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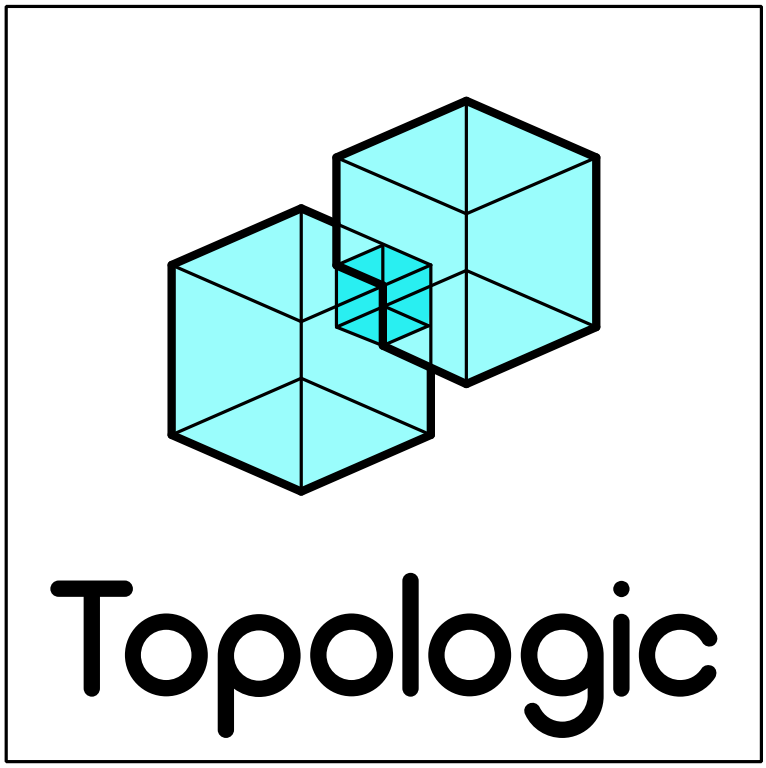


# TUTORIAL 03
# Topological Queries

Version: 0.8.6

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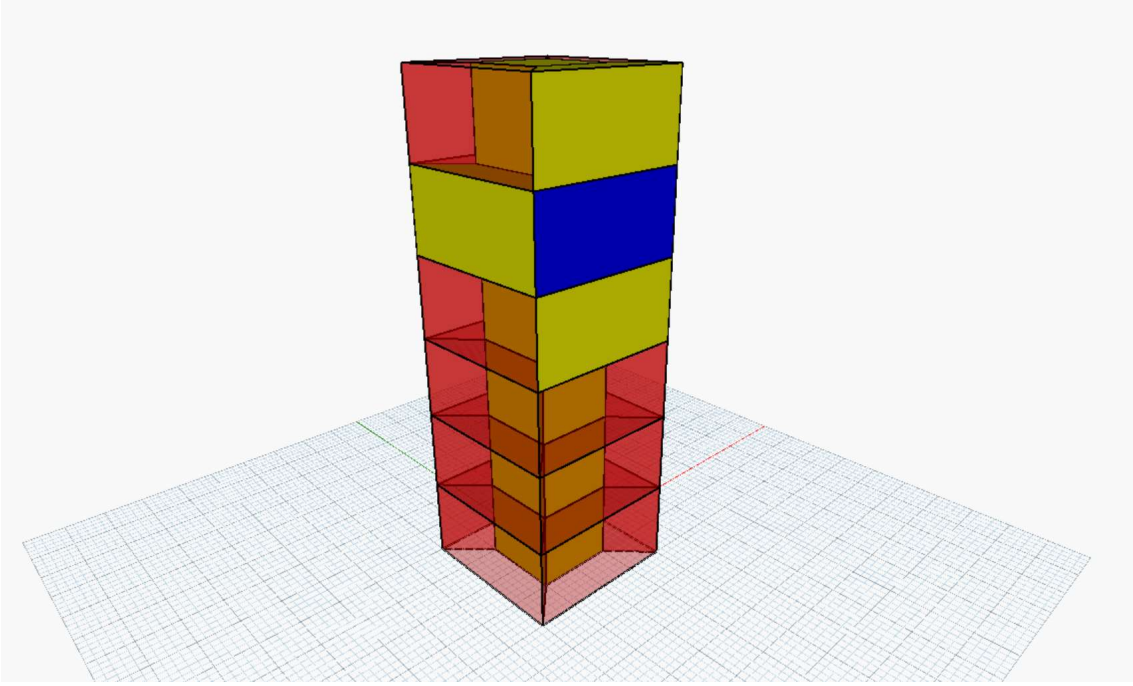
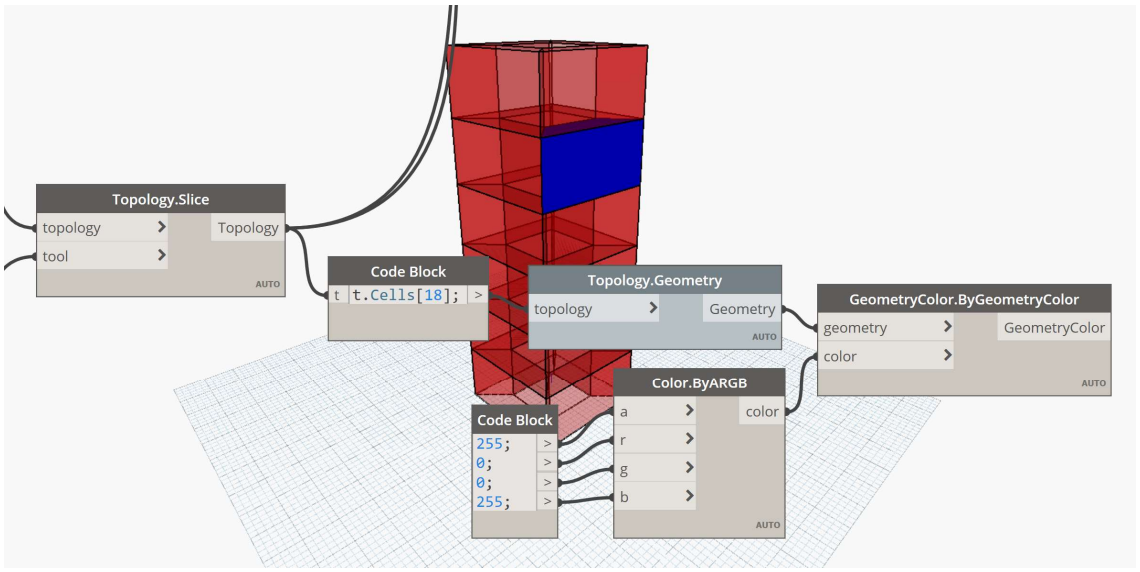
## Introduction

Topologic enables the user to submit topological queries. For example, you can ask a **Cell** to list its adjacent **Cells** – as you see in the figure below. The dark blue **Cell** is the one that was selected from the **CellComplex** and the yellow **Cells** are the ones it listed as adjacent **Cells**. An adjacent Cell is defined as one that shares a **Face** with the queried Cell. You can also ask two **Cells** to list any **Faces**, **Edges**, or **Vertices** that they share. In this tutorial, we will create a few of these topological queries. To do so, we will use the Dynamo definition that you created earlier for the multi-storey building (Tutorial 02). Do not worry if you have not saved it. We include a copy with these tutorials. The file is called **Topologic-04-Tutorial02.dyn**. Open this file and save it under a new name (e.g. **Topologic-05-Tutorial03.dyn**).



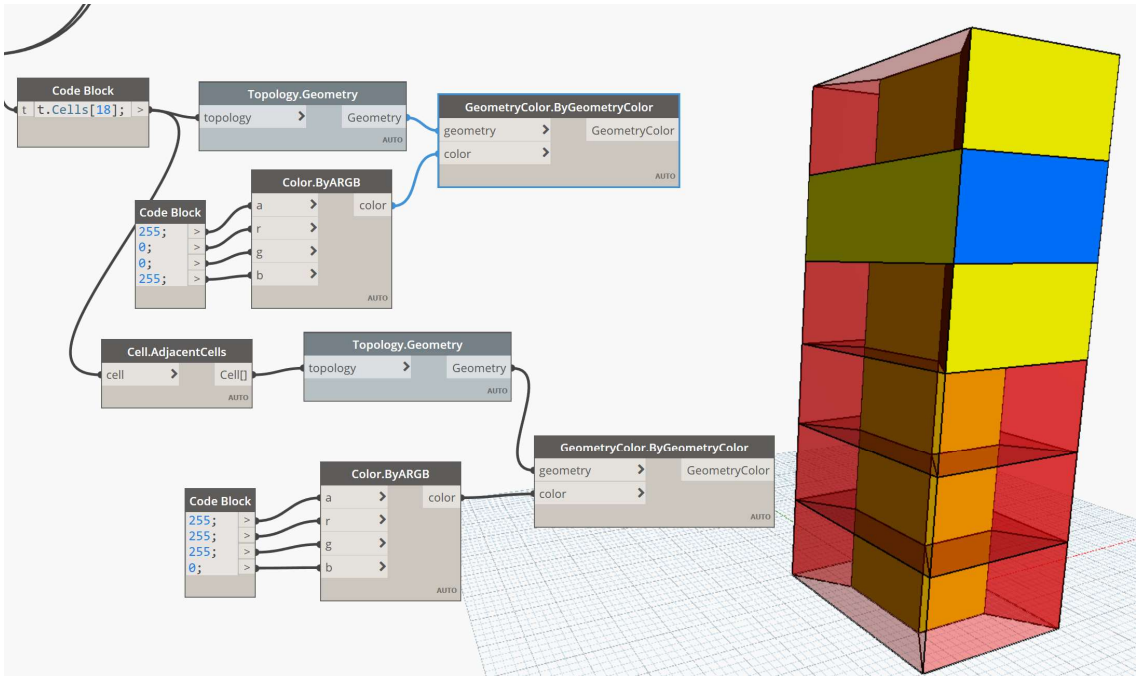
## Step 1: Select a Cell from the CellComplex

The quickest way to select a **Cell** from the **CellComplex** is to use a Code Block. Create a Code Block and enter the following line into it: **t.Cells[18];**. Connect the **CellComplex** output to the t input parameter. The result will be a **Cell**. Connect the output of the Code Block to the usual **Topology.Geometry** node to display it in the geometry view. Change the index number (18) to a different number to test how different **Cells** are selected. Follow the figure below if you wish to add colour to the selected **Cell** to better identify it.



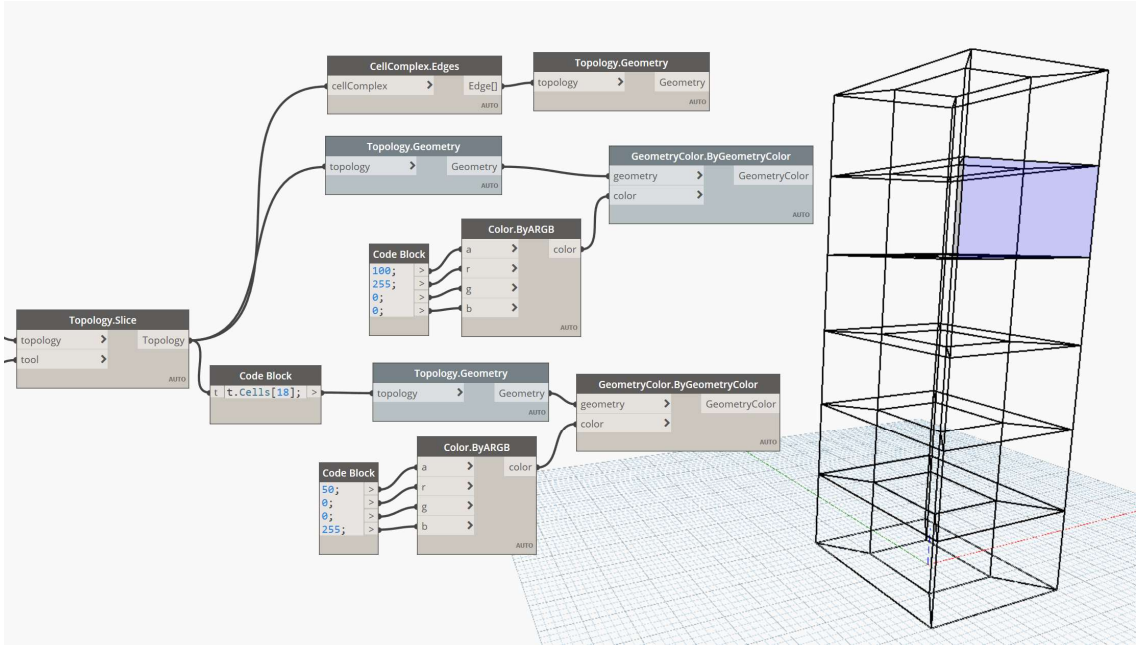

## Step 2: Adjacent Cells

Create a **Cell.AdjacentCells** node. Connect the output of the Code Block to its **Cell** input parameter. Connect its output to a new **Topology.Geometry** and add colour if you wish to better visualise the result – as seen in the figure below. Change the index parameter in the Code Block to test how different **Cells** create different adjacent **Cells**.

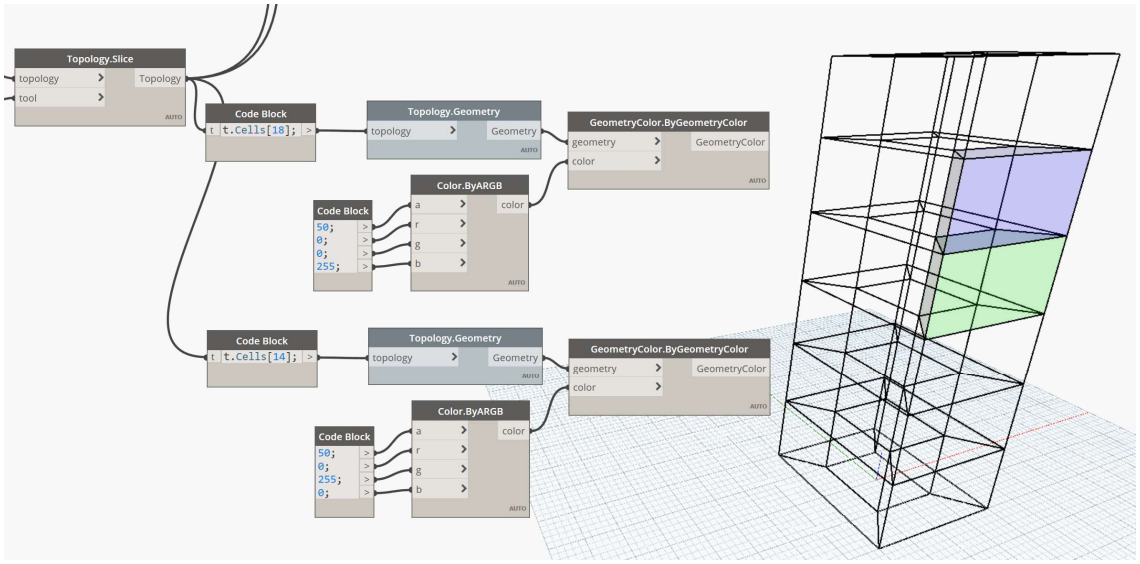


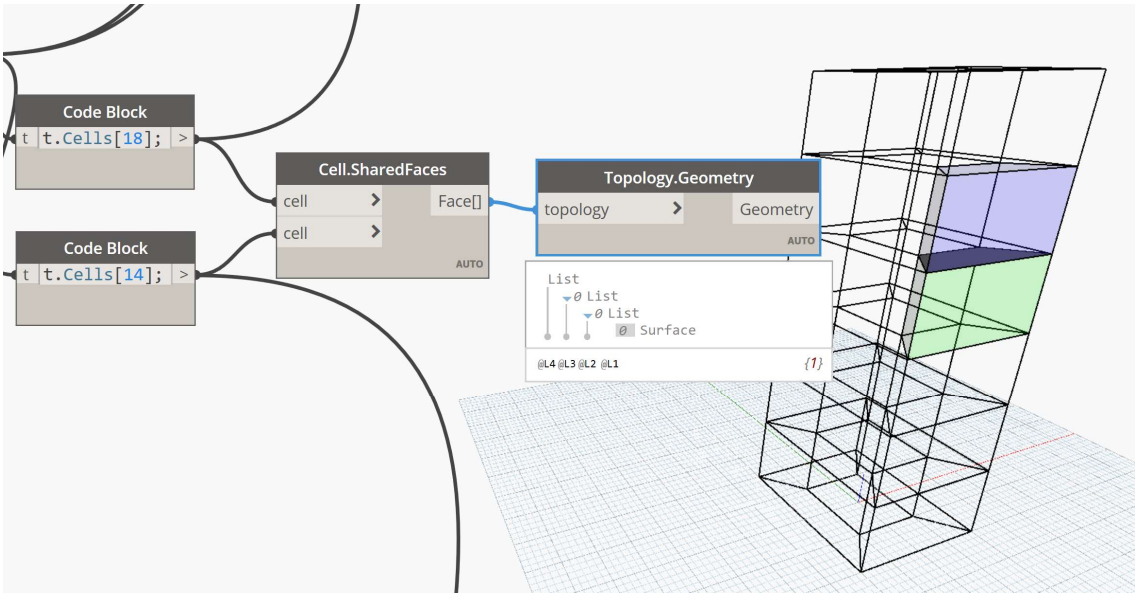

## Step 3: Shared Faces

Disconnect or disable the preview of nodes created in the previous step. Disable the preview of the **Geometry.ByGeometryColor** of the **CellComplex** to see only its **Edges**. Reduce the opaqueness (a) of the selected **Cell** to 100. You should see a figure similar to the one below.




Copy and paste the Code Block node that contains **t.Cells[18];** along with its connected **Topology.Geometry** etc. Make sure the new Code Block is still connected to the **CellComplex**. Try different numbers until you find a **Cell** that is adjacent to the first **Cell** at index 18. Give this new **Cell** a different colour and rotate the geometry view to better see the shared **Face**.






You can explore other shared topologies such as **Cell.SharedEdges** and **Cell.SharedVertices**.

Congratulations. You are mastering the use of Topologic.

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**CONTACT US**

Web: topologic.app

Email: info@topologic.app

Phone: +44 (0) 29 2087 5981

Welsh School of Architecture
Cardiff University
Cardiff CF10 3NB
United Kingdom