

# We Code Because We Can!

## Fundamentals of Functional Programming

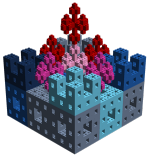
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In this workshop, LEGO<sup>®</sup> help you learn about functional thinking and programming in a fun and engaging way! Learn the basics of functional thinking as you learn how to build and write programs. No background in programming is needed.

### Monday

Day	Activity
1	<ul style="list-style-type: none"><li>• Background Survey</li><li>• Gather typing metrics</li><li>• Vitruvia concepts 1,3,4,5 and 6</li><li>• Coding exercises for concept 5 and 6</li><li>• Vitruvia concept 7</li><li>• Coding exercises for concept 7</li><li>• Powerpoint presentation showing common syntax errors</li><li>• Level 1 capstone – if time permits</li></ul>





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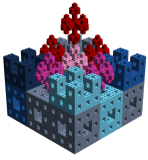
### Tuesday

Day	Activity
2	<ul style="list-style-type: none"><li>• Find and fix the syntax errors in these programs</li><li>• Level 2 – coding should be done as time permits<ul style="list-style-type: none"><li>– Vitruvia concept 10</li><li>– Concept 10 running example – this can be omitted</li><li>– Concept 10 coding</li><li>– Vitruvia concept 11</li><li>– Concept 11 coding</li><li>– Vitruvia concept 12</li><li>– Concept 12 coding</li></ul></li><li>• Level 3 – coding should be done as time permits<ul style="list-style-type: none"><li>– Overview of available bricks</li><li>– Vitruvia concept 14</li><li>– Concept 14 coding</li><li>– Formation of groups (2-4) for pixel art project, and selection of pixel art. Color copies of selected images (2 copies of each image) should be printed by instructors before the next day's meeting.</li></ul></li></ul>

### Wednesday

Day	Activity
3	<ul style="list-style-type: none"><li>• Level 3<ul style="list-style-type: none"><li>– Work on pixel art projects in groups of 2-4.</li></ul></li><li>• Level 4 – code as time permits<ul style="list-style-type: none"><li>– Vitruvia concept 19</li><li>– Demo of Level 4 functions.</li><li>– Concept 19 coding</li></ul></li><li>• Mini-presentation – using the projector, participants can show what they have created.</li></ul>





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### Thursday

Day	Activity
4	<ul style="list-style-type: none"><li>• Finish up work not completed on previous days (as needed).</li><li>• Begin work on art show project. The art project can be done in 2D or 3D. Project themes that are very popular include:<ul style="list-style-type: none"><li>– Minecraft</li><li>– Pixel art</li><li>– Star wars</li><li>– LEGO artifacts that look cool when blown up</li></ul></li></ul>

### Friday

Day	Activity
5	<ul style="list-style-type: none"><li>• Finish up art show project.</li><li>• Present</li></ul> <p><b>Remarks:</b> Some participants will not want to present anything or will not have anything ready to present. Sometimes the reason for this is that the choice to attend this event was not theirs.</p>

