

# Computational design

Using Rhino & Grasshopper

Lesson 2 – Curves and lists

# Inputs

Point

x

- {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

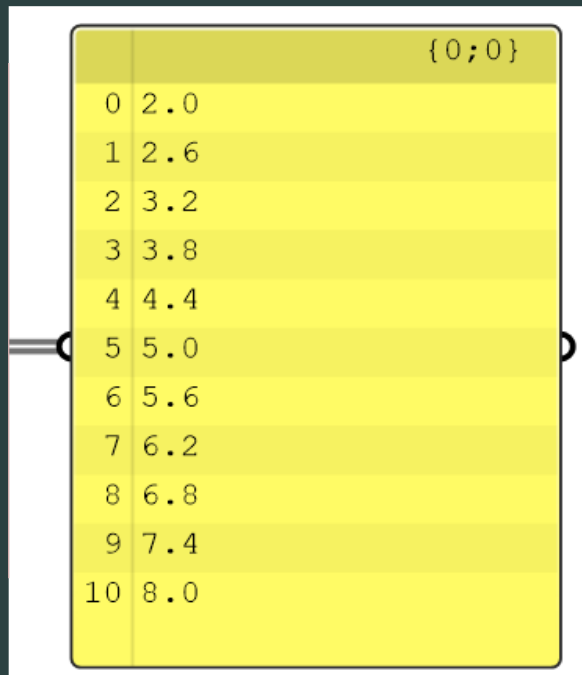
Height

30

Periodic = ope

# Structure of a list

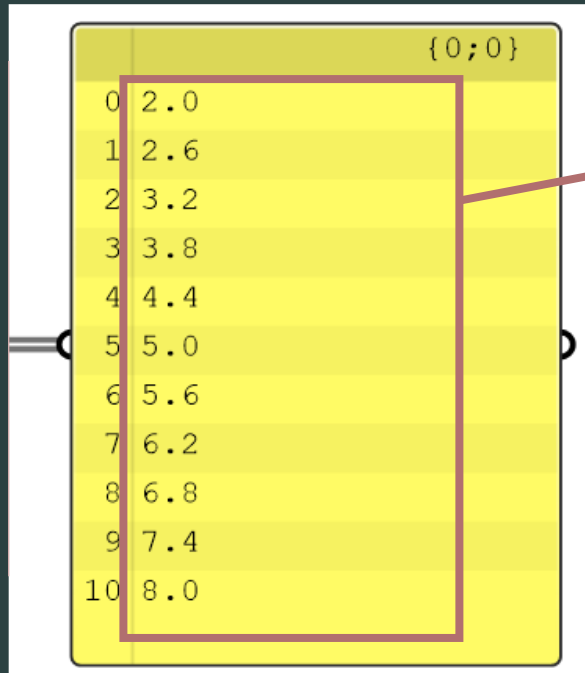
- List is a data structure in Grasshopper
- Use the “panel” component to visualise

A screenshot of a Grasshopper 'List Panel' component. The panel is a yellow rectangle with a thin black border. At the top right, it displays the text '{0;0}'. The main area of the panel is divided into two columns by a vertical line. The left column contains index numbers from 0 to 10, and the right column contains corresponding numerical values. The rows are highlighted in alternating shades of yellow. On the left side of the panel, there is a small circular input port with a double-line connection. On the right side, there is a small circular output port with a single-line connection.

	{0;0}
0	2.0
1	2.6
2	3.2
3	3.8
4	4.4
5	5.0
6	5.6
7	6.2
8	6.8
9	7.4
10	8.0

# Structure of a list

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



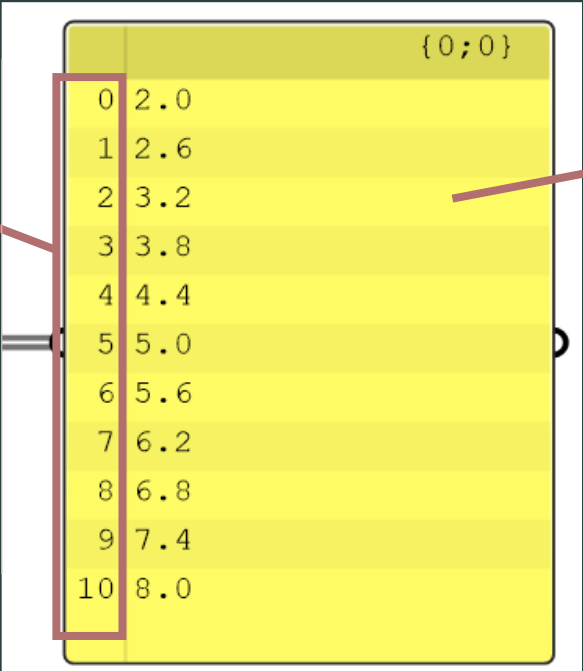
The image shows a Grasshopper Panel component, which is a yellow rectangular box with a dark border. Inside the panel, there is a list of 11 items, each consisting of an index number followed by a numerical value. The items are: 0 2.0, 1 2.6, 2 3.2, 3 3.8, 4 4.4, 5 5.0, 6 5.6, 7 6.2, 8 6.8, 9 7.4, and 10 8.0. A red rectangular box highlights the entire list area. A red line points from the word "Data" to the right side of the panel, indicating the data being visualized.

	{0;0}
0	2.0
1	2.6
2	3.2
3	3.8
4	4.4
5	5.0
6	5.6
7	6.2
8	6.8
9	7.4
10	8.0

Data

# Structure of a list

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

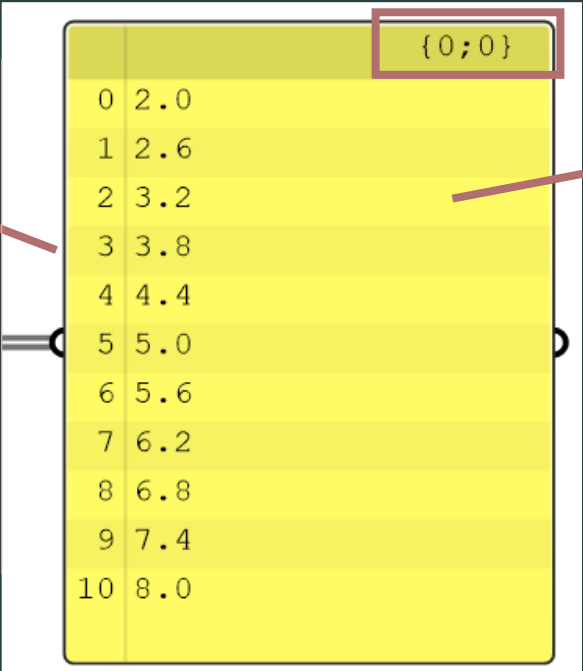


A screenshot of a Grasshopper 'List Panel' component. The panel is a yellow rectangle with a header row containing the text '{0;0}'. Below the header, there are 11 rows of data. The first column of each row contains an index value from 0 to 10. The second column contains a numerical value. A red rectangular box highlights the first column of data (the indices). A red line points from the label 'Indices' to this box. Another red line points from the label 'Data' to the second column of data.

	{0;0}
0	2.0
1	2.6
2	3.2
3	3.8
4	4.4
5	5.0
6	5.6
7	6.2
8	6.8
9	7.4
10	8.0

# Structure of a list

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



The image shows a Grasshopper List Panel component. It is a yellow rectangular panel with a header row and 11 data rows. The header row is labeled '{0;0}' and is highlighted with a red box. The data rows contain indices and values. A red line points from the label 'Indices' to the first column of the data rows. Another red line points from the label 'Data' to the second column of the data rows. The label 'Path' is positioned above the header row.

Path		
0	2.0	
1	2.6	
2	3.2	
3	3.8	
4	4.4	
5	5.0	
6	5.6	
7	6.2	
8	6.8	
9	7.4	
10	8.0	

# How to make a list

Typing in a panel  
(switch off multiline data)

<i>A list</i>	
	{0}
0	test
1	41234
2	2
3	1.00
4	6

# How to make a list

## Combining outputs

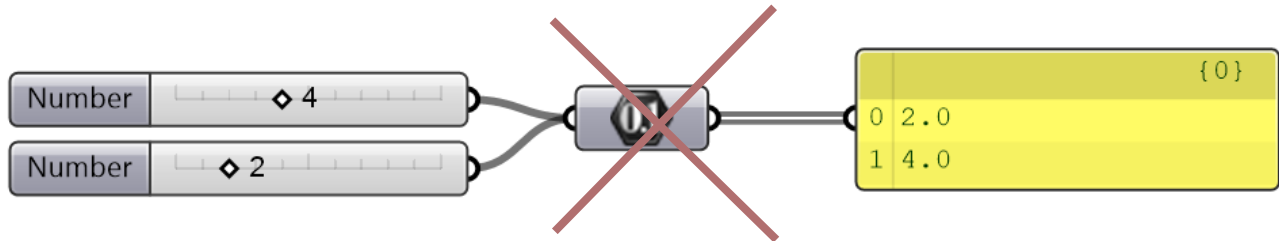




# How to make a list

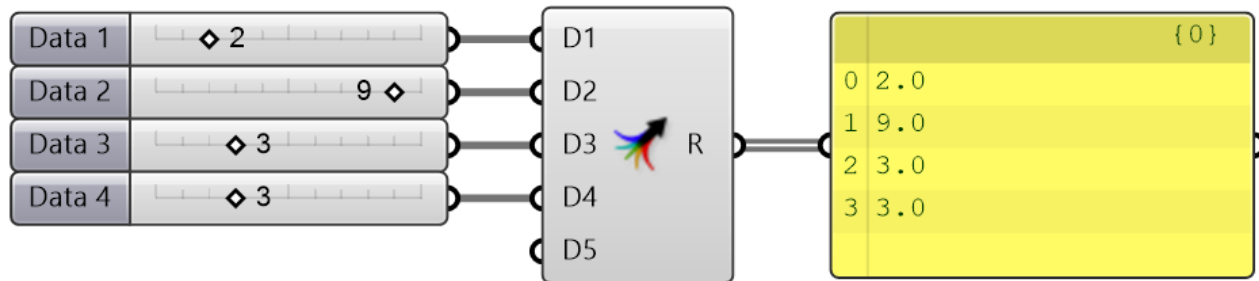
## Combining outputs

Bad habit!



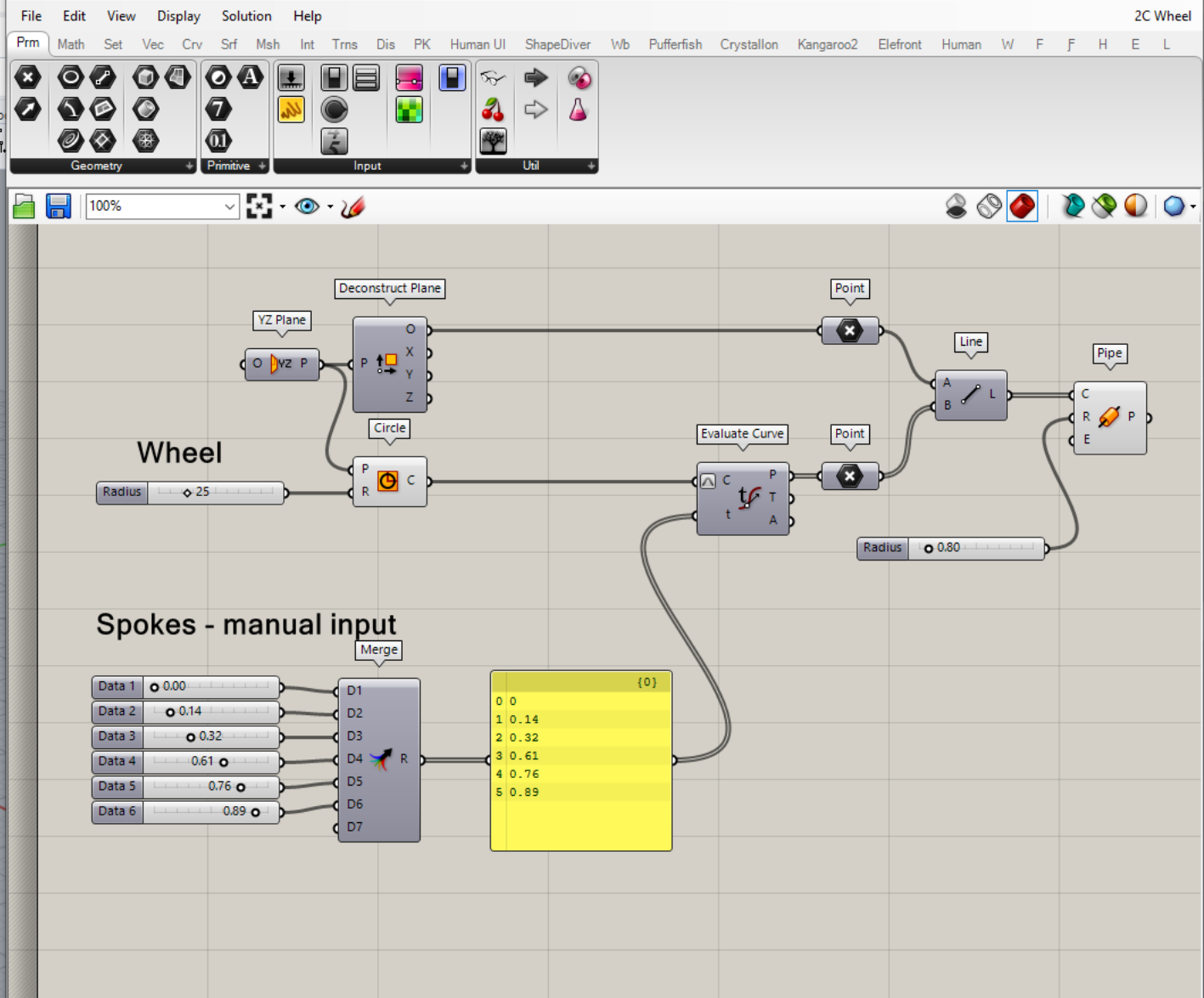
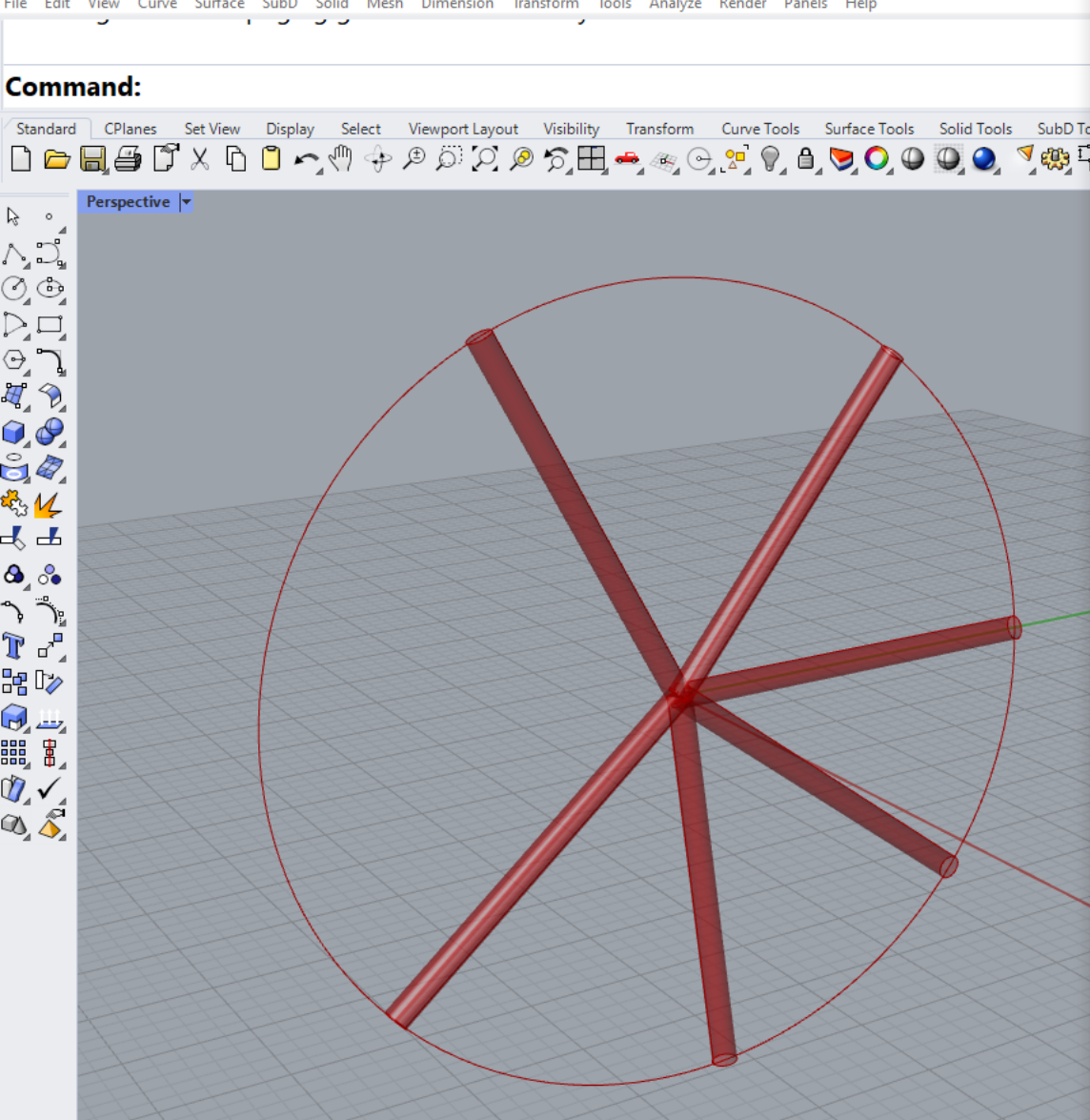
## Merge

Beter



# Applications of a list

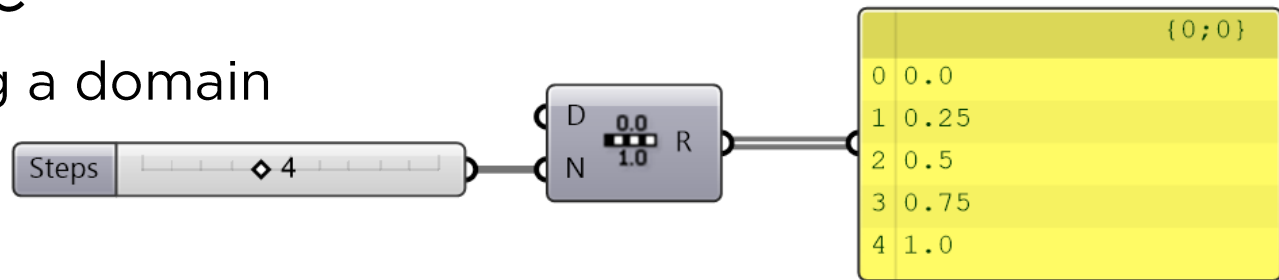
- Combining objects
- Generating objects
- Processing multiple things at once



# How to make a list - Range

## Range

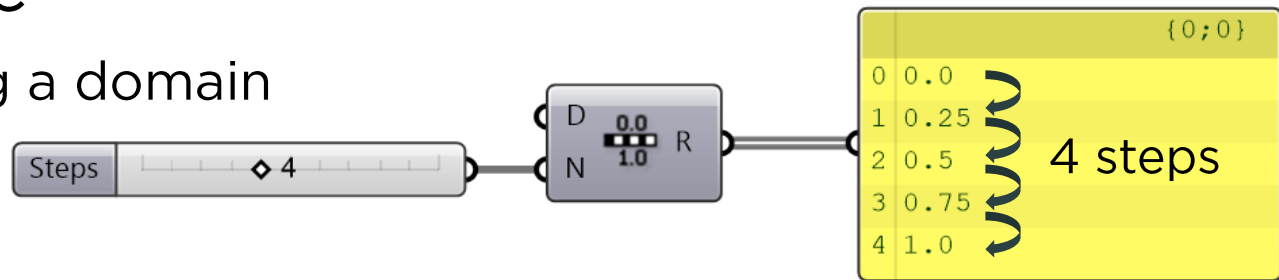
Dividing a domain



# How to make a list - Range

## Range

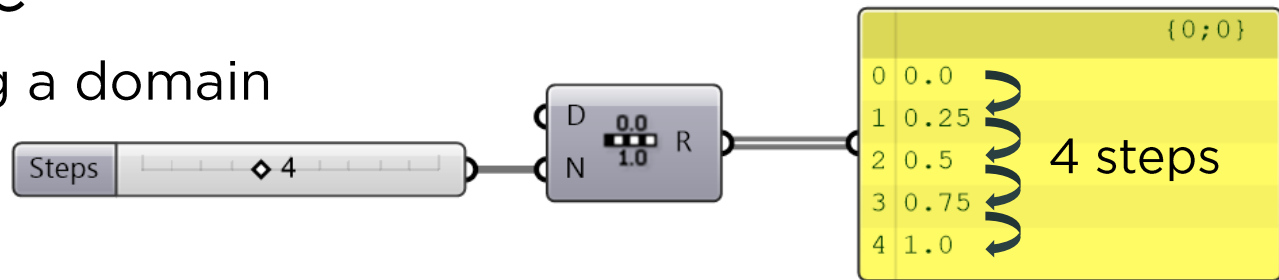
Dividing a domain



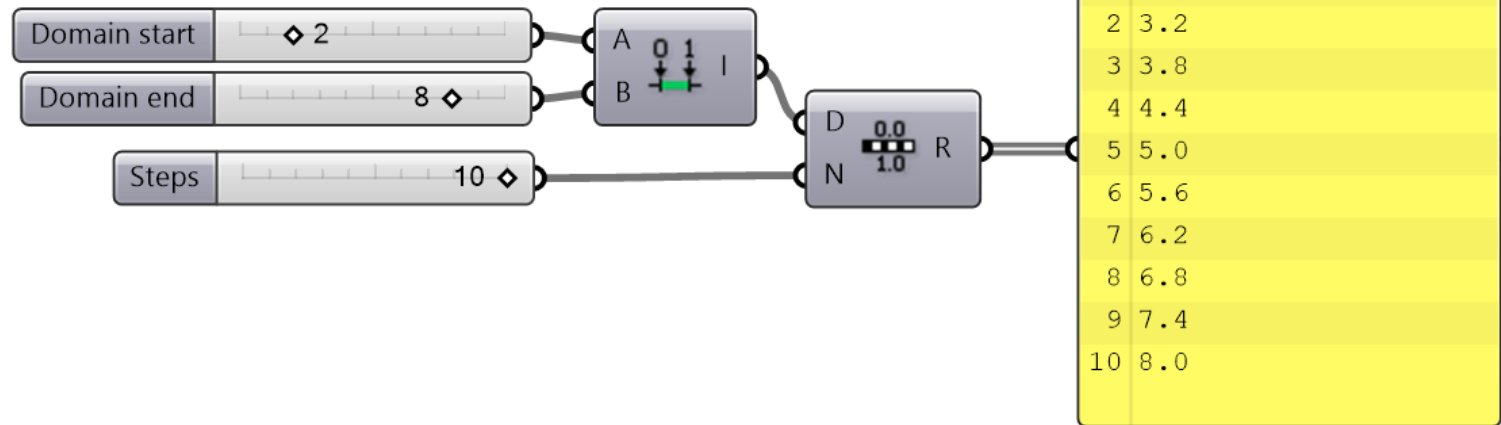
# How to make a list - Range

## Range

Dividing a domain

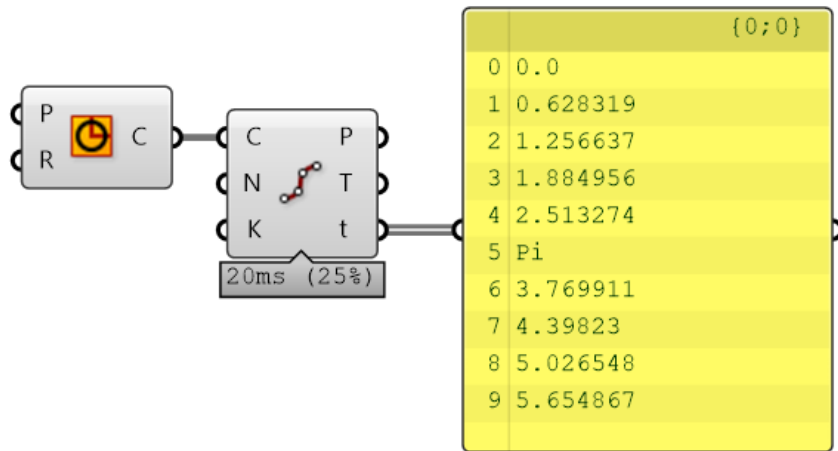


Not just from 0 to 1



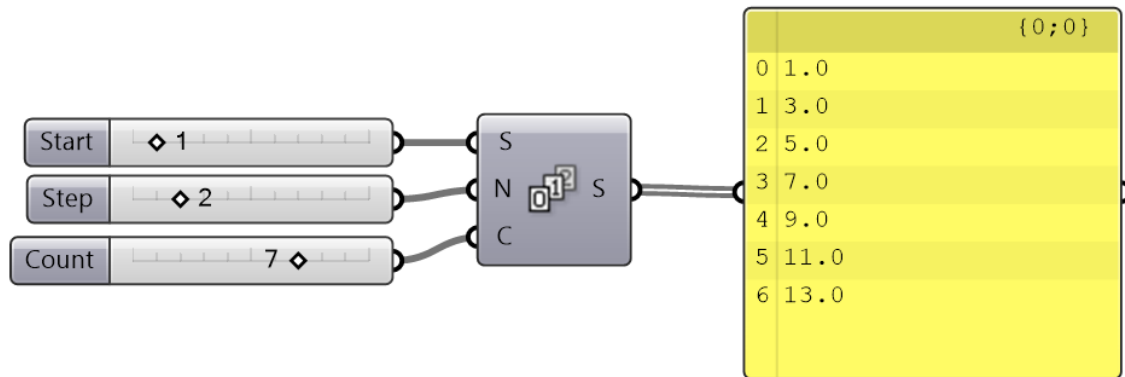
# How to make a list

## Divide Curve



# How to make a list

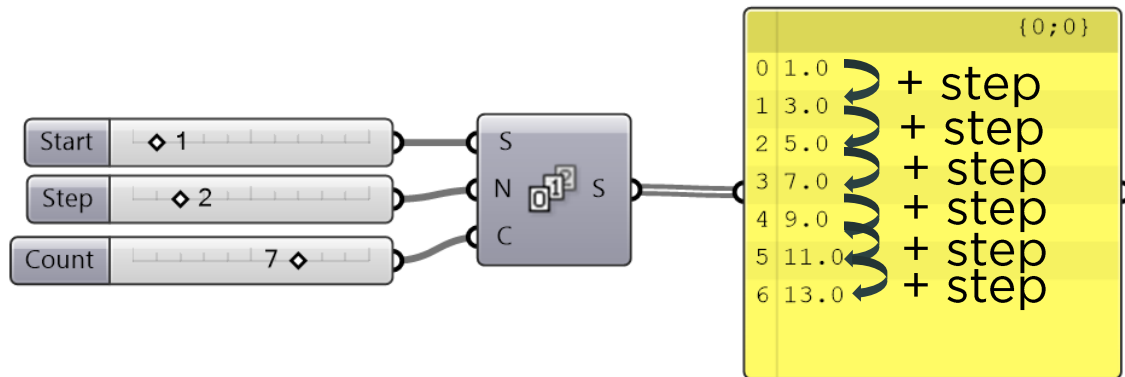
Series: counting in steps





# How to make a list

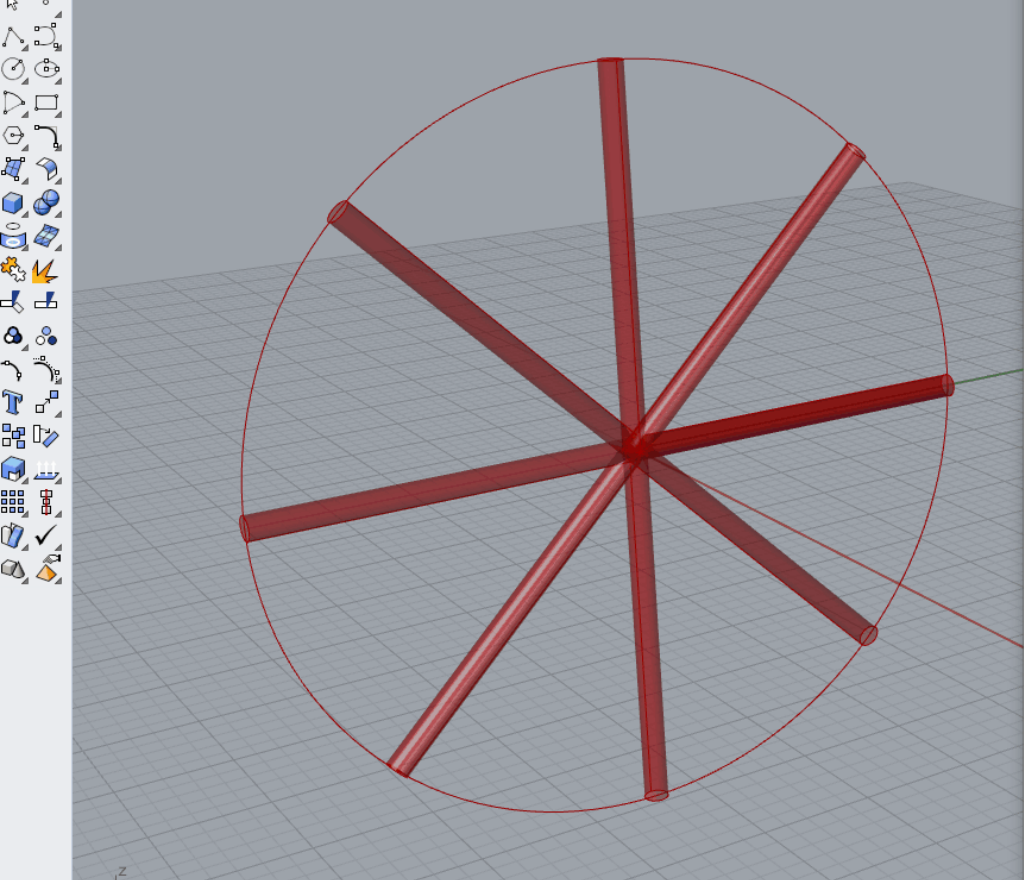
Series: counting in steps



## Command:

Standard CPlanes Set View Display Select Viewport Layout Visibility Transform Curve Tools Surface Tools Solid Tools SubD Tools

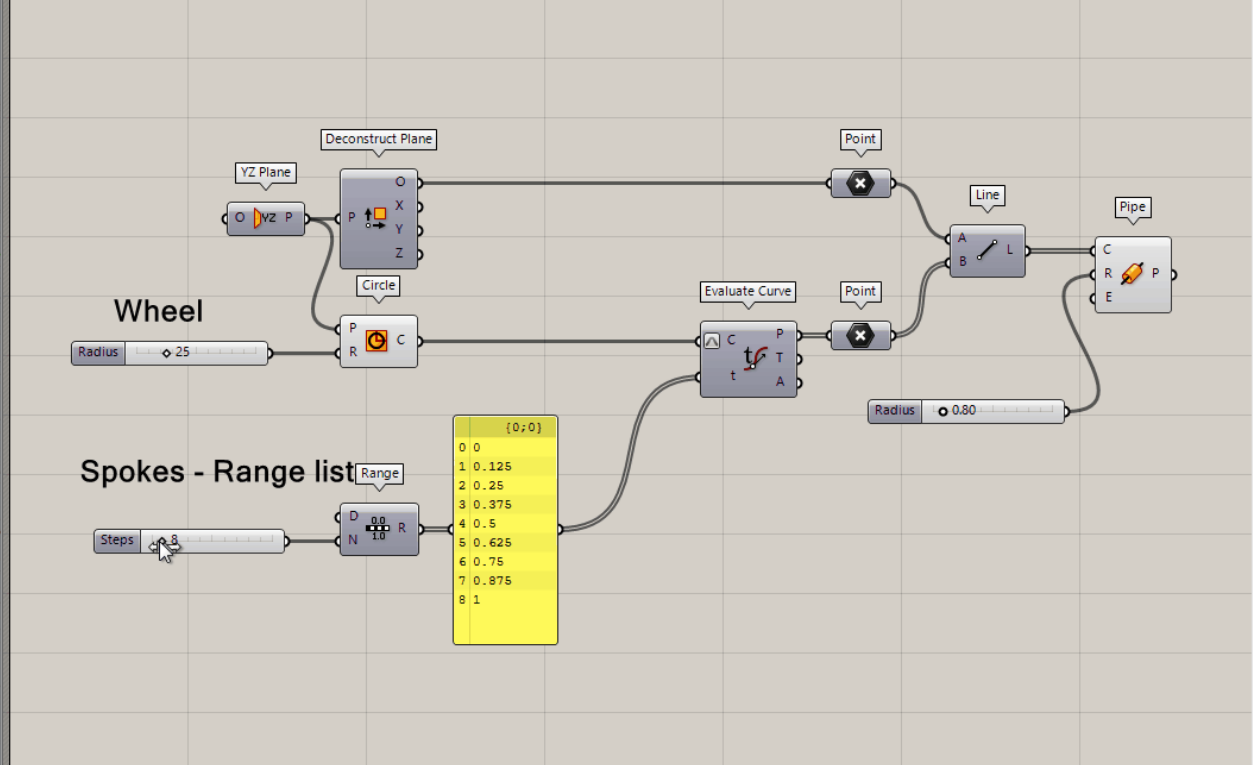
Perspective



Prm Math Set Vec Crv Srf Msh Int Trns Dis PK Human UI ShapeDriver Wb Pufferfish Crystallon Kangaroo2 Elefront Human W F F H E L

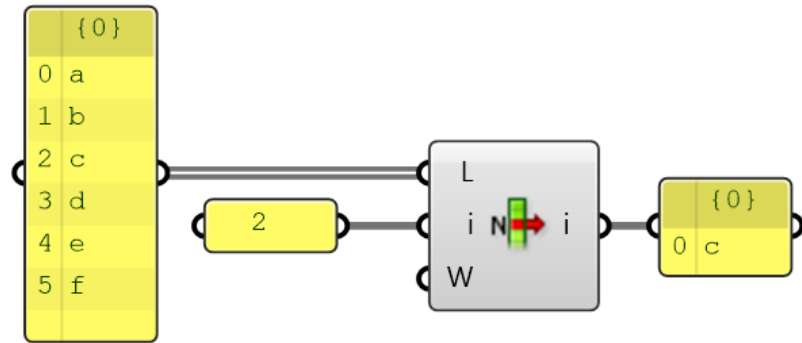
Geometry Primitive Input Util

100% Active



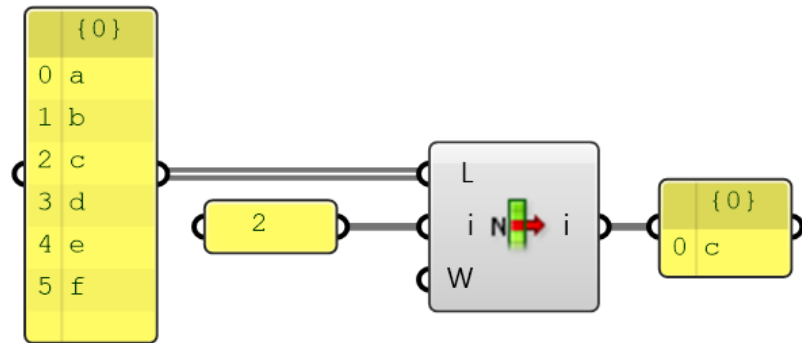
# Editing lists

List item: pick an item

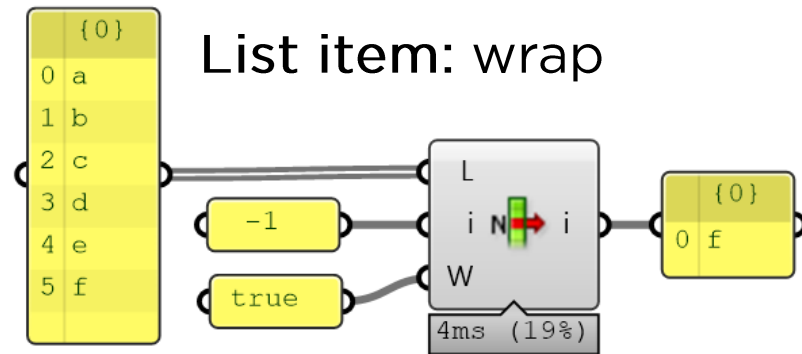


# Editing lists

List item: pick an item

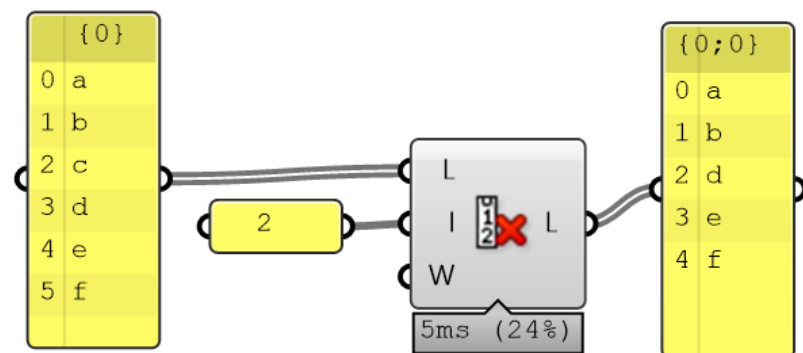


List item: wrap

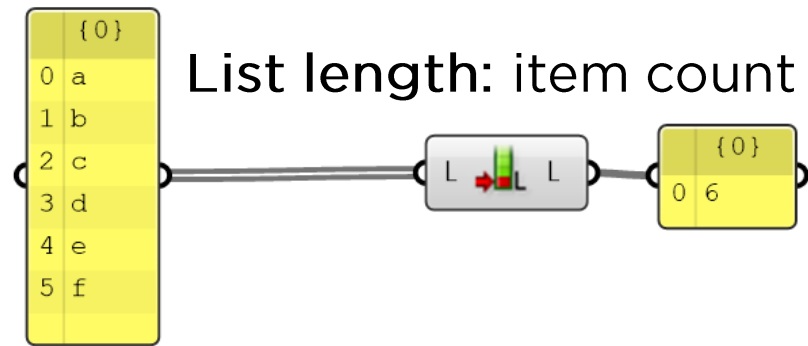


# Editing lists

Cull index: remove



# Editing lists



Command:

Standard CPlanes Set View Display Select Viewport Layout Visibility Transform Curve Tools Surface Tools Solid Tools SubD To

