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Research Week 1

Results: [See the code](https://github.com/jLoven/research_week1)

**NOTE: VISUALS ARE FOR 3D IMPLEMENTATIONS.**

1. Prioritize materials when combining matrices

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| --- | --- |
| Test Matrix 1: | Test Matrix 2: |
| JackieOS:Users:platypus:Desktop:matrix1_before_prioritize.png | JackieOS:Users:platypus:Desktop:matrix2_before_prioritize.png |

Function call: prioritize\_materials\_3D(originalMatrix, newMatrix, varargin)

JackieOS:Users:platypus:Desktop:prioritize_function_call.png

Note: This function can take any number of materials to prioritize.

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| --- | --- |
| Final Matrix | The original matrix (Test Matrix 1) was altered to be more like the new matrix (Test Matrix 2). If the new matrix had a 1 or a 0 in a place where the original matrix did not, the new matrix’s data would replace that of the original matrix. If the original matrix already had a 1 or a 0, it would remain unchanged.  This is evident in the second layer of the result (Final Matrix): the row of 2’s has been replaced with the 0’s found in the new matrix. In the new matrix, there is an 8, and this does not change the original matrix because it is not a 1 or a 0. |
| JackieOS:Users:platypus:Desktop:after_prioritize.png |

1. Splice matrices together

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| Test Matrix 1: | Test Matrix 2: |
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Function call: prioritize\_materials\_3D(originalMatrix, newMatrix, xSplitStart, xSplitEnd, ySplitStart, ySplitEnd, zSplitStart, zSplitEnd)



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| --- | --- |
| Final Matrix | The original matrix (Test Matrix 1) was altered to be more like the new matrix (Test Matrix 2). Given the specified chunk in the new matrix, the original matrix’s corresponding chunk was replaced.  In this case, the new matrix’s chunk from x = 1 to x = 2, y = 1 to y = 2, z = 1 to z = 2 replaced the corresponding locations in the original matrix. |
|  |

1. Edit final matrix

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| Test Matrix: |
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Function call: edit\_final\_matrix\_3D(originalMatrix, bottomLayer, topLayer, underTopLayer)



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| Final Matrix | The original matrix (Test Matrix) was altered to have the conditions for layers specified.  In this case, the original matrix is changed so that the bottom layer is all 5, the top layer is all 6, and the layer under the top layer is all 10. |
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**4D implementations for each of the above functions have been created.**