

## Learning Data Science with Blockly in JupyterLab

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Blocks languages are widely used to teach children programming, and research over the past decade has generally supported their benefits in terms of motivation and actual learning. However, little work has been done on using blocks languages to teach adults, and even less work has looked at blocks languages for data science. We have integrated Blockly, a blocks-based programming environment, into JupyterLab, one of the leading computational notebook development environments for data science. Our integration, which is publicly released as a JupyterLab extension, allows users to assemble blocks-based programs in a GUI workspace and then render the blocks as textual code (e.g., Python) in a computational notebook cell. Additional features of the extension are notebook sync, which clears and restores the blocks workspace as the user navigates to different notebook cells, and intelliblocks, dynamically generated blocks that are created when users load software packages. In this demonstration, we show how learners can use blocks to solve data science problems in a JupyterLab computational notebook. We have released 20 worked example companion notebooks at <https://github.com/memphis-iis/datawhys-content-notebooks> and an extended tutorial on the extension at <https://youtu.be/-luPzplPDI0>. This material is based upon work supported by the National Science Foundation under Grant No. 1918751.

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