Using Blockly in Jupyter Notebooks

How to Write Code Without Writing Code

What is Blockly?

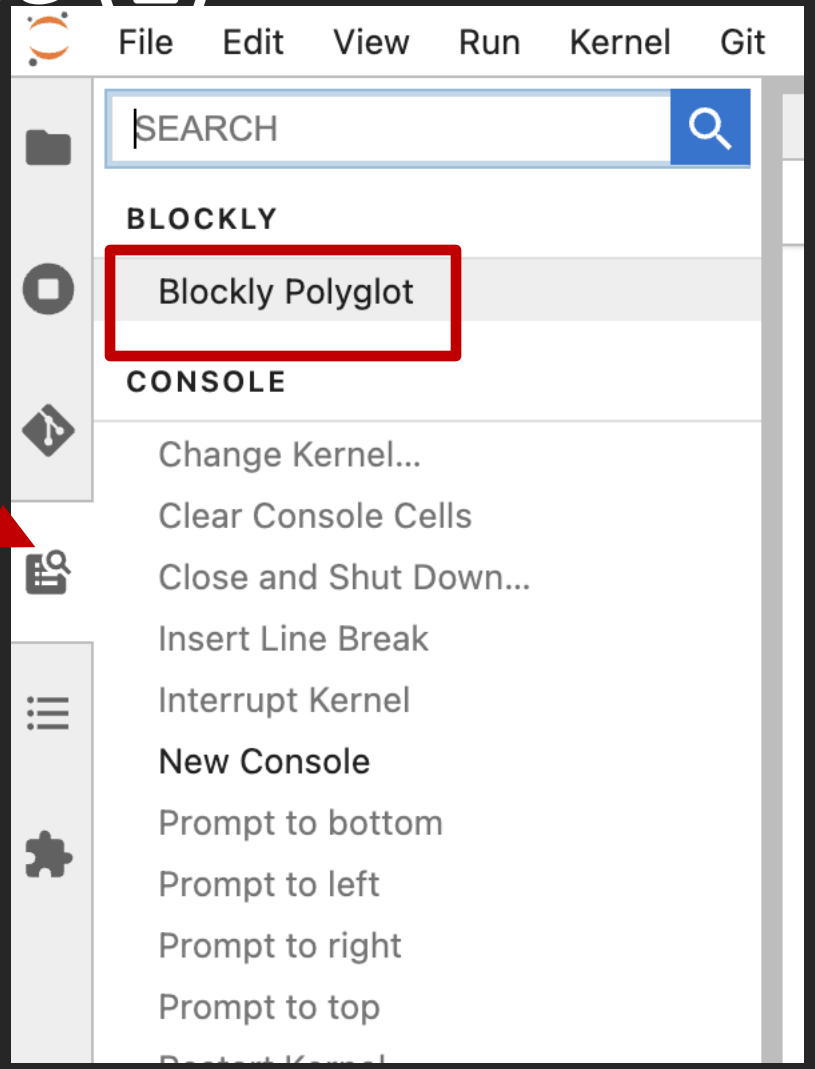
- Block-based programming editor
- Users place interlocking, graphical blocks representing code concepts
- Blockly generates equivalent Python code


```
print('Hi')
```

How-to: Open Blockly Interface (1)

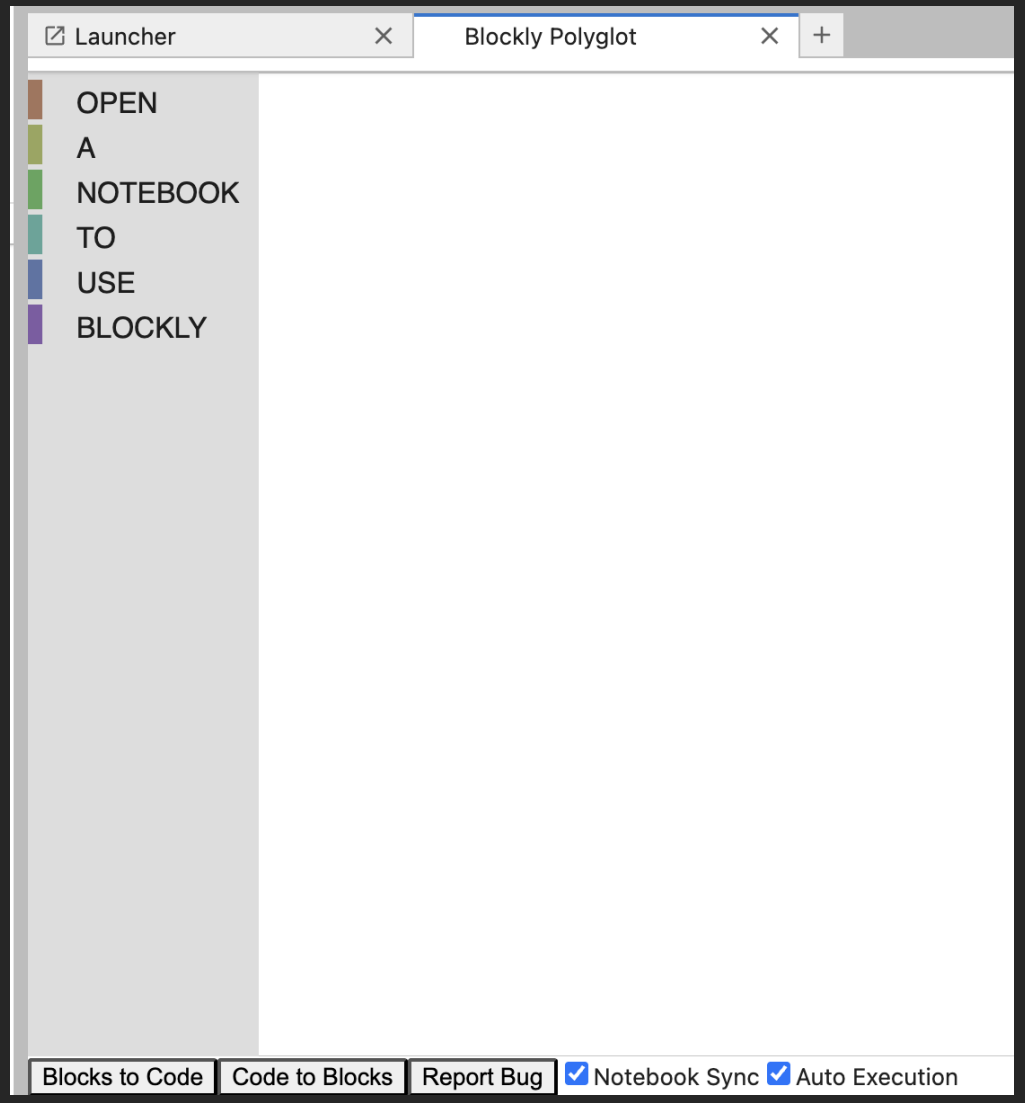
1. Open Commands
2. Click Blockly Python

This will open a Blockly tab.



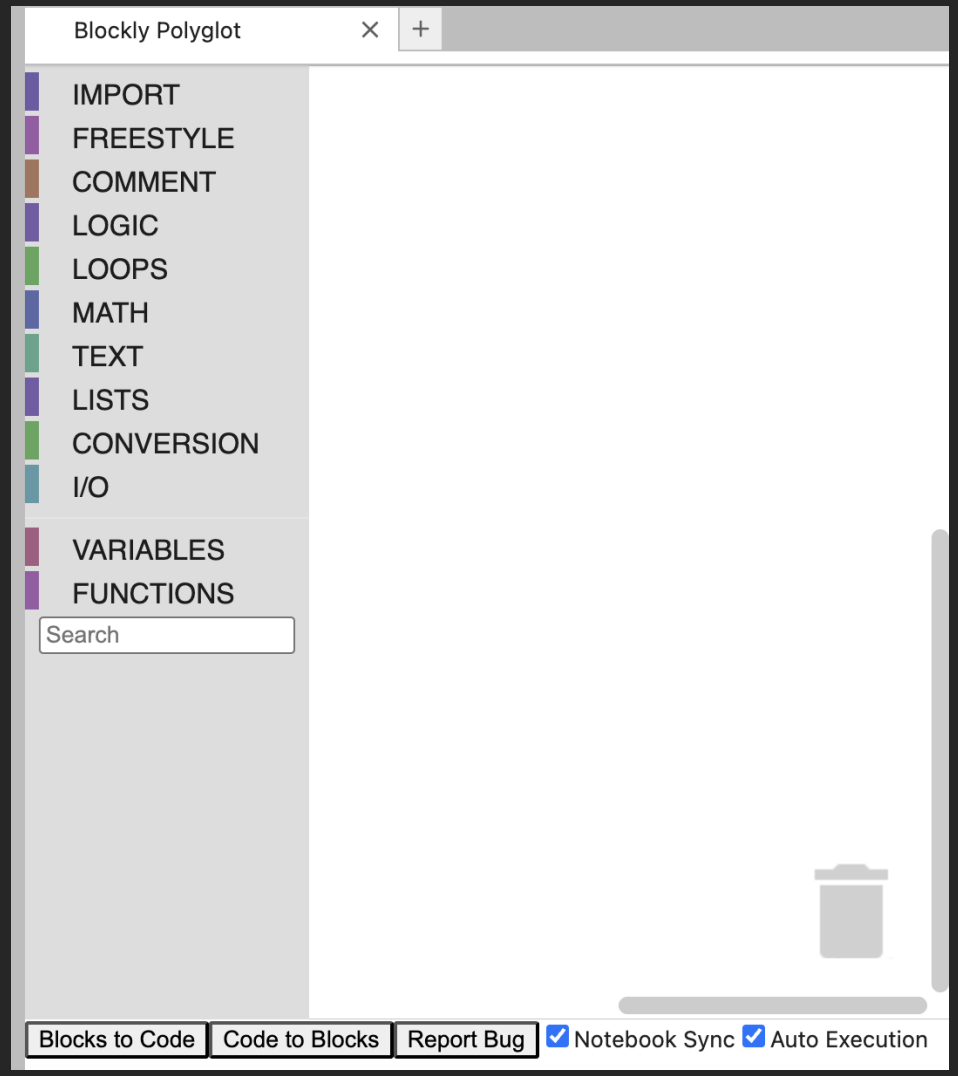
How-to: Open Blockly Interface (2)

This is how the Blockly Editor **should look… without any opened notebook**



How-to: Open Blockly Interface (2)

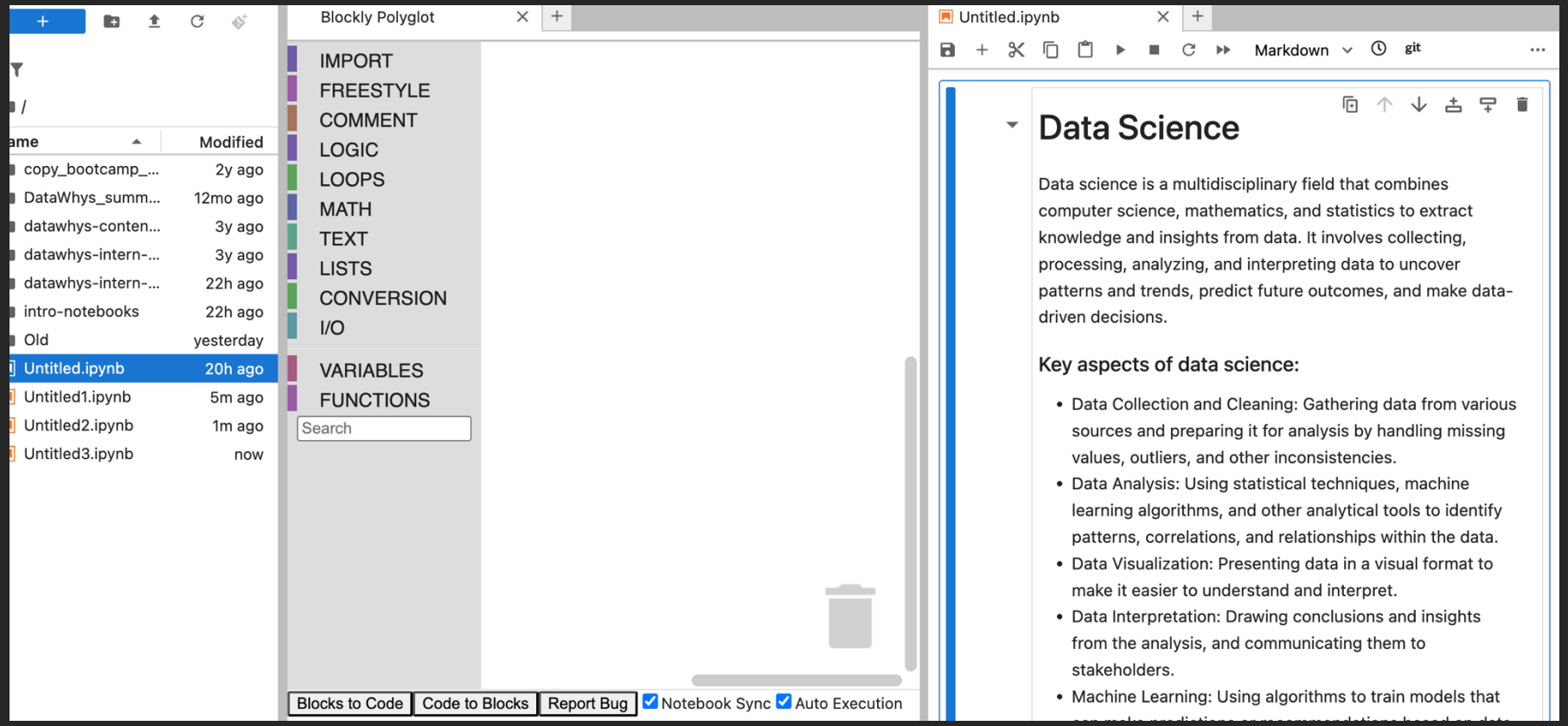
This is how the Blockly Editor **should look…with an opened notebook**



How-to: Use Blockly Interface (2)

How to use a notebook side by side with Blockly editor

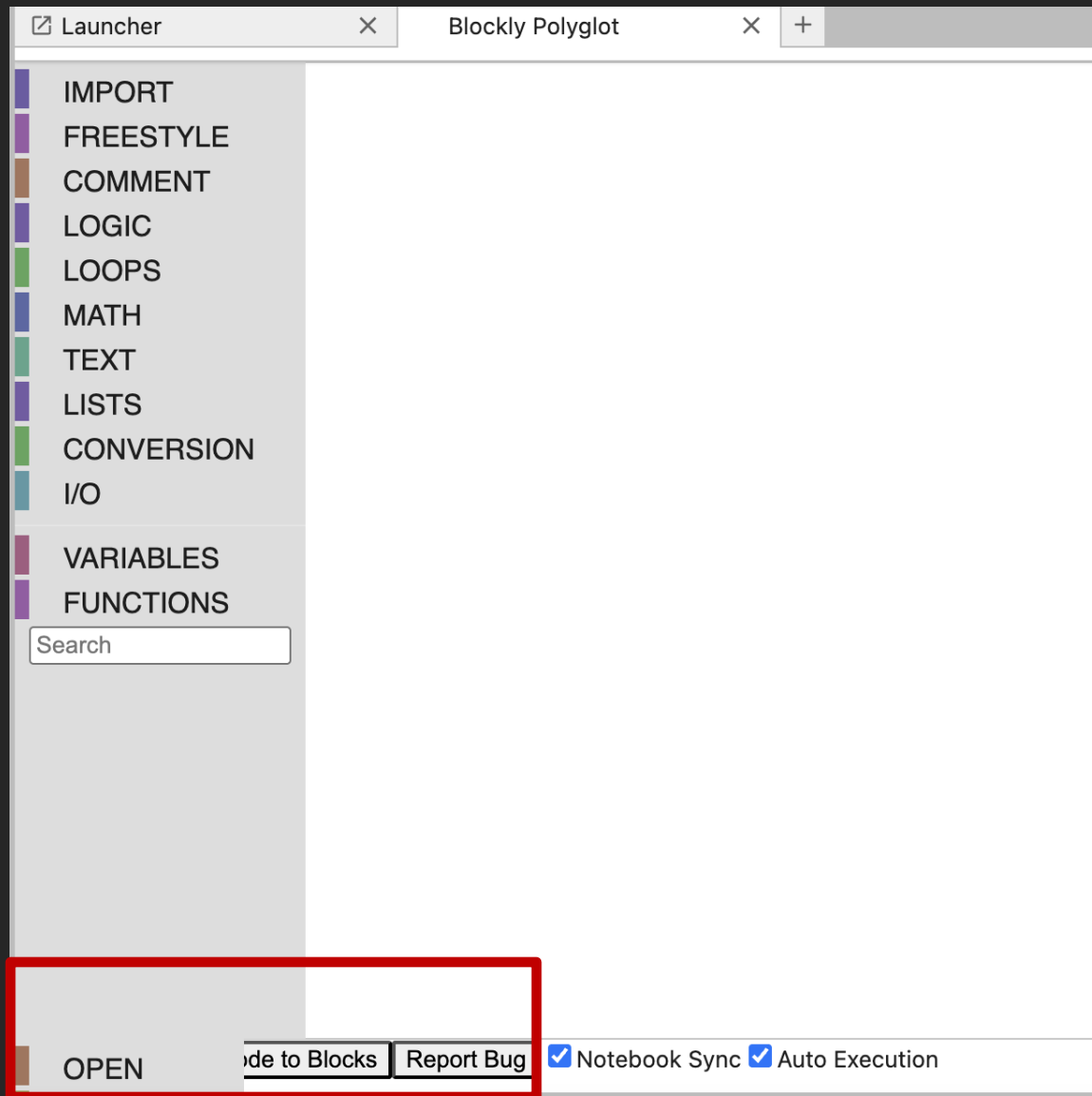
Demo!



How-to: Fix Blockly Interface Render Issues

But sometimes it may not render correctly…

Solution: Reload the page.

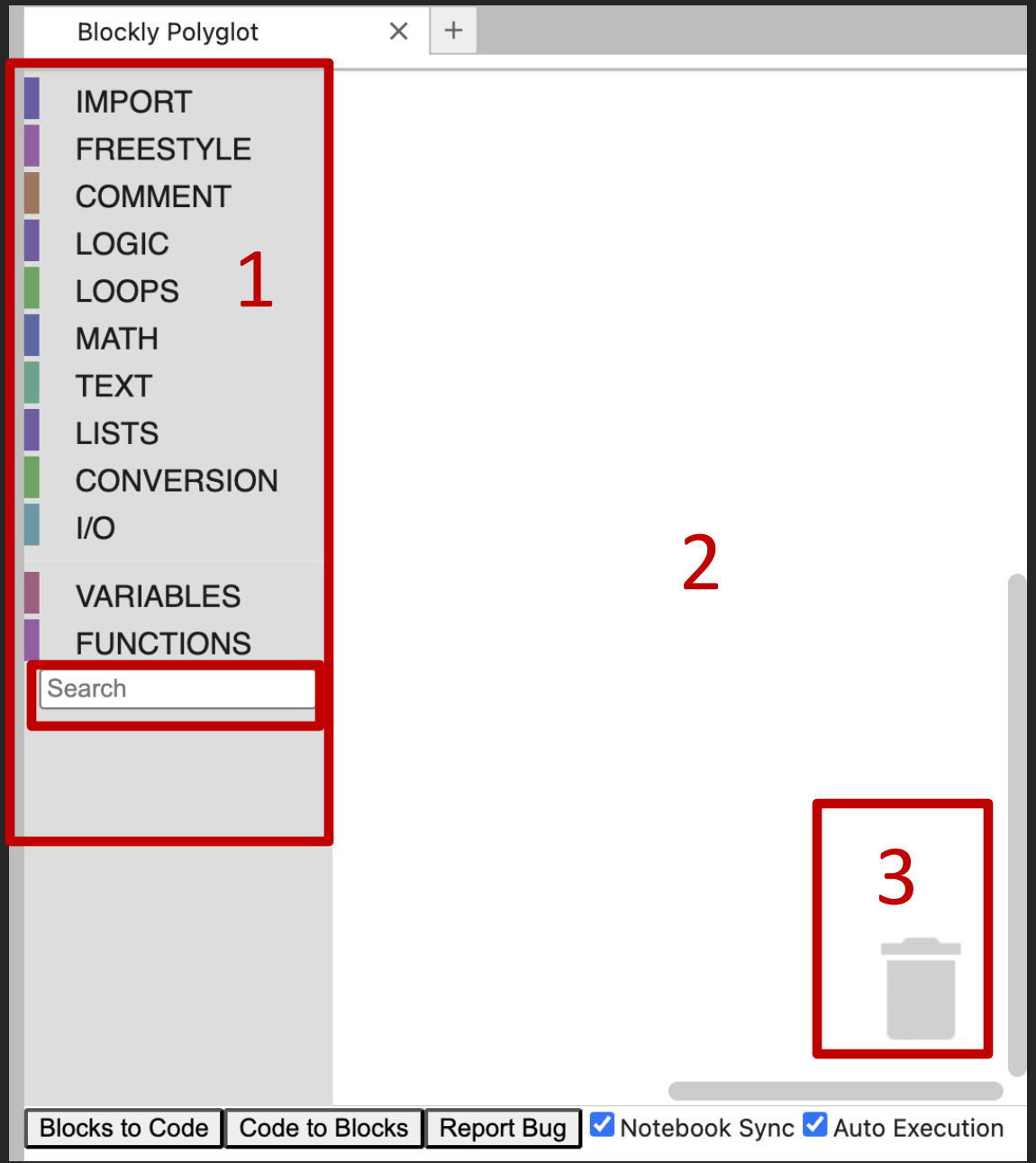


Activity 1: Open Blockly Editor

1. Close all open tabs (except pdf)
2. Reload the page
3. Open Blockly Editor & confirm rendered **correctly**
4. Close Blockly Editor
5. Open Blockly Editor & confirm rendered **incorrectly**
6. Reload the page
7. Confirm Blockly Editor rendered **correctly**

Blockly Interface

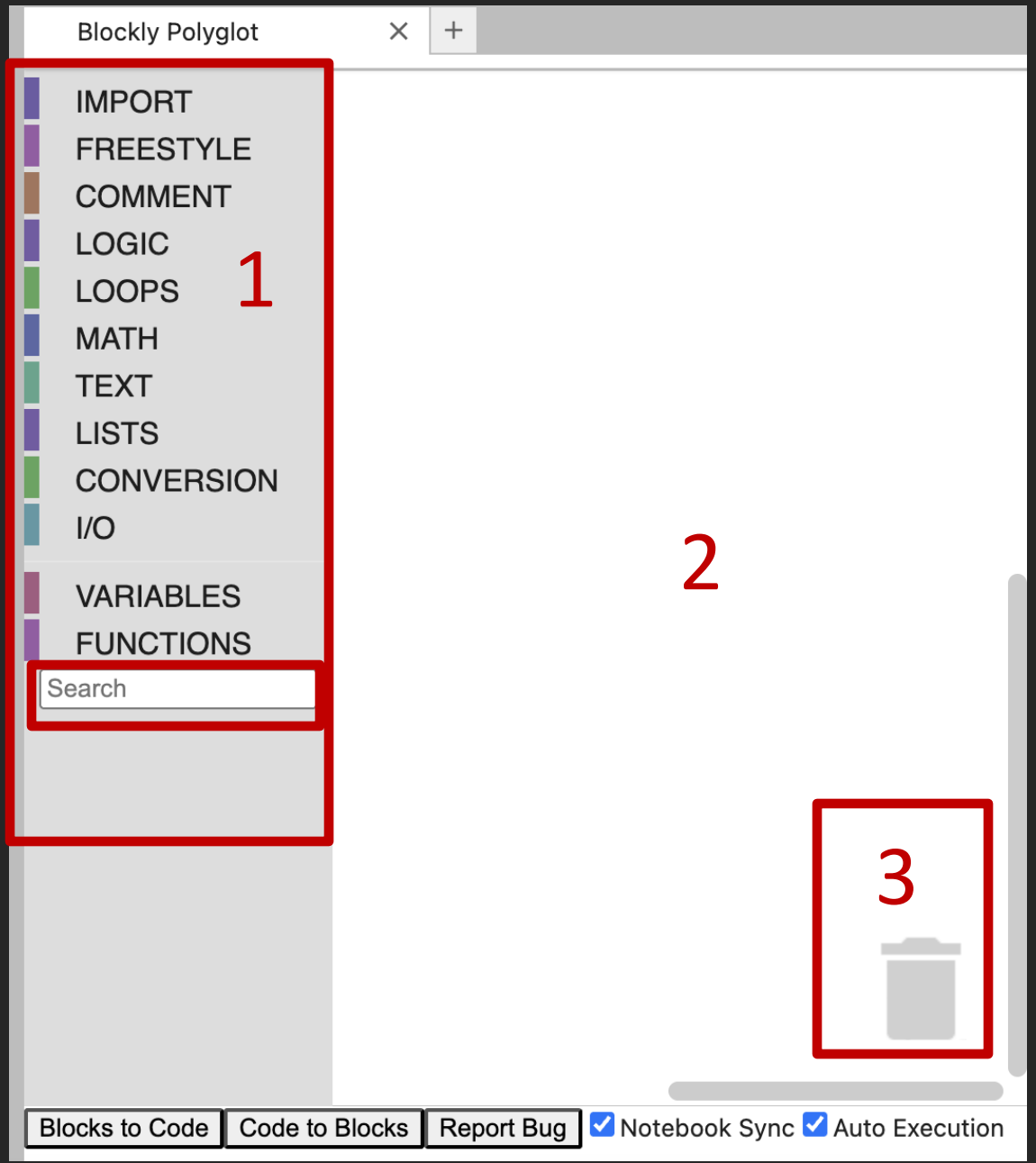
1. Blockly Toolbox
2. Blockly Workspace
3. Blockly Trash Can



Blockly Interface

1. Blockly Toolbox
2. Blockly Workspace
3. Blockly Trash Can

Demo!



Activity 2: Playtime with Blocks

1. Open Blockly Editor (if not already open)
2. Click the Text section of Blockly Toolbox
3. Find the “print” text block 

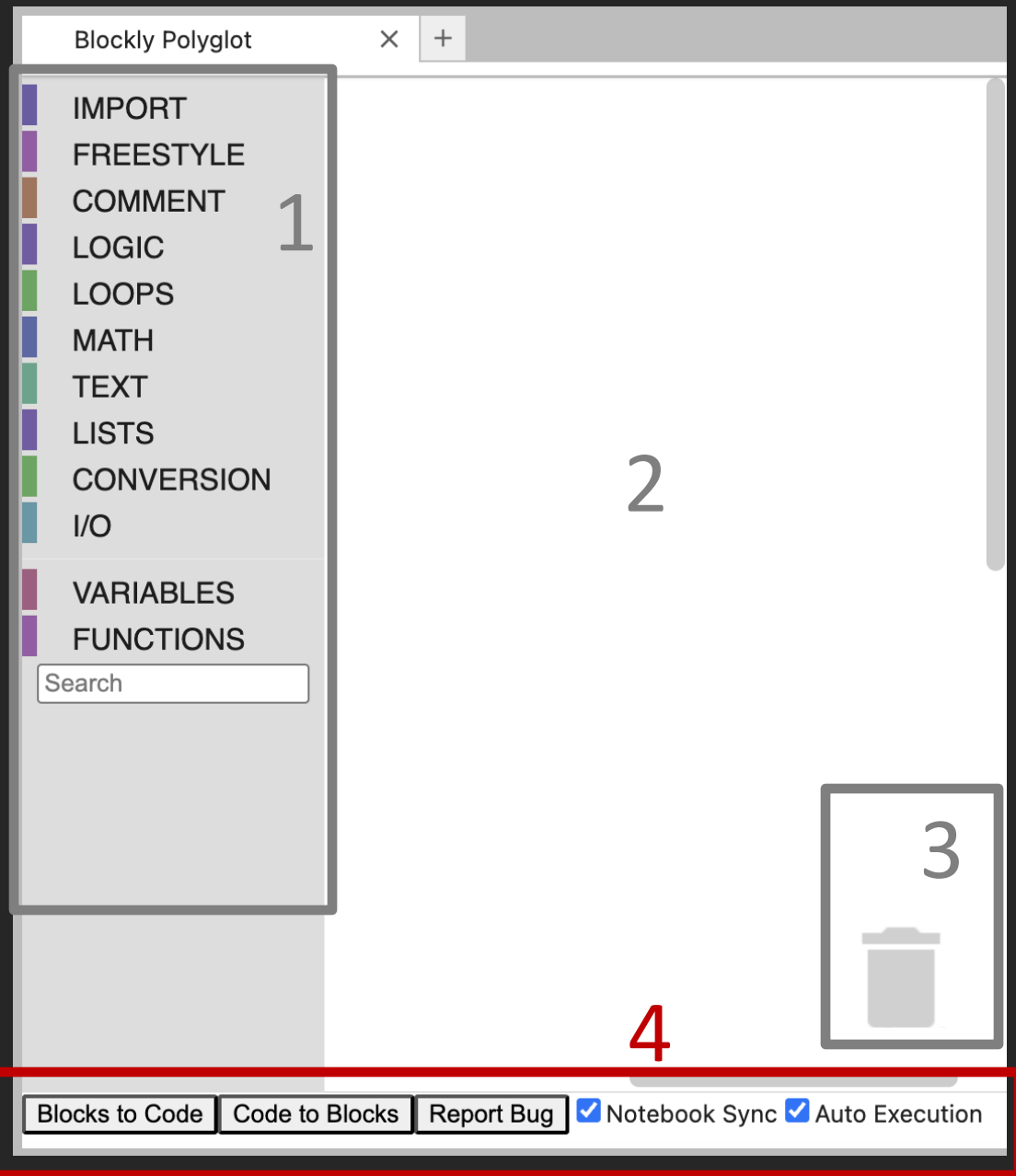
4. Hover over the block to see a description
5. Click or drag the block into the Blockly Workspace
6. Find the “ ” text block and write your name in it 

7. Connect the blocks
8. Take a screenshot of your block and show to the mentor/instructor
9. Drag the block to the Blockly Trash Can

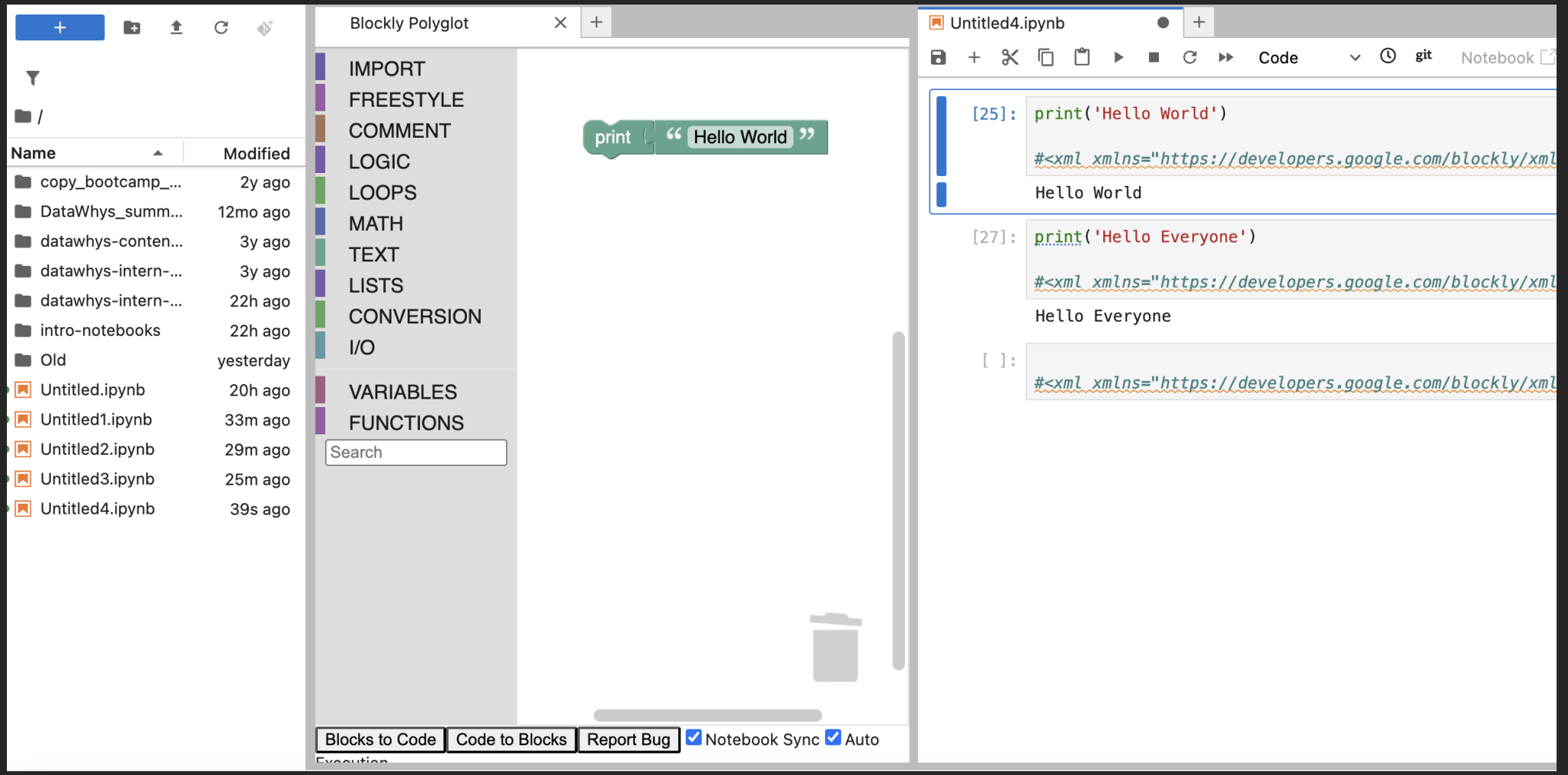
Blockly Interface

1. Blockly Toolbox
2. Blockly Workspace
3. Blockly Trash Can

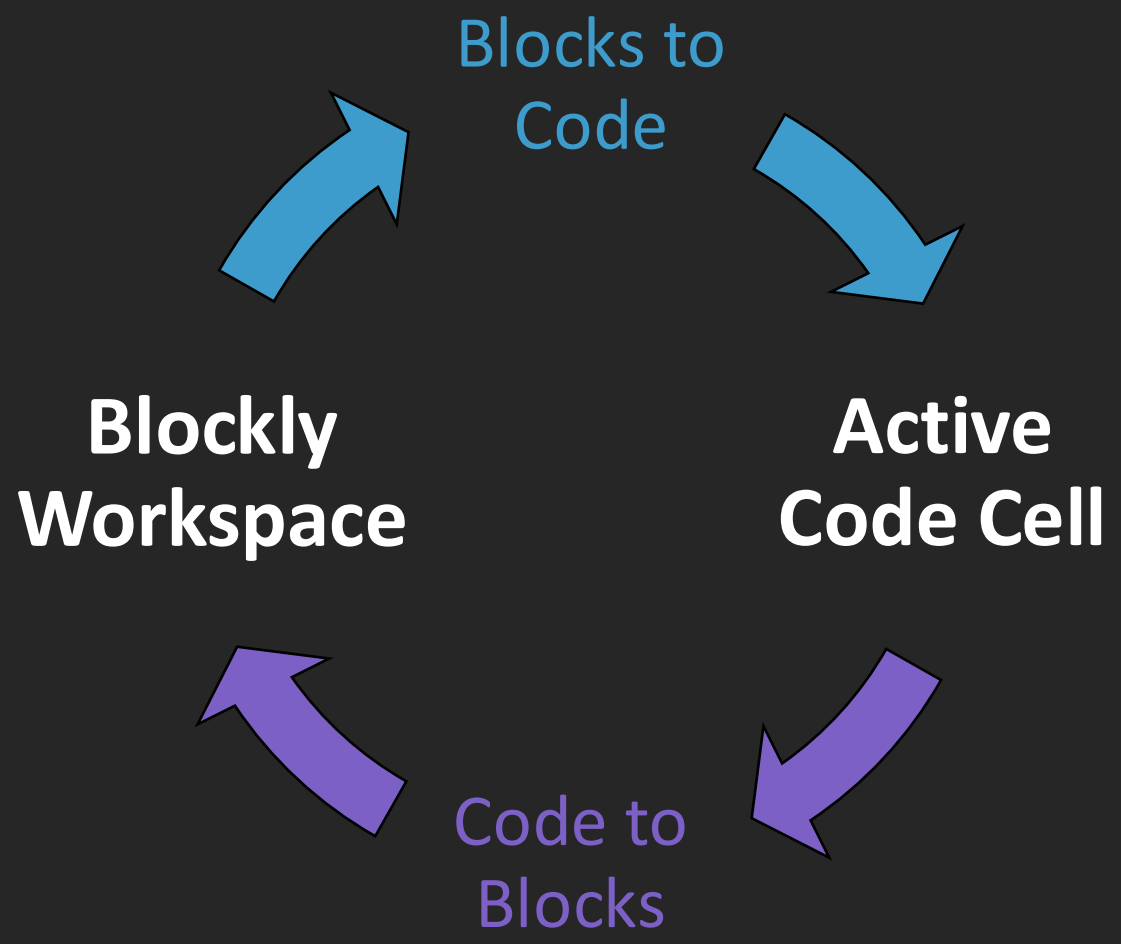
4. JupyterLab Blockly Integration Toolbar



Using JupyterLab with Blockly



JupyterLab Blockly Integration



JupyterLab Blockly Integration

Blocks

Python code

Blockly XML Tag

Blockly Workspace

Active Code Cell

Blocks

Blockly XML Tag

Activity 3: Code to Blocks, Blocks to Code

1. Open blockly_integration.ipynb
2. Copy/paste the provided **Blockly XML tag** into the indicated empty code cell
3. Click **Code to Blocks** & observe the **Blockly Workspace**
4. Click **Blocks to Code** & observe the **code input** of the **active cell**
5. Run the **active cell**
6. Take a screenshot that includes both the **code input** & **code output** and show to the instructor/mentor

Summary

- Blockly Interface
- Blocks to Code and Code to Blocks
- How to add code to notebook cell with Blockly