geometry.

Note that splitting edges breaks the mesh topology.

Inputs

Mesh

Input mesh.

Selection

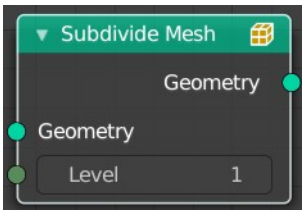
A selection of the input mesh.

Outputs

Mesh

Standard Mesh output.

Subdivide Mesh



Subdivides the geometry by a simple division.

Inputs

Geometry

Standard geometry input.

Level

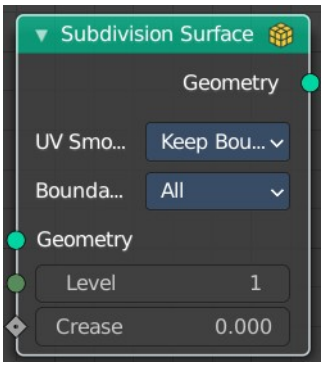
To which degree the geometry will be deformed.

Outputs

Geometry

Standard geometry output.

Subdivision Surface



The Subdivision Surface node subdivides the geometry using Catmull-Clark deformation.

Inputs

Geometry

Standard geometry input.

Level

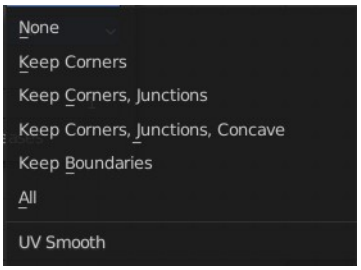
To which degree the geometry will be deformed.

Creases

Control how smooth edges should be with Weighted Edge Creases.

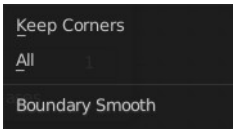
Properties

UV Smooth



The methbod to deal with smoothing the UV.

Boundary Smooth



Controls if open boundaries and corners are smooth.

Outputs

Geometry

Standard geometry output.

Triangulate

The Triangulate node triangulates all faces in a mesh.

Inputs

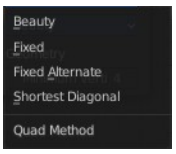
Geometry

Standard geometry input.

Minimum Vertices

Minimum number of vertices a face must have to be triangulated. For example, setting this value to 5, will prevent triangulation of Quads and only triangulate N-gons.

Properties



Quad Method

A quad is a polygon with four edges.

Beauty

Split the quads in nice triangles, slower method.

Fixed

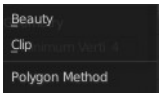
Split the quads on their 1st and 3rd vertices.

Fixed Alternate

Split the quads on their 2nd and 4th vertices.

Shortest Diagonal

Split the quads based on the diagonal distance between their vertices.



Polygon Method

Meant are N-Gons. Faces with more than four edges. Tris, Quads and N-Gons are all Polygons.

Beauty

Arrange the new triangles nicely, slower method.

Clip

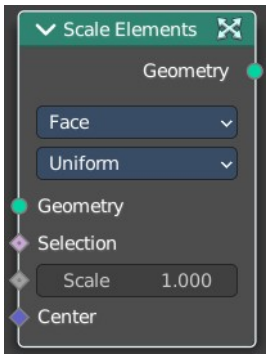
Split the polygons using an ear-clipping algorithm (gives similar results to the tessellation used for the viewport rendering).

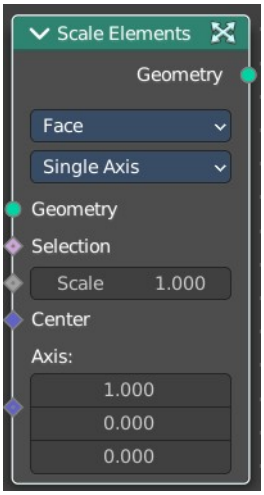
Outputs

Geometry

Standard geometry output.

Scale Elements





Allows to scale the selected elements.

Inputs

Geometry

Standard geometry input.

Selection

A selection of the geometry.

Scale

The scale factor

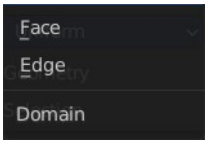
Center

The center of the scaling.

Axis

Scale Mode Single axis only. Scale the selection separately along its single axis.

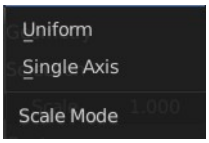
Properties



Domain

What kind of elements to scale.

Scale Mode



Uniform scales uniformly in all three world coordinates.

Single Axis scales separately in the single axis.

Outputs

Geometry

The output geometry.

Edge Angle

Calculates the angle in radians between two faces that meet at an edge. Without two faces on the edge, the angle will be 0.

Outputs

Unsigned Angle

The unsigned output angle. The shortest angle will be picked.

Signed Angle

The signed angle between the two faces, where Convex angles are positive and Concave angles are negative. This calculation is slower than the unsigned angle.

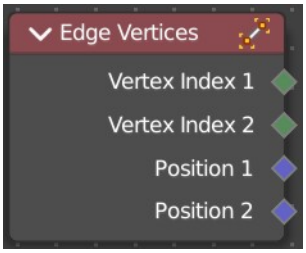
Edge Neighbours

Outputs the number of faces connected to each edge.

Outputs

Face Count

The number of faces.



Edge Vertices

Outputs the index and position of the two vertices that defines an edge. Index outputs an integer. Position a vector.

Outputs

Vertex Index 1

The index of the first vertice.

Vertex Index 2

The index of the second vertice.

Position 1

The position of the first vertice.

Position 2

The position of the second vertice.

Face Area

Gives each face area a unique id. Which can be used in a capture attribute for

example, to create instances of other geometry to this now unique face areas.

Outputs

Area

The face area output.

Face Neighbours

Outputs the number of vertices or faces connected to each face.

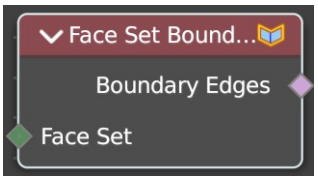
Outputs

Vertex Count

The vertex count for the face neighbors.

Face Count

The face count for the face neighbors.



Face Set Boundaries

Find edges on the boundaries between face sets

Inputs

Face Set

The input face sets to calculate the boundaries from.

Outputs

Boundary Edges

The edges that lies on the boundaries between the different face sets

Face Count

The face count for the face neighbors.

Face is Planar

Returns true if all of the points of the evaluated face are on the same plane.

Inputs

Threshold

The threshold to consinder the points to be at the same plane.

Outputs

Planar

True if the face is planar.

Mesh Island

Outputs a separate index for each mesh island. The indices are based on the order of the lowest-numbered vertex in each island.

Outputs

Index

The index output.

Is Shade Smooth

Retreives if the geometry is shaded smooth.

Outputs

Smooth

Smooth output.

Vertex Neighbors

Outputs the number of vertices or faces connected to each vertex.

Outputs

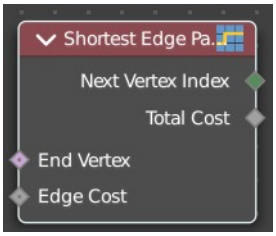
Vertex Count

The vertex count for the vertex neighbors.

Face Count

The face count for the vertex neighbors.

Shortest Edge Path



Calculates the shortest path from multiple start points.

Input

End Vertex

The last point of the path.

Edge Cost

The amount of calculation to find the shortest path.

Outputs

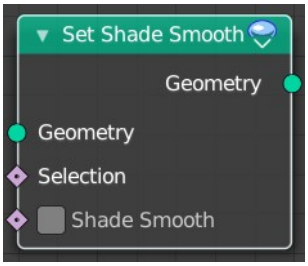
Next Vertex Index

The vertices index of the shortest path.

Total Cost

The calculation amount.

Set Shade Smooth



Retreives if the geometry is shaded smooth.

Input

Geometry

Input mesh.

Selection

A selection of the input mesh.

Shade Smooth

Set the shading to smooth.

Outputs

Geometry

Geometry output.