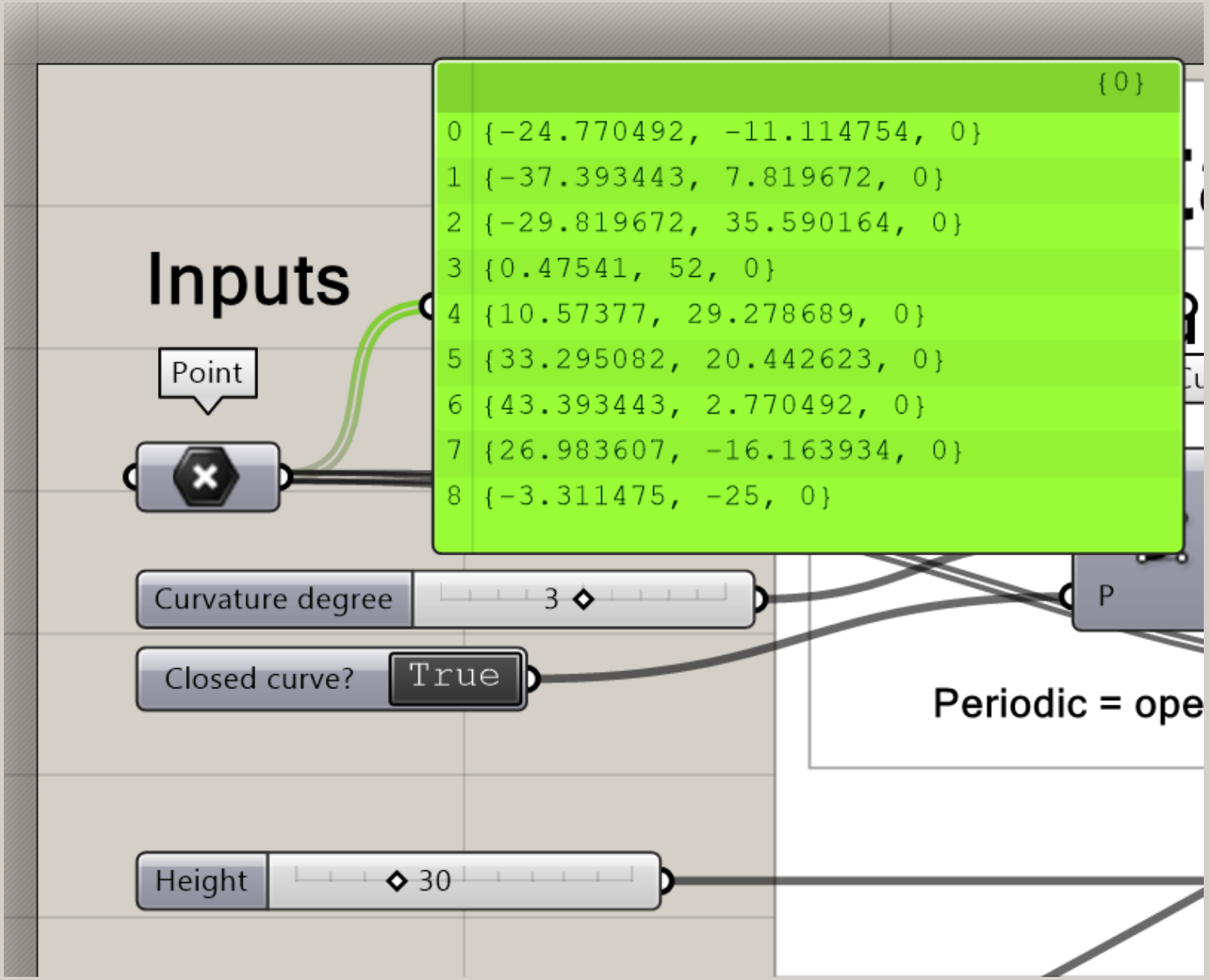
Computational design

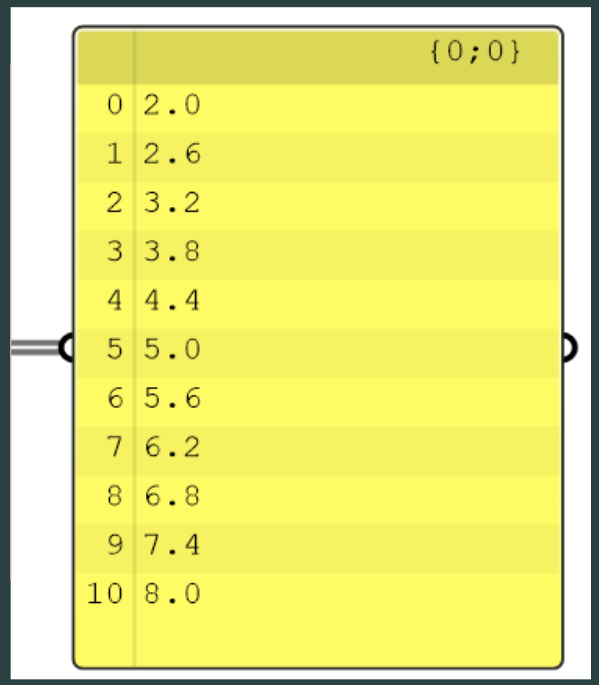
Using Rhino & Grasshopper

Lesson 2 – Curves and lists


Inputs
Point
{0}
0 {-24.770492, -11.114754, 0}
1 {-37.393443, 7.819672, 0}
2 {-29.819672, 35.590164, 0}
3 {0.47541, 52, 0}
4 {10.57377, 29.278689, 0}
5 {33.295082, 20.442623, 0}
6 {43.393443, 2.770492, 0}
7 {26.983607, -16.163934, 0}
8 {-3.311475, -25, 0}
Curvature degree
3
Closed curve?
True
P
Periodic = ope
Height
30

Structure of a list

- List is a data structure in Grasshopper
- Use the “panel” component to visualise



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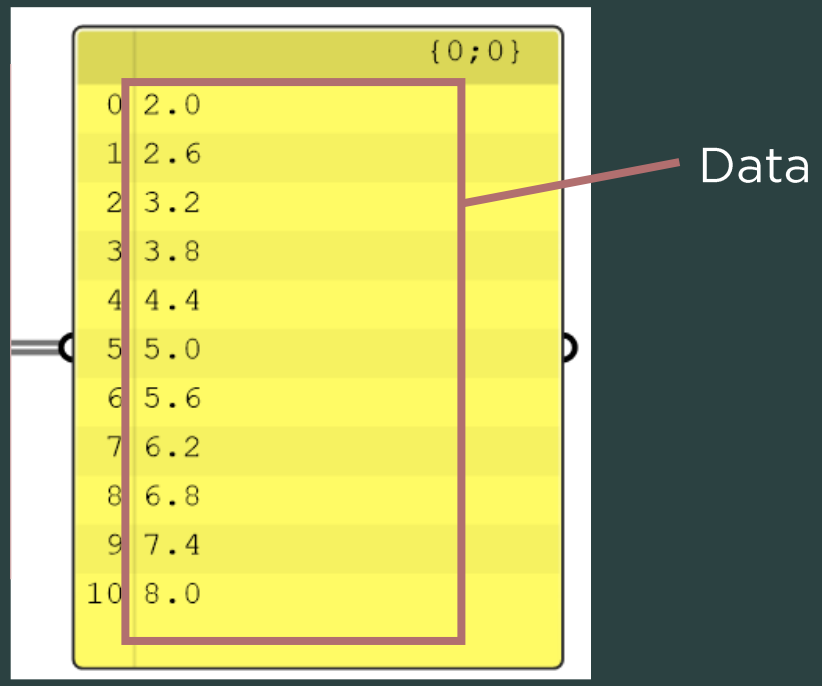

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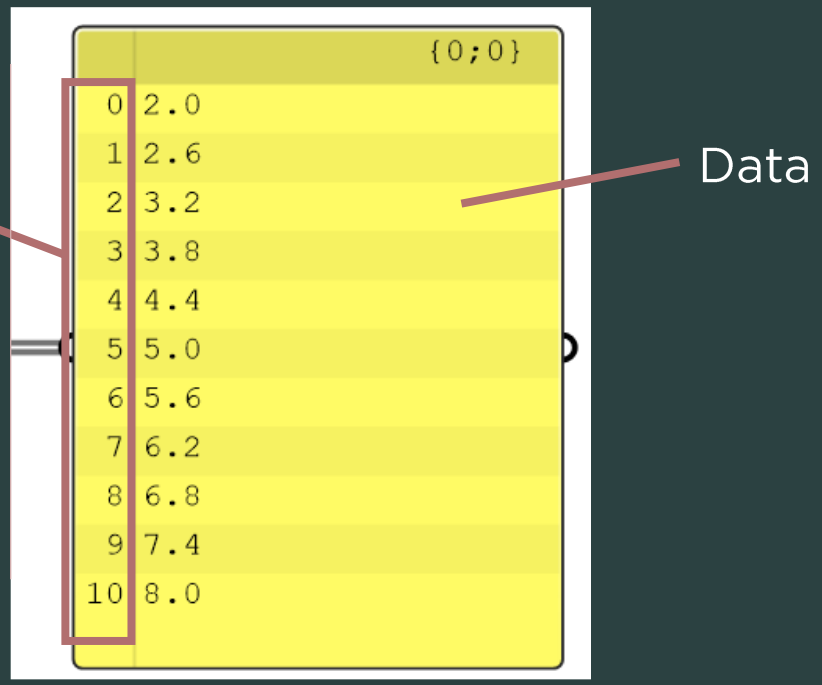

Structure of a list

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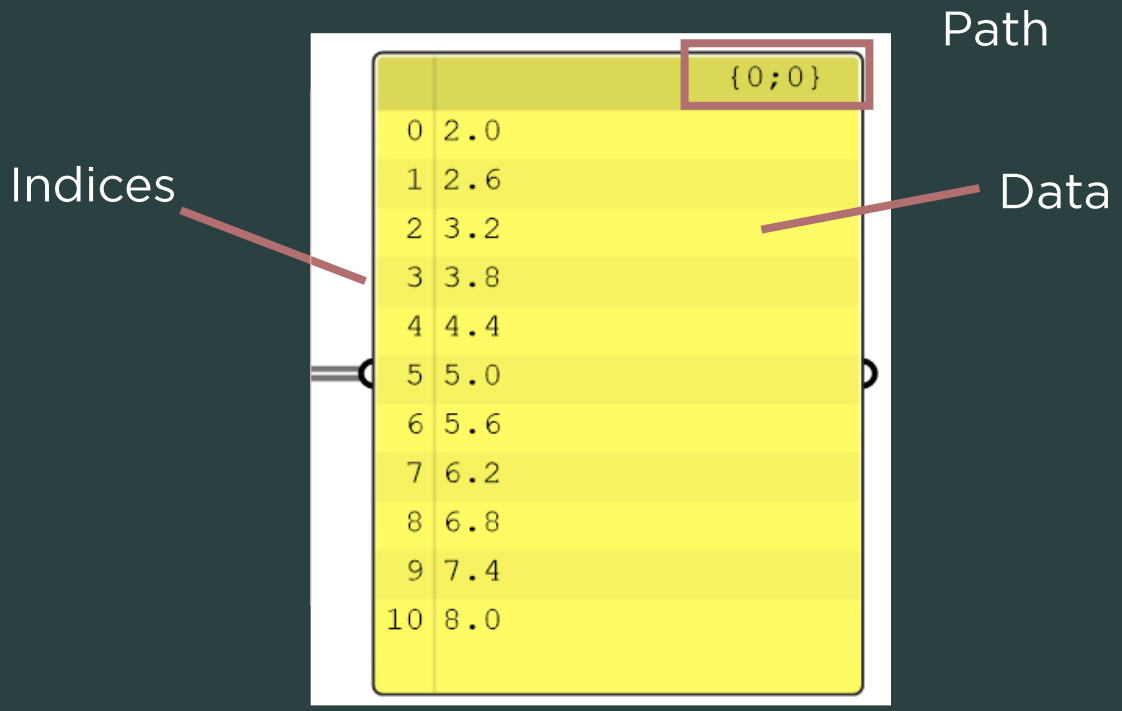
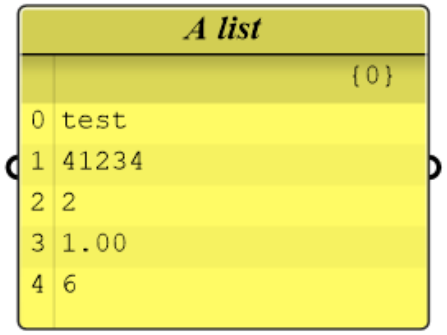


How to make a list

Typing in a panel

(switch off multiline data)



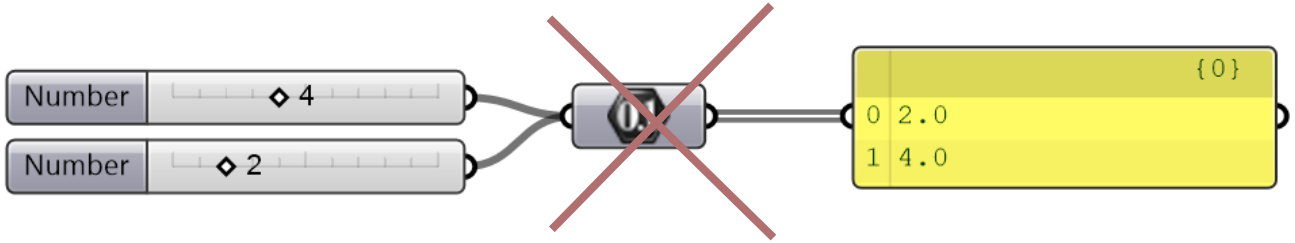
How to make a list

Combining outputs

How to make a list

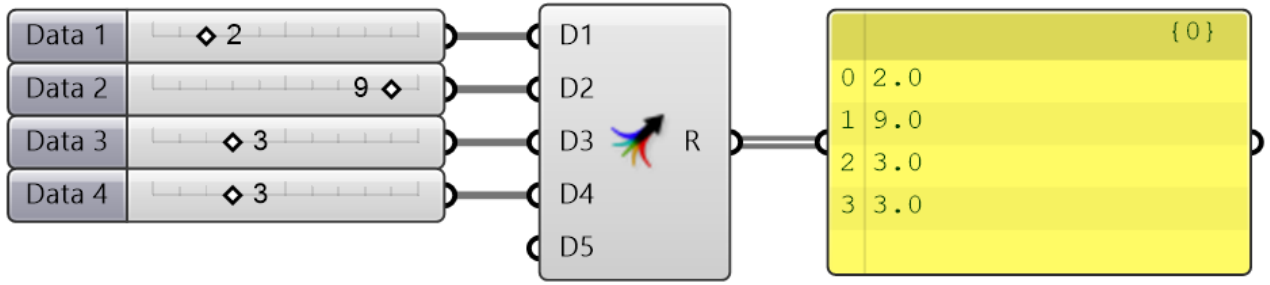
Combining outputs

Bad habit!



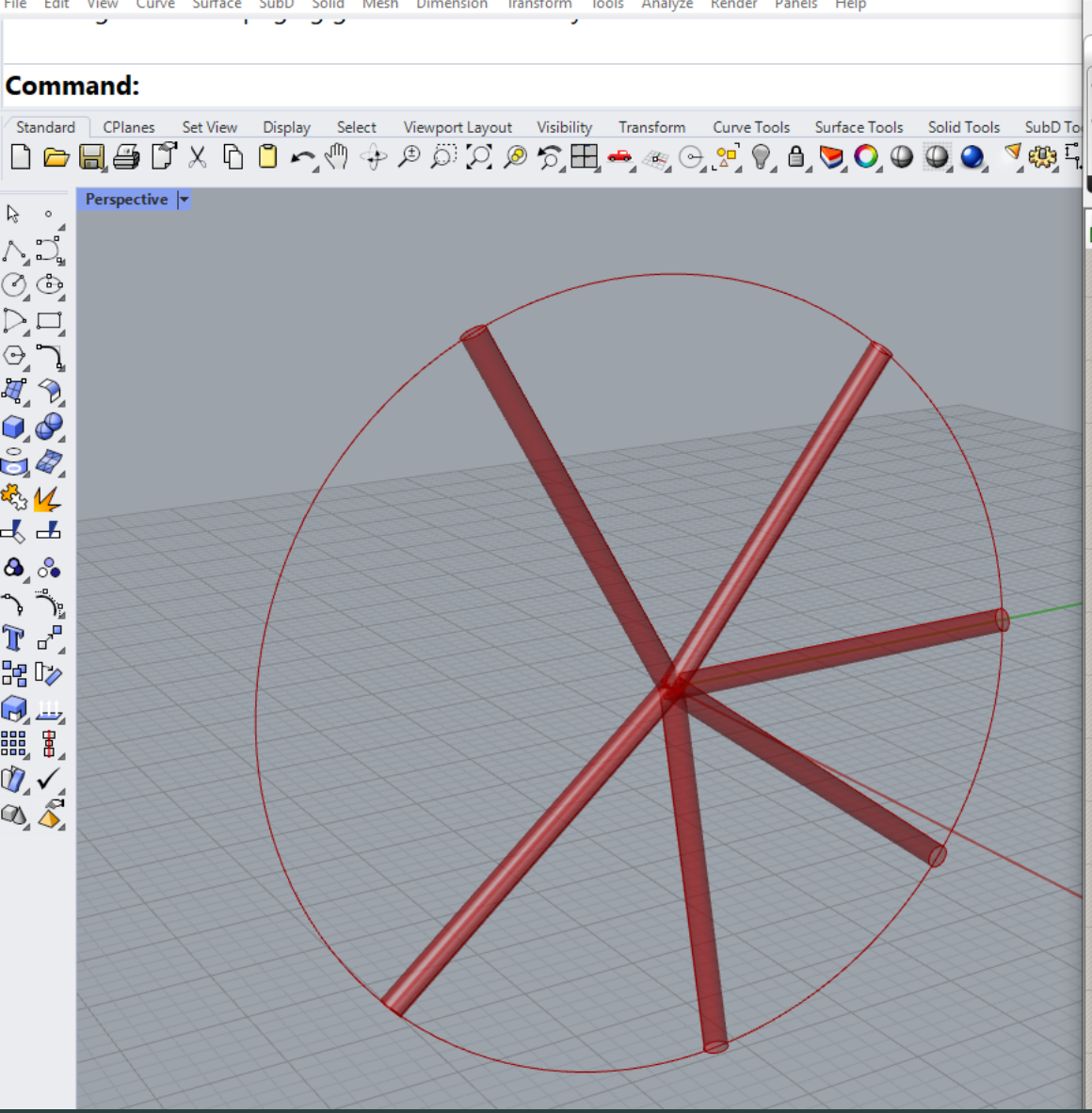
Merge

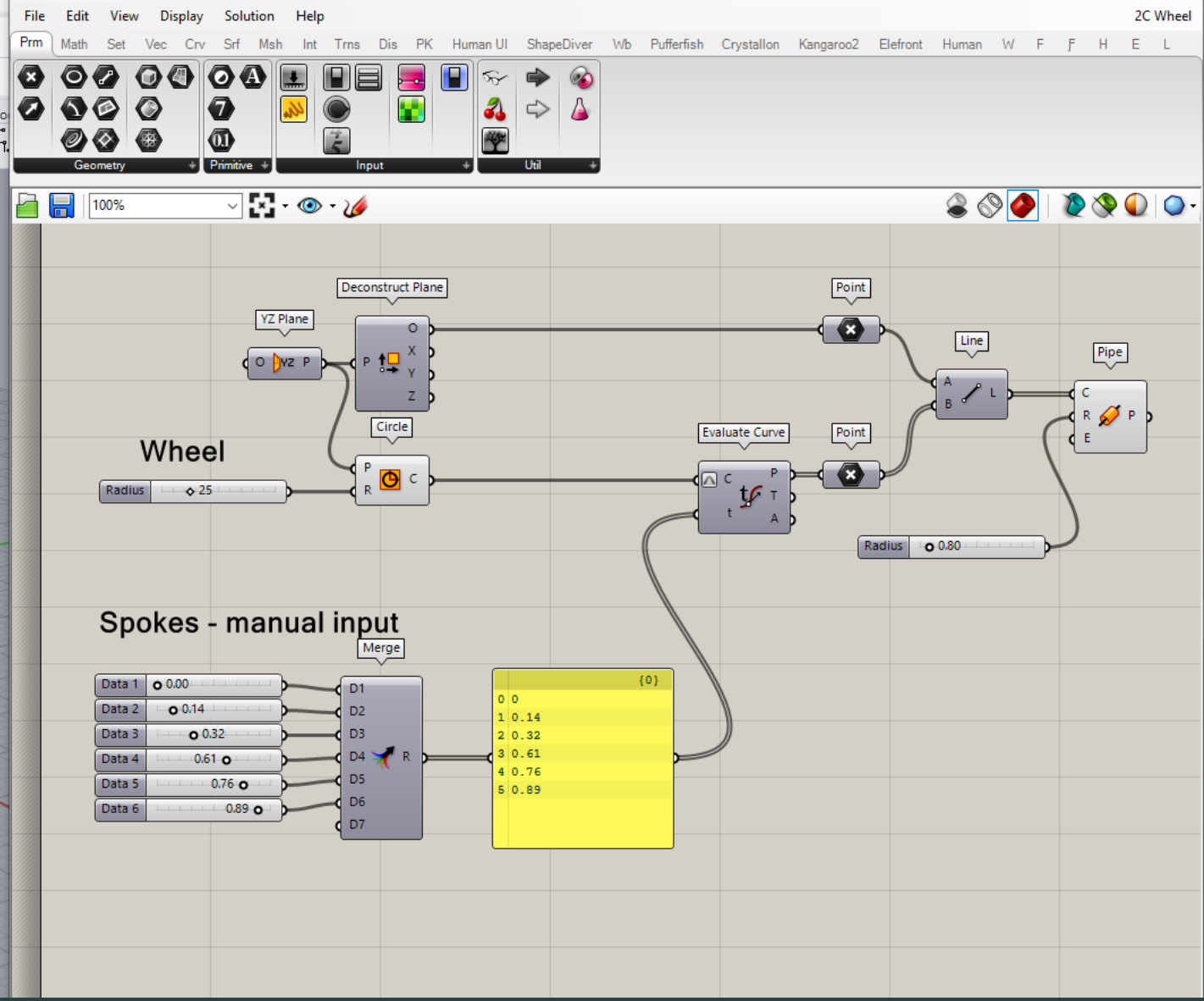
Beter



Applications of a list

- Combining objects
- Generating objects
- Processing multiple things at once

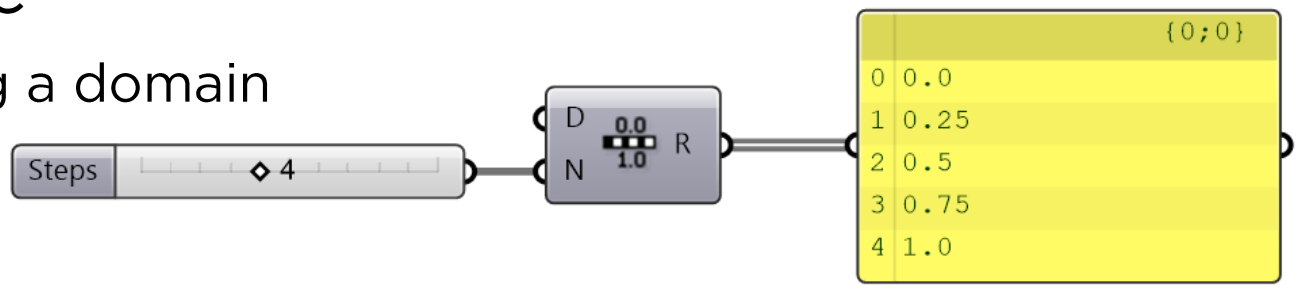

Command:
Standard
CPlanes
Set View
Display
Select
Viewport Layout
Visibility
Transform
Curve Tools
Surface Tools
Solid Tools
Perspective


File
Edit
View
Display
Solution
Help
2C Wheel
Geometry
Primitive
Input
Util
Deconstruct Plane
YZ Plane
Point
Line
Pipe
Circle
Evaluate Curve
Point
Wheel
Radius 25
Radius 0.80
Spokes - manual input
Merge
Data 1 0.00
Data 2 0.14
Data 3 0.32
Data 4 0.61
Data 5 0.76
Data 6 0.89
0 0
1 0.14
2 0.32
3 0.61
4 0.76
5 0.89

How to make a list - Range

Range

Dividing a domain



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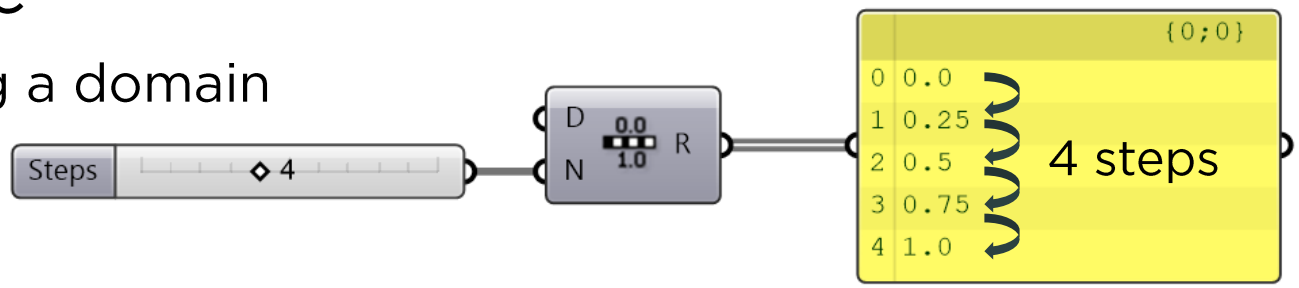

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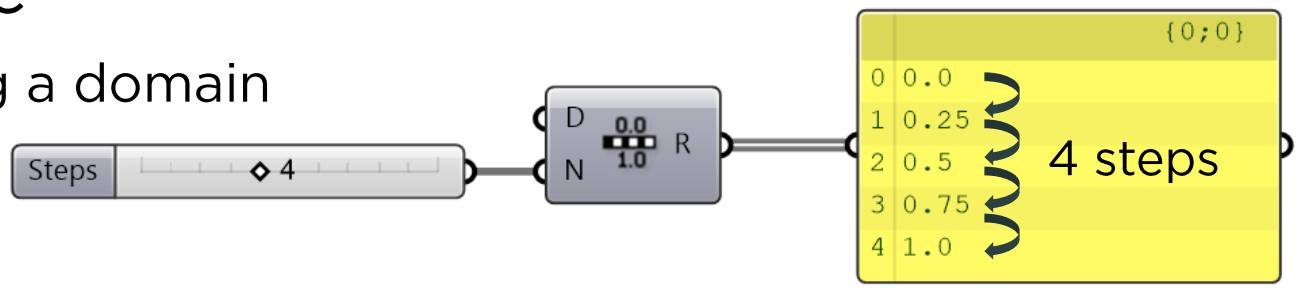
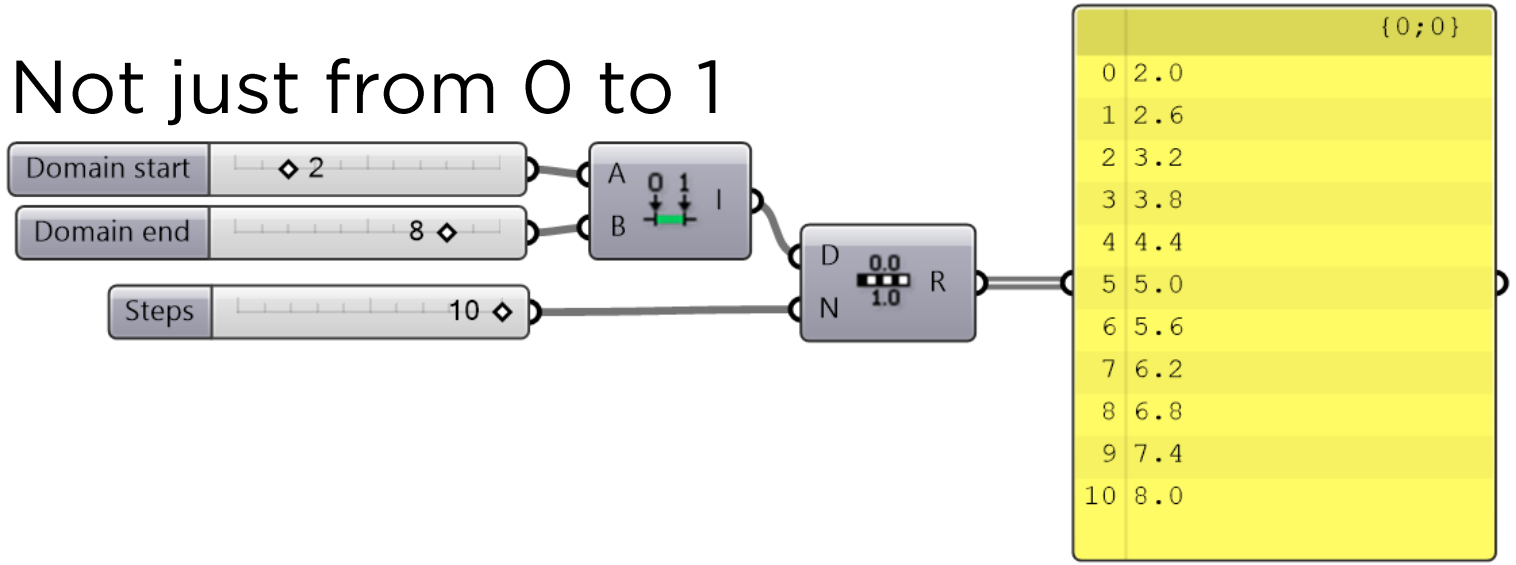
Dividing a domain

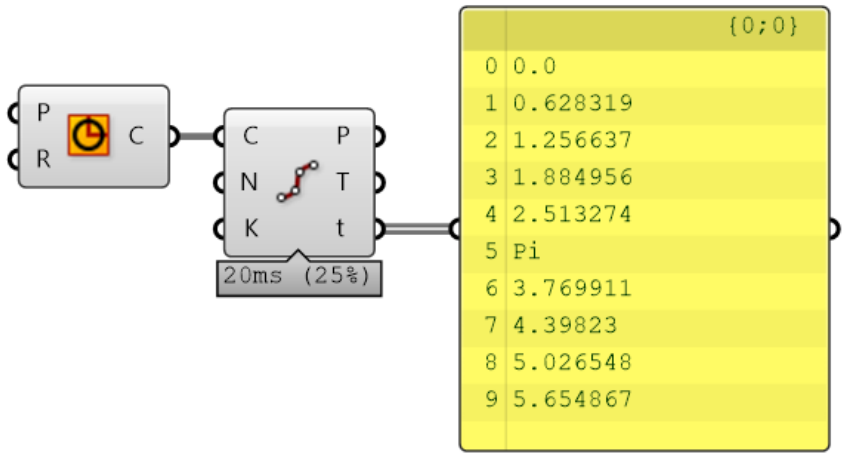


Not just from 0 to 1



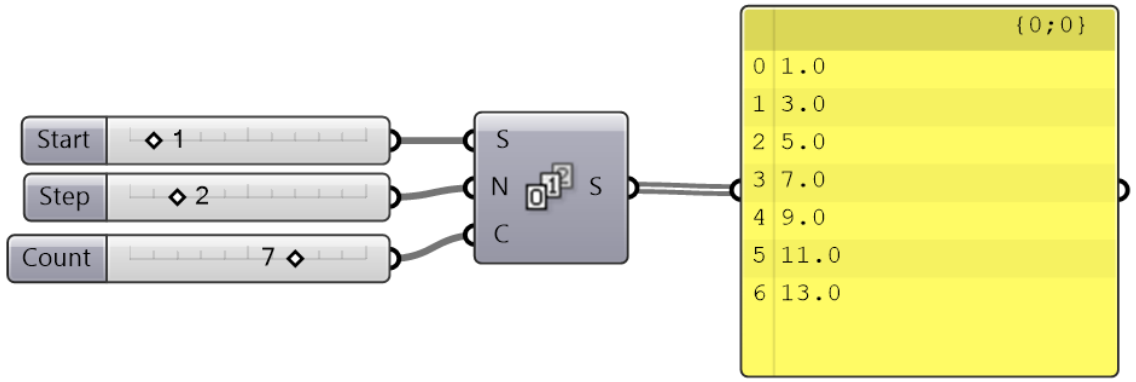
How to make a list

Divide Curve



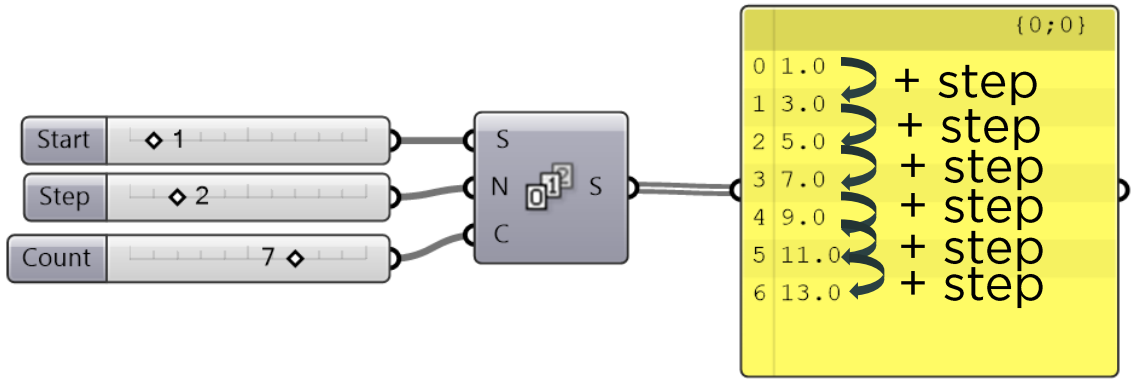
How to make a list

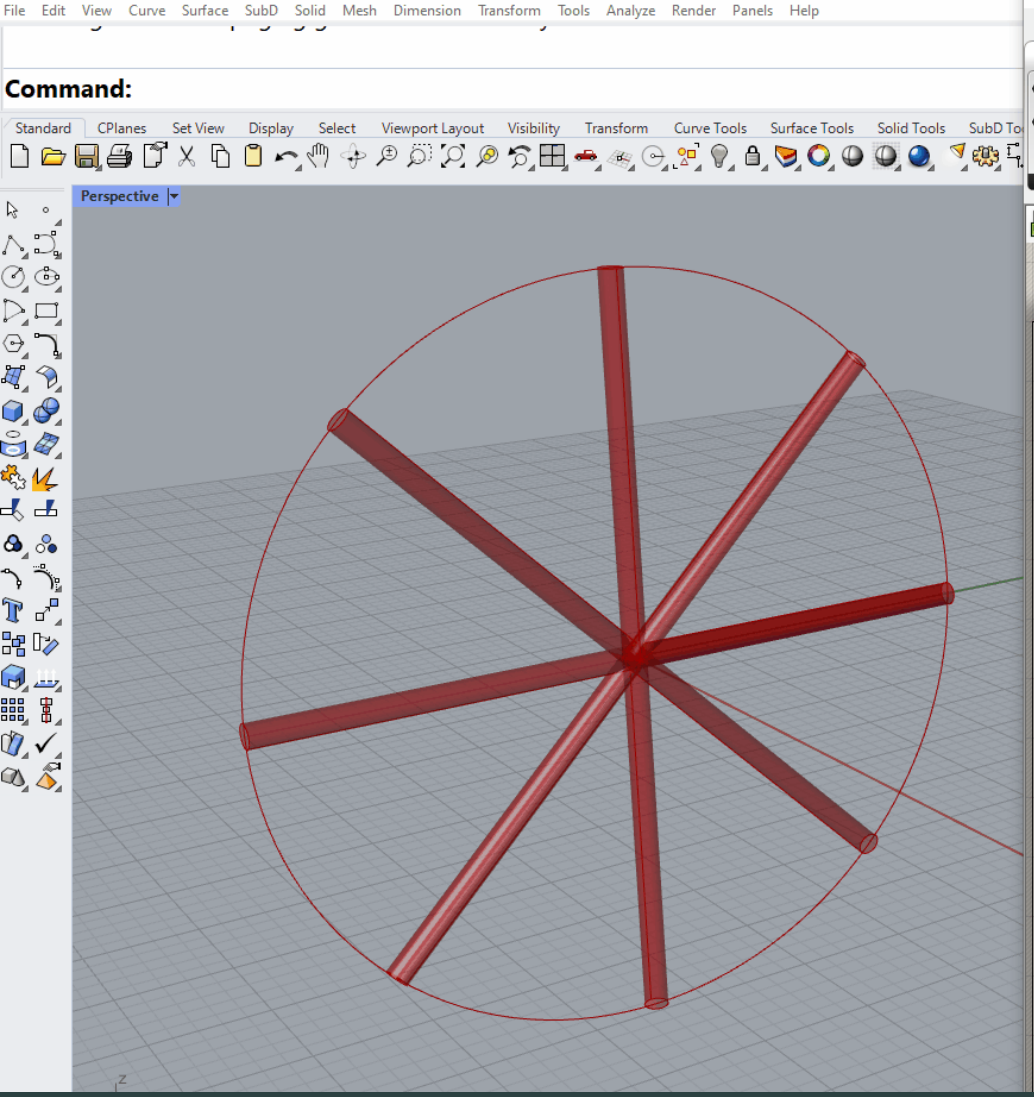
Series: counting in steps

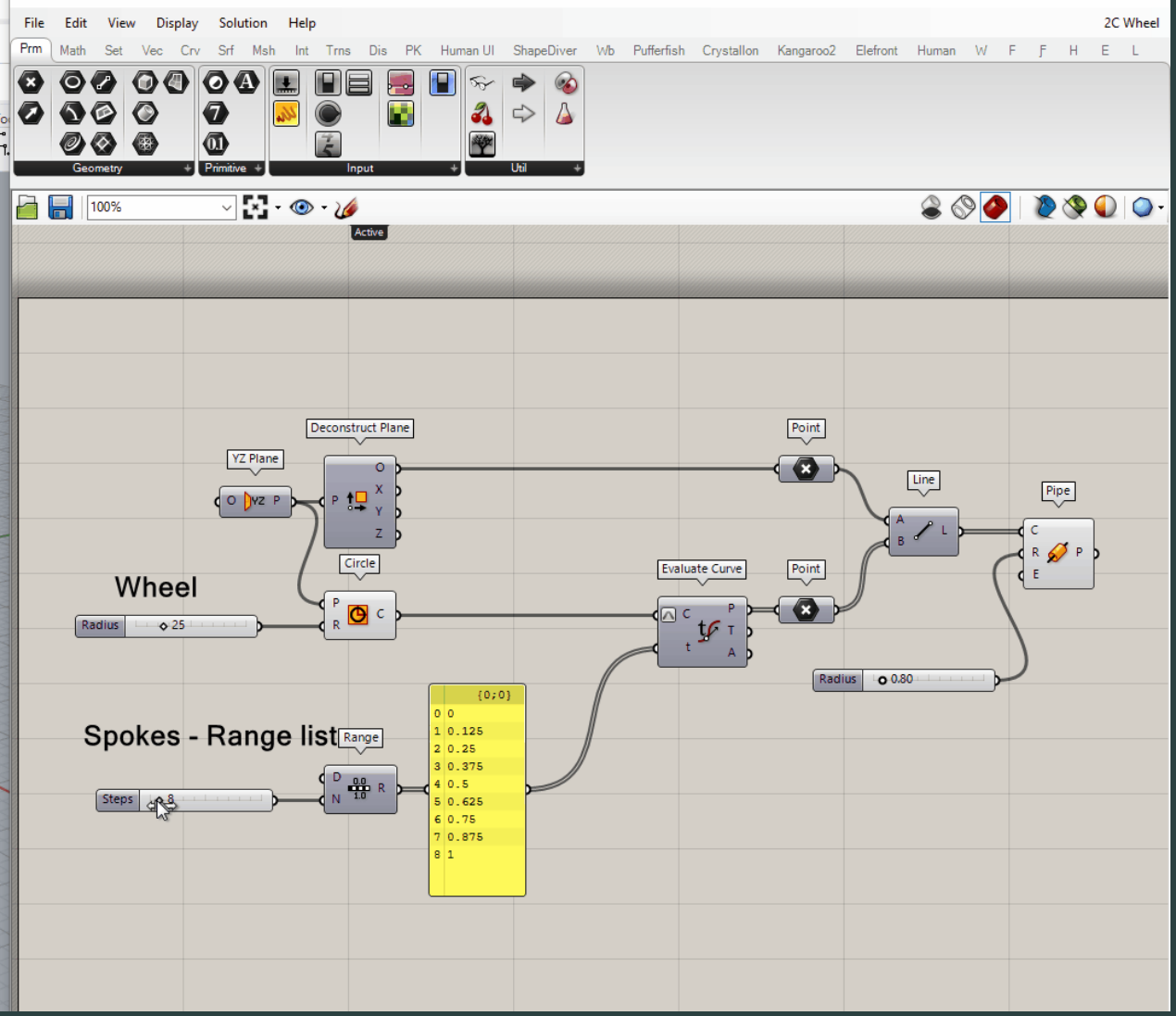


How to make a list

Series: counting in steps

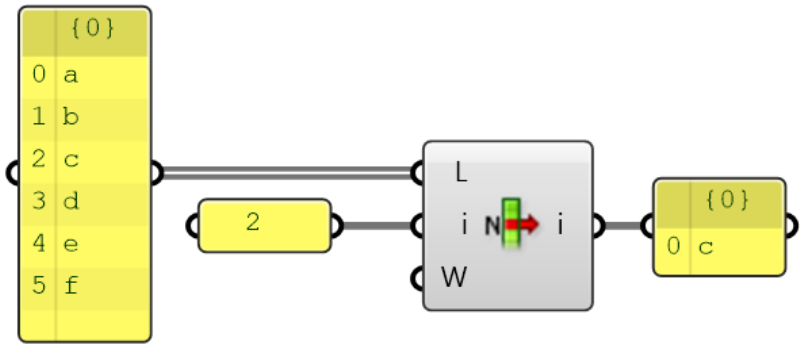



File Edit View Curve Surface SubD Solid Mesh Dimension Transform Tools Analyze Render Panels Help
Command:
Standard CPlanes Set View Display Select Viewport Layout Visibility Transform Curve Tools Surface Tools Solid Tools
Perspective


File Edit View Display Solution Help
2C Wheel
Prm Math Set Vec Crv Srf Msh Int Trns Dis PK Human UI ShapeDiver Wb Pufferfish Crystallon Kangaroo2 Elefront Human
Geometry Primitive Input Util
100%
Active
Wheel
Radius 25
Deconstruct Plane
YZ Plane
Circle
Point
Evaluate Curve
Point
Line
Pipe
Radius 0.80
Spokes - Range list
Range
Steps 8
{0;0}
0 0
1 0.125
2 0.25
3 0.375
4 0.5
5 0.625
6 0.75
7 0.875
8 1

Editing lists

List item: pick an item



Editing lists

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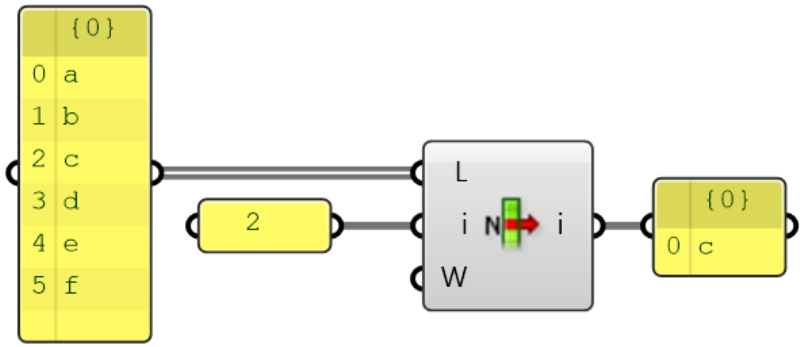
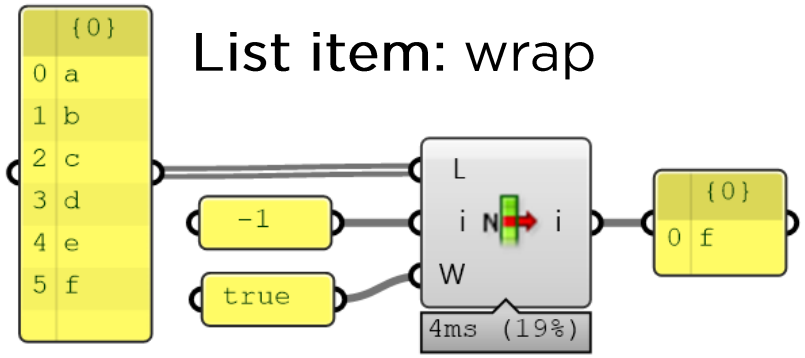
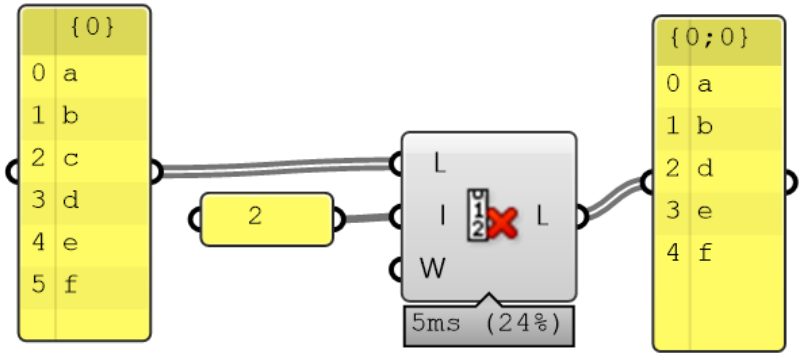


List item: wrap

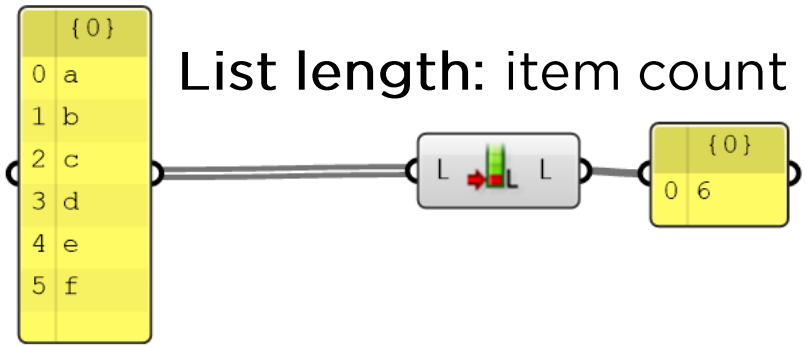


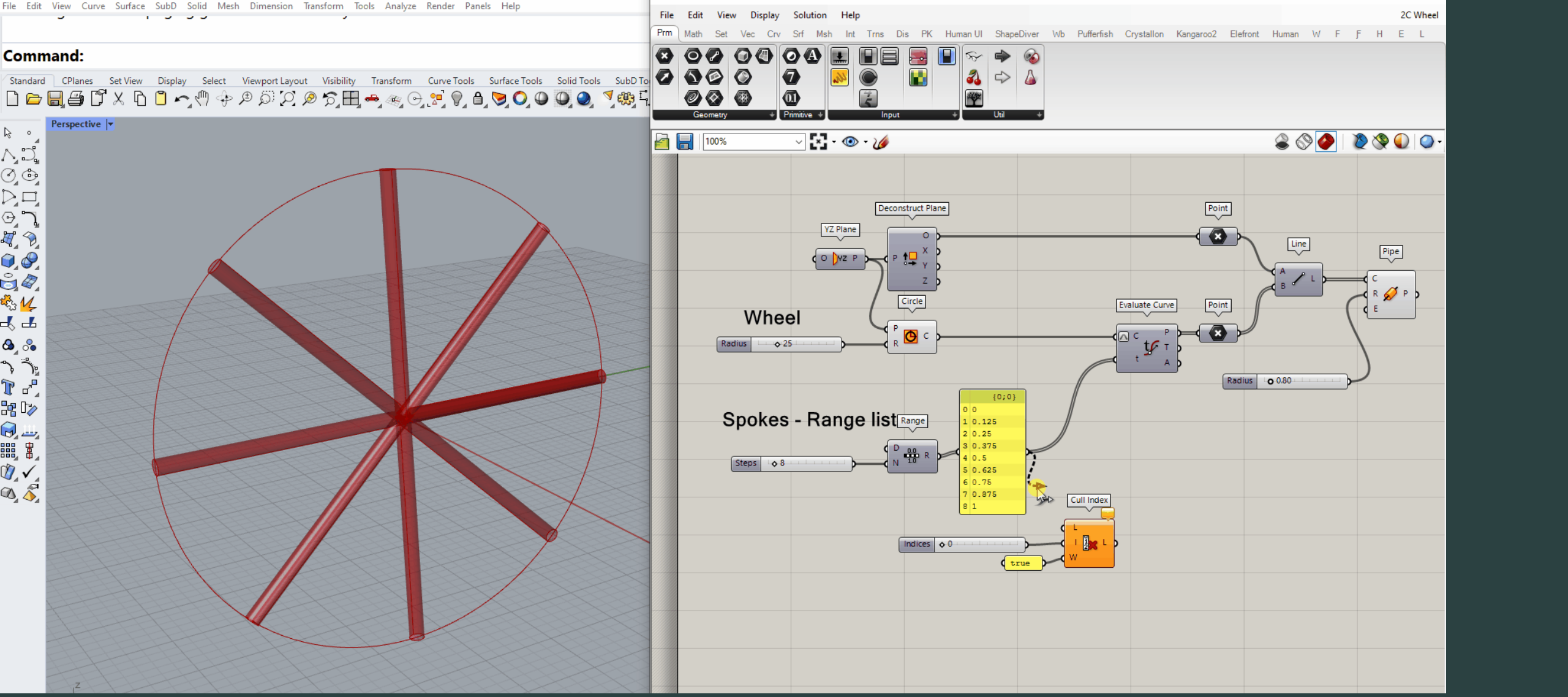
Editing lists

Cull index: remove



Editing lists

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Geometry Primitive Input Util
100%
Wheel
Deconstruct Plane
YZ Plane
Point
Line
Pipe
Circle
Evaluate Curve
Point
Radius 25
Radius 0.80
Spokes - Range list
Range
Steps 8
{0;0}
0 0
1 0.125
2 0.25
3 0.375
4 0.5
5 0.625
6 0.75
7 0.875
8 1
Cull Index
Indices 0
true