

# Parallel BVH Construction for Real-Time Ray Tracing

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# Ray Traced Scene

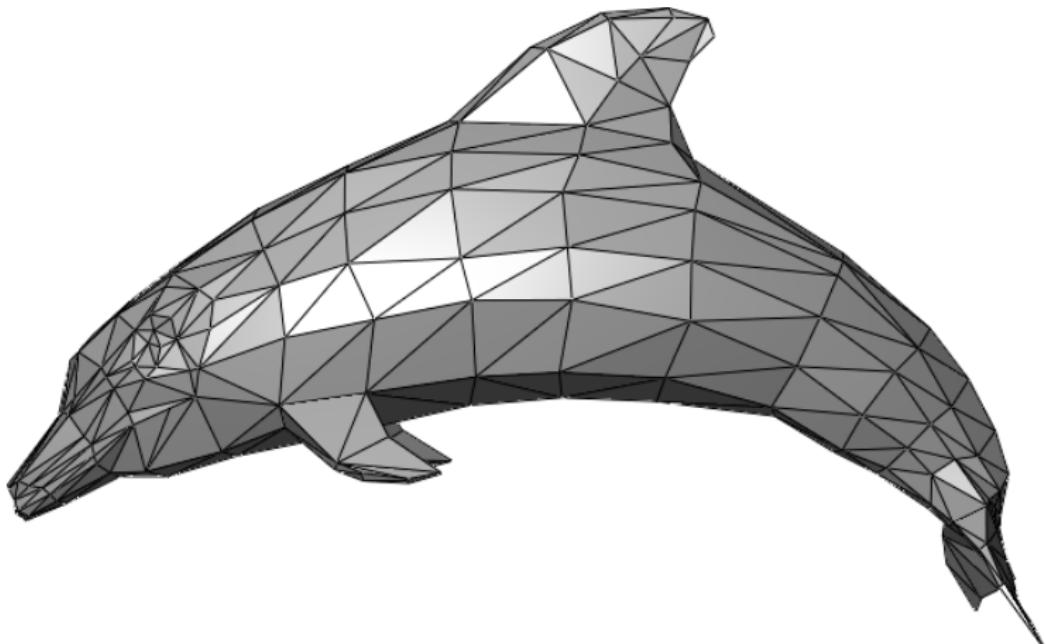


[https://en.wikipedia.org/wiki/Ray\\_tracing\\_\(graphics\)](https://en.wikipedia.org/wiki/Ray_tracing_(graphics))

# Outline

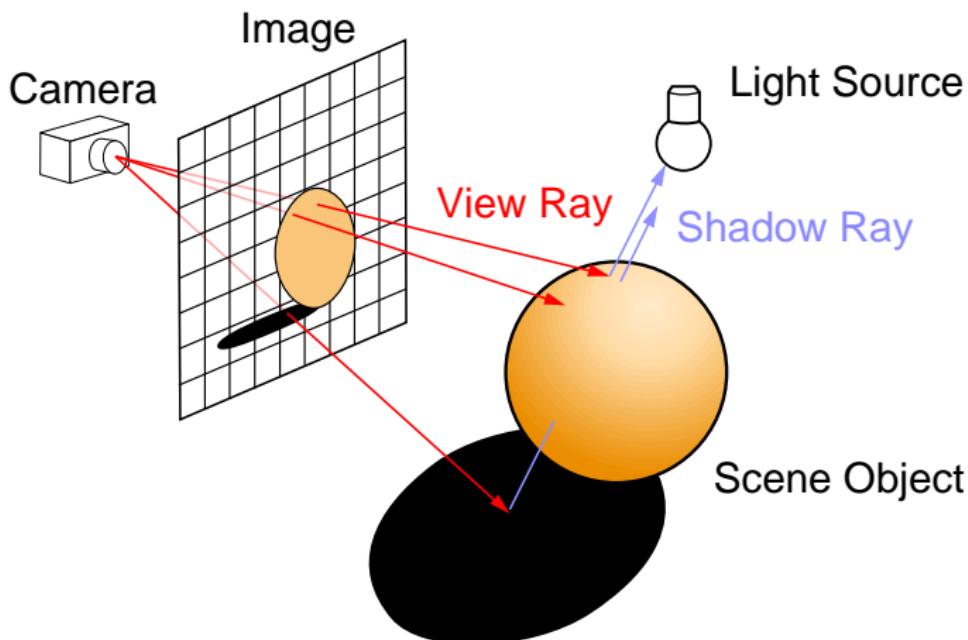
- 1 Ray Tracing Fundamentals
- 2 Grouping Primitives
- 3 Bounding Volume Hierarchy Construction
- 4 Results

# Primitives



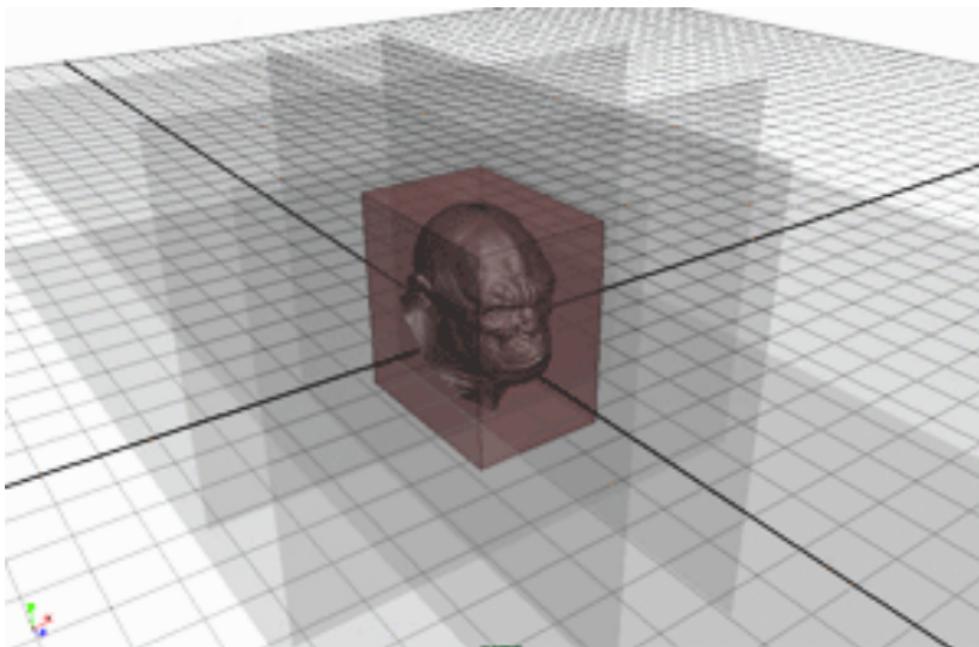
[https://en.wikipedia.org/wiki/Triangle\\_mesh](https://en.wikipedia.org/wiki/Triangle_mesh)

# Ray Tracing

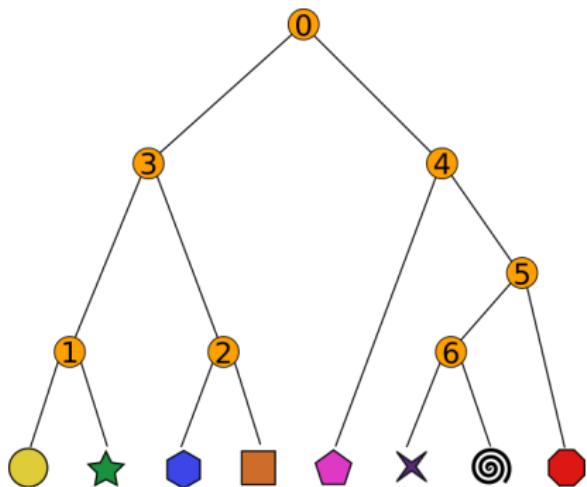
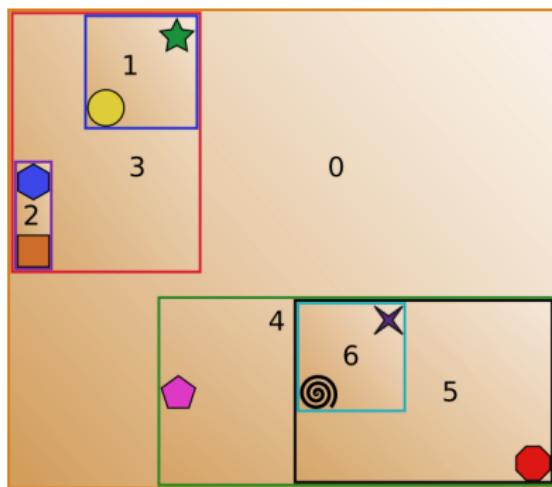


[https://en.wikipedia.org/wiki/Ray\\_tracing\\_\(graphics\)](https://en.wikipedia.org/wiki/Ray_tracing_(graphics))

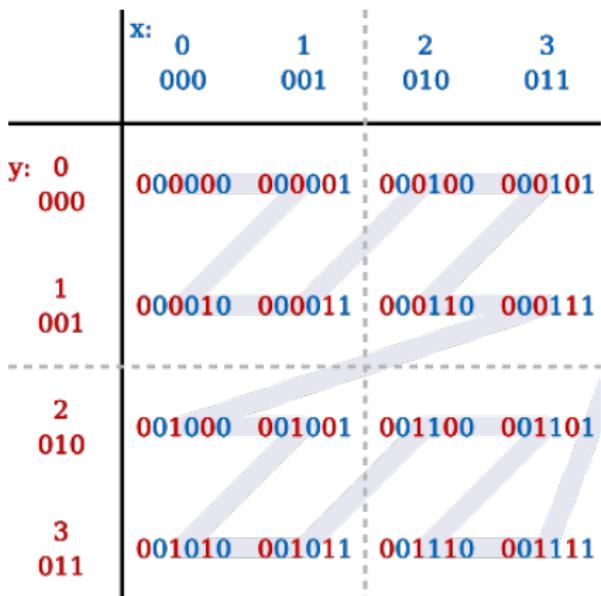
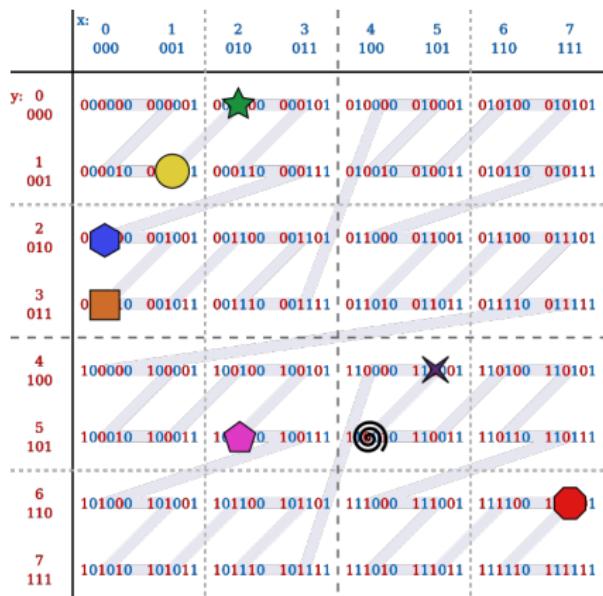
# Axis-Aligned Bounding Boxes



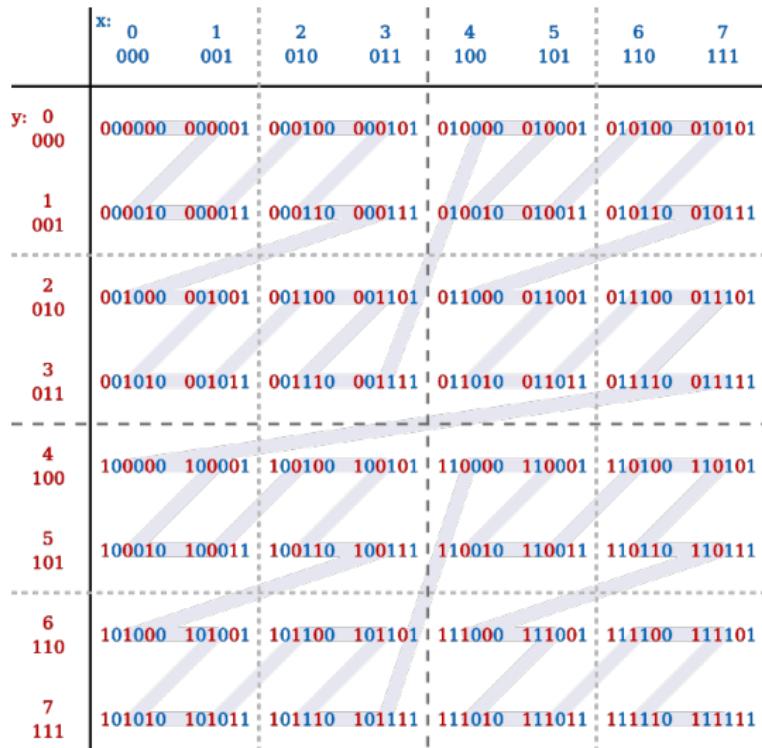
# Bounding Volume Hierarchy



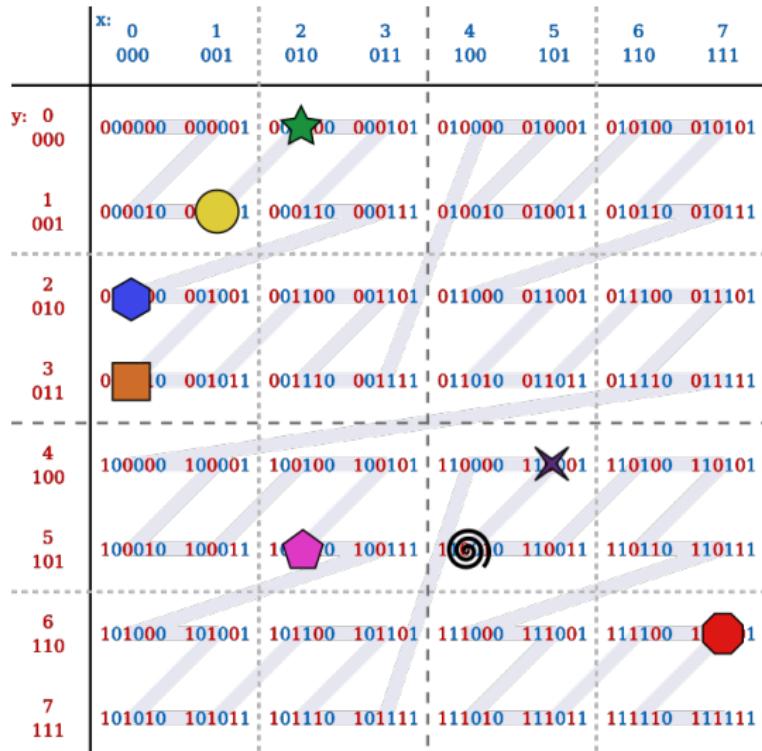
# Morton Codes



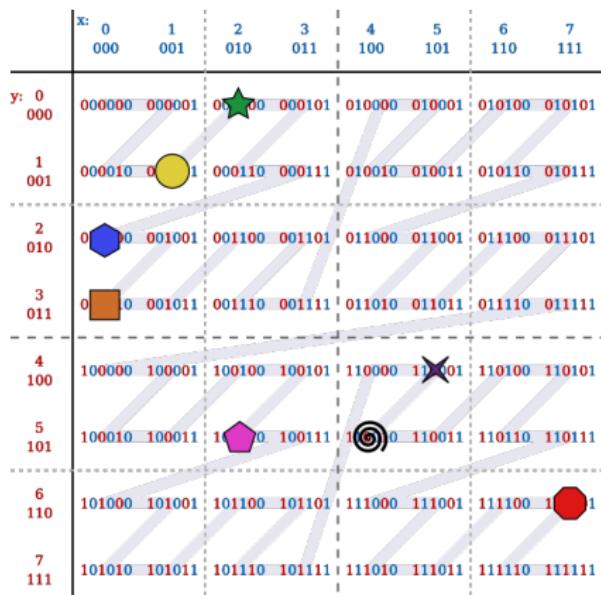
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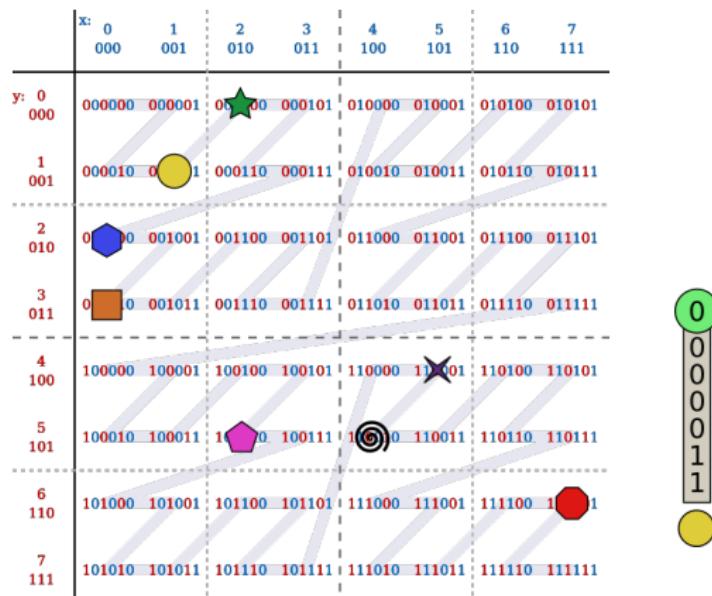
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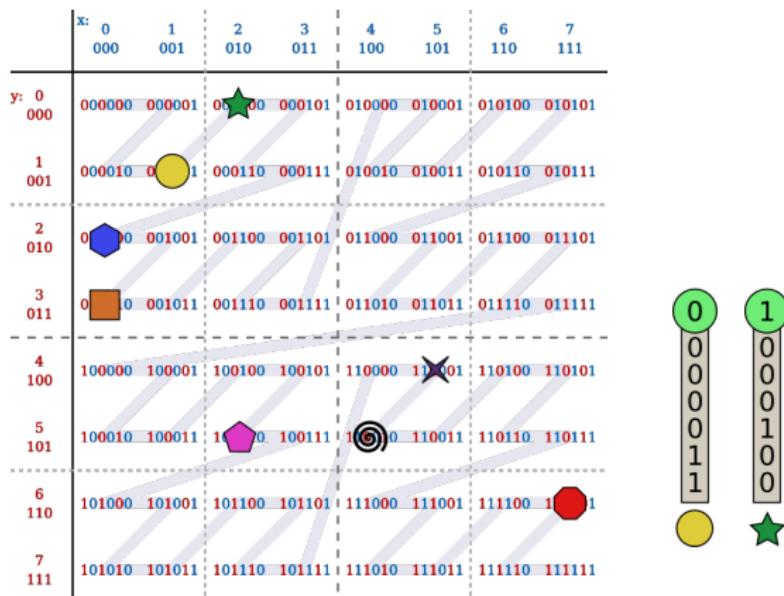
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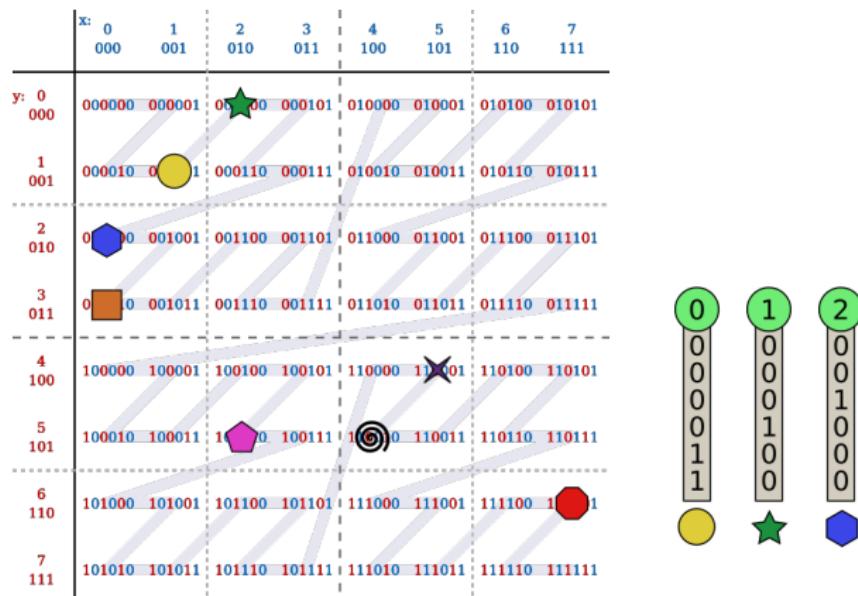
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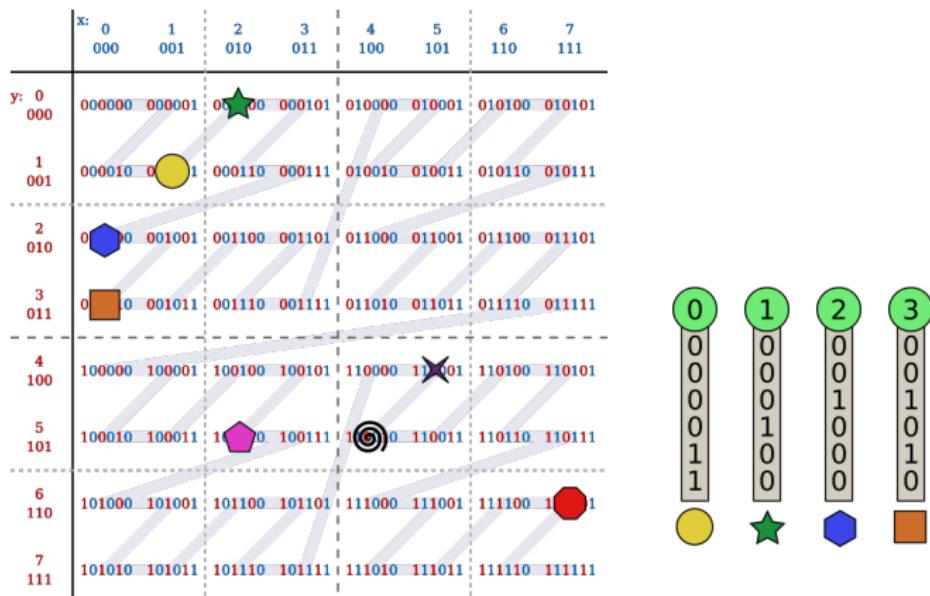
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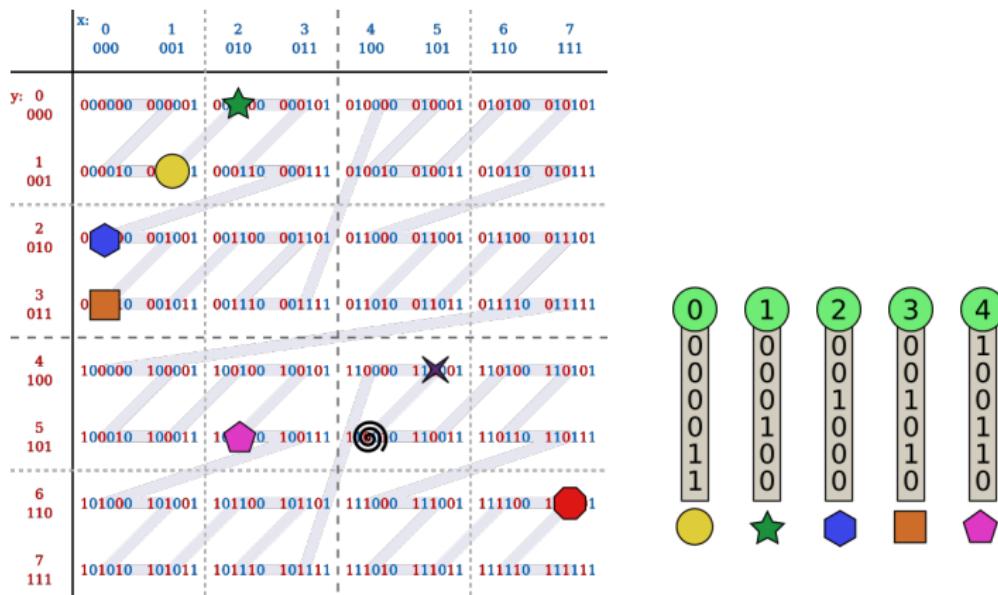
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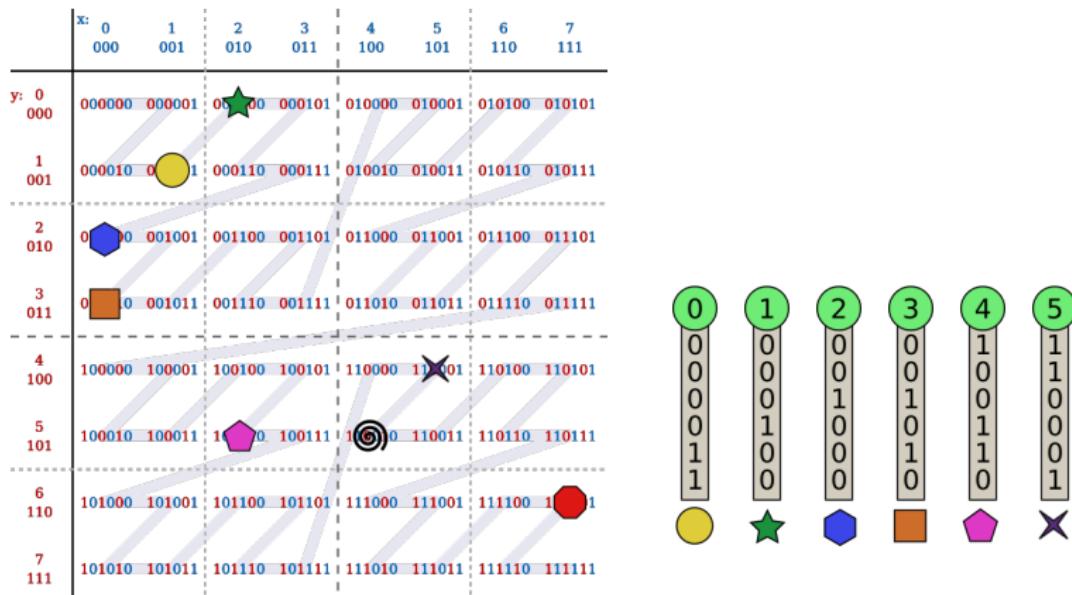
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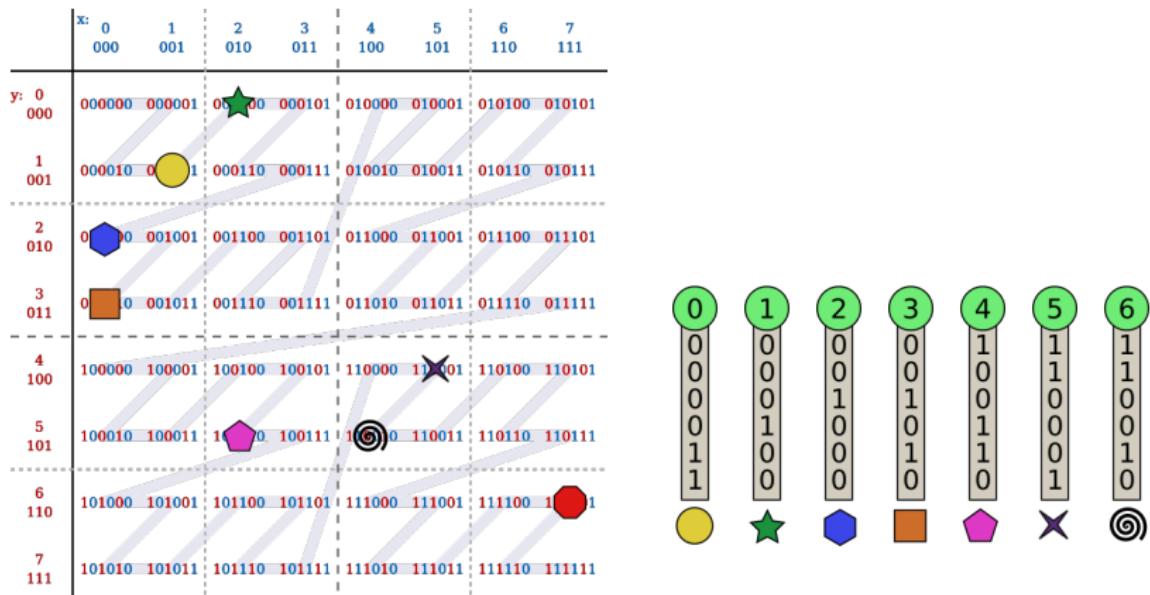
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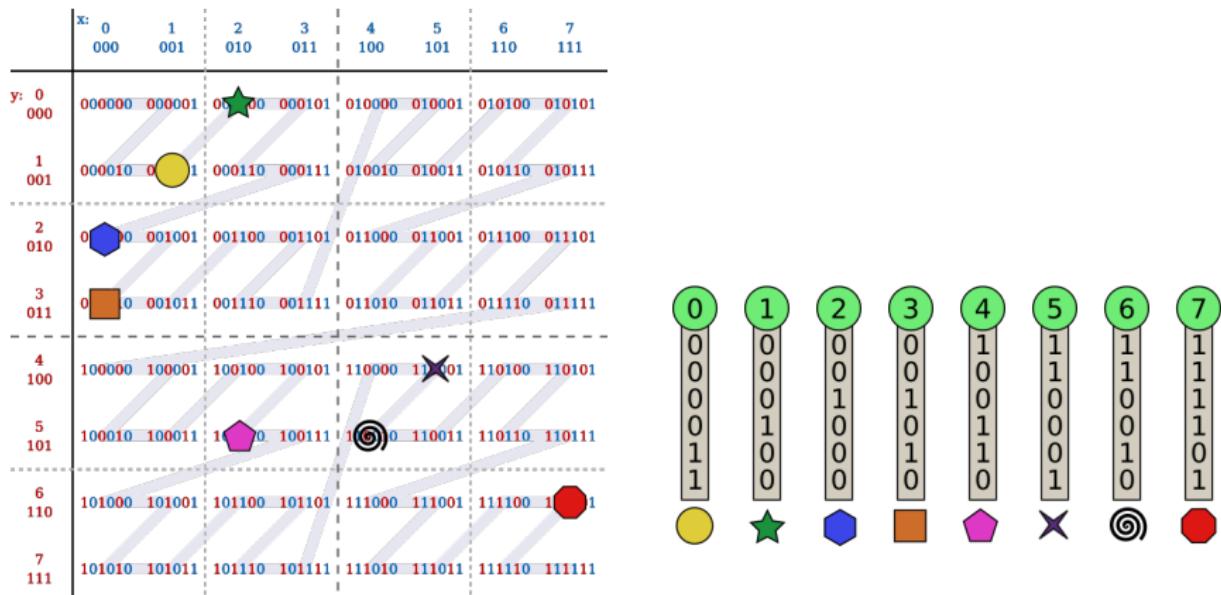
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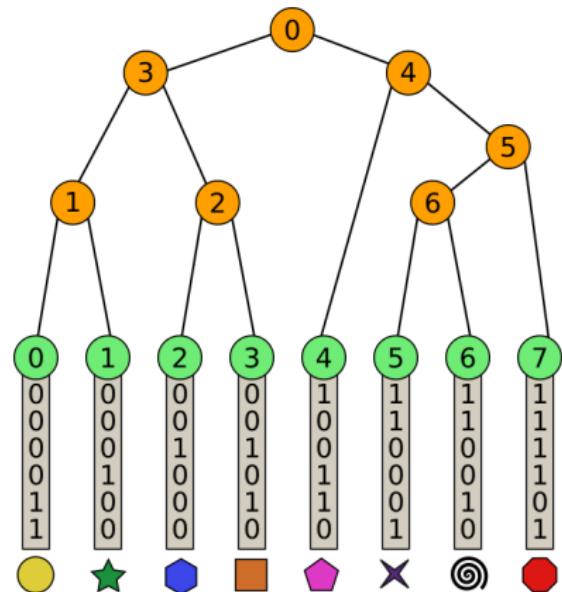
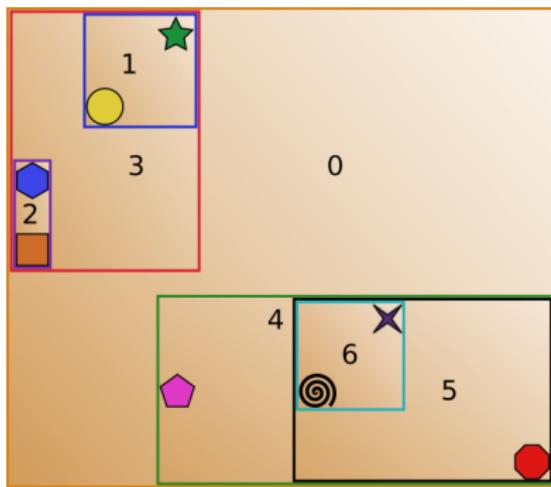
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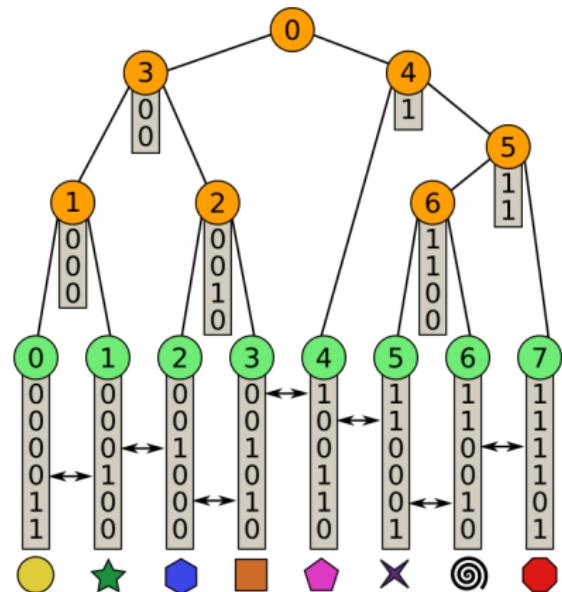
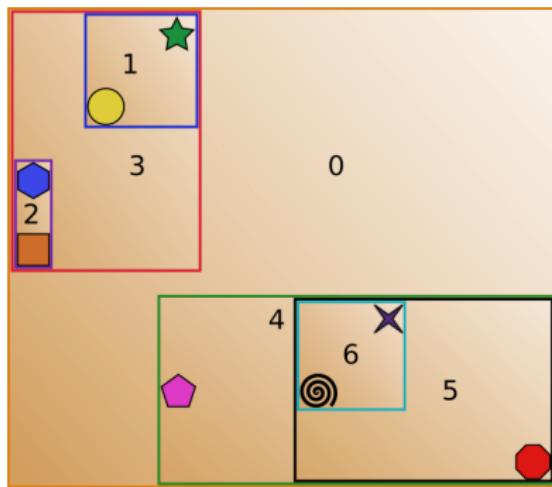
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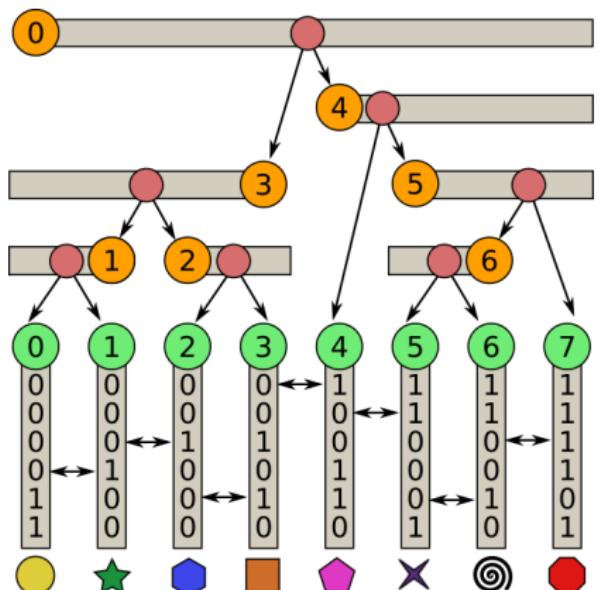
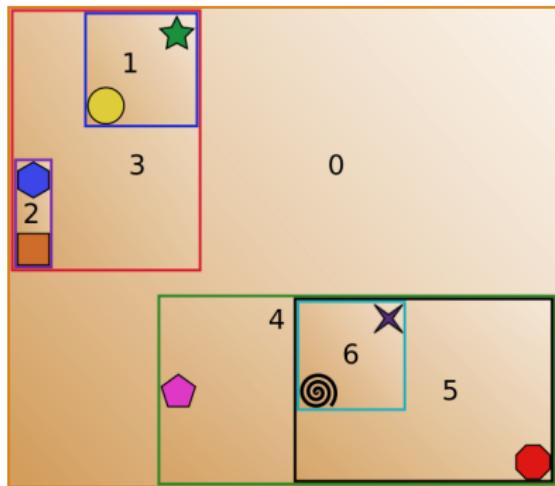
# Goal



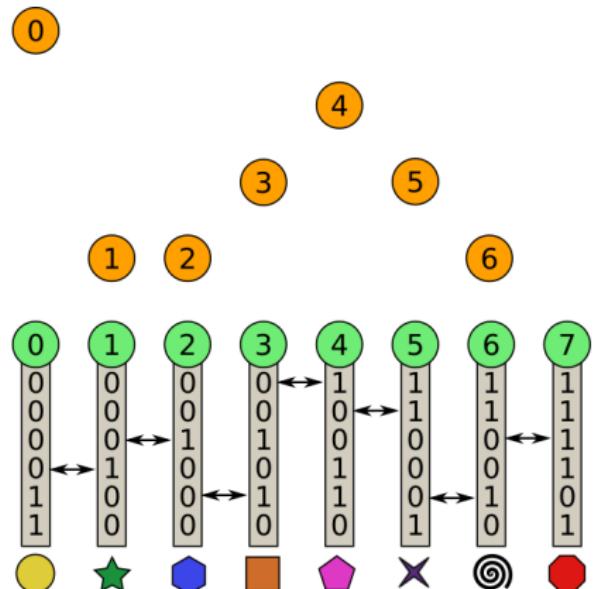
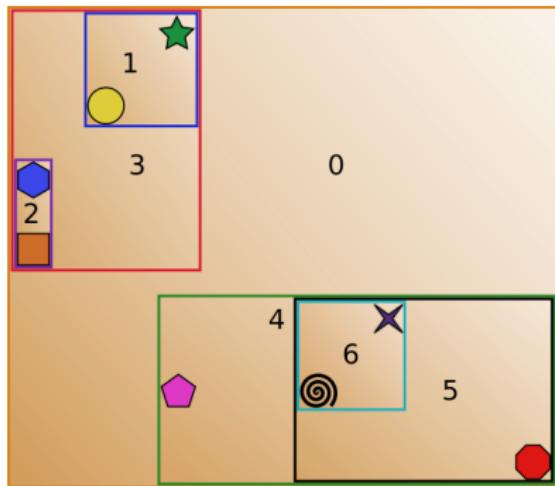
# Binary Radix Tree



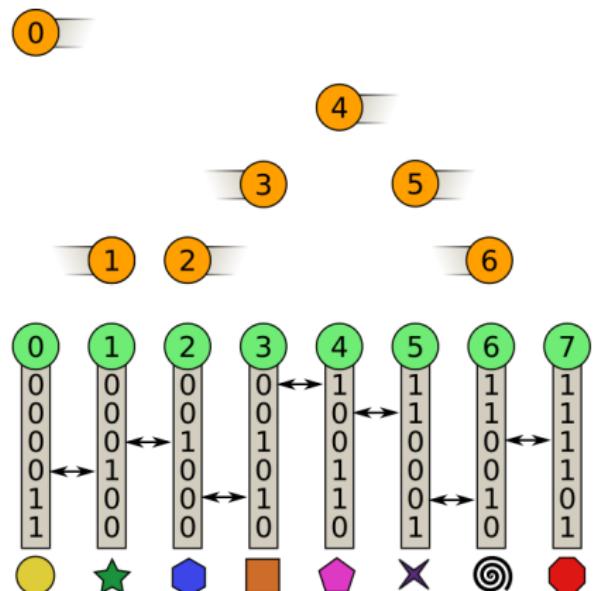
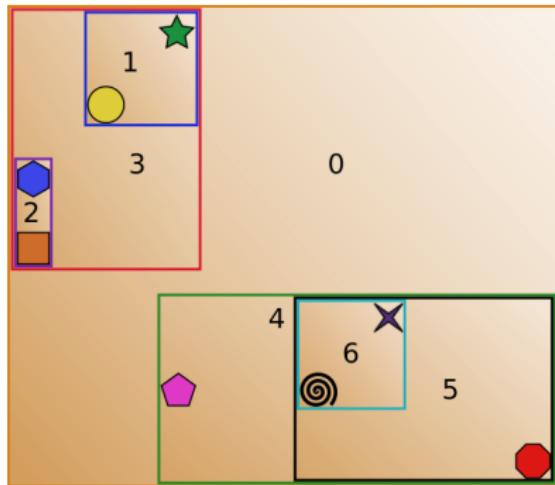
# Internal Node Array



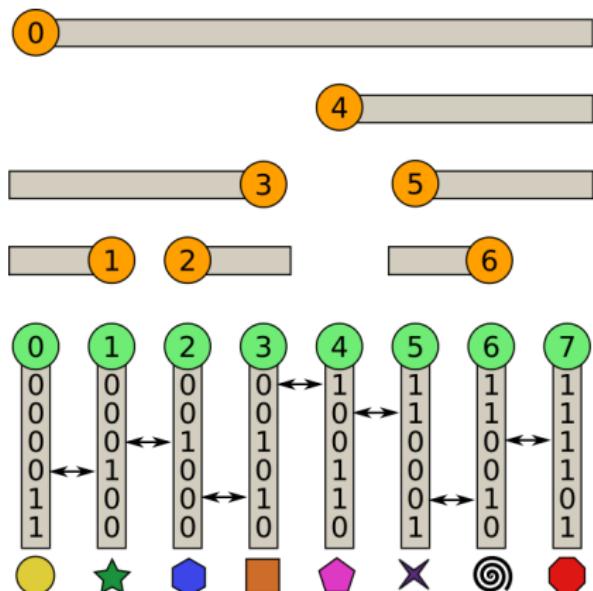
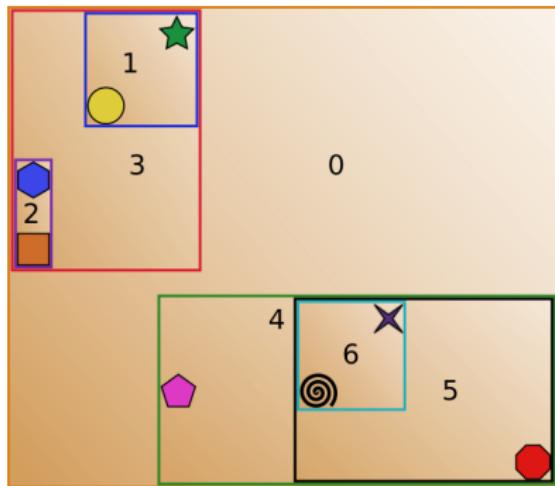
## Internal Nodes



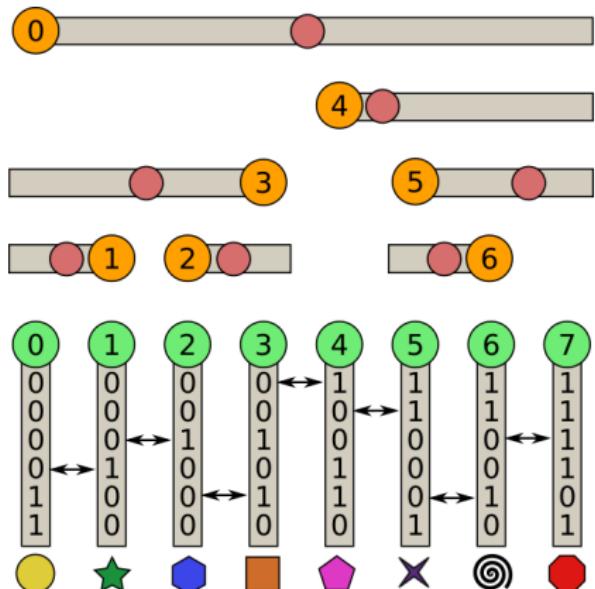
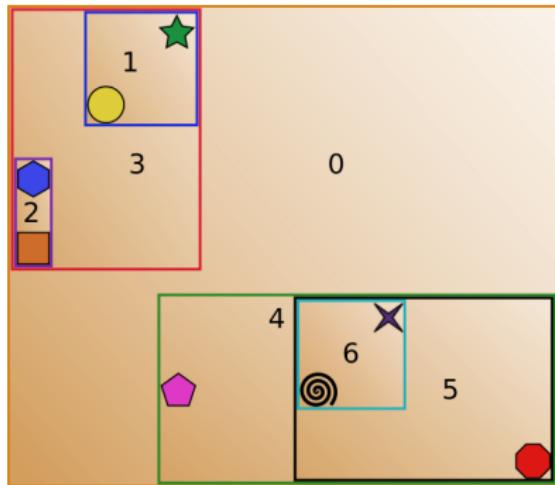
# Determine Range Direction



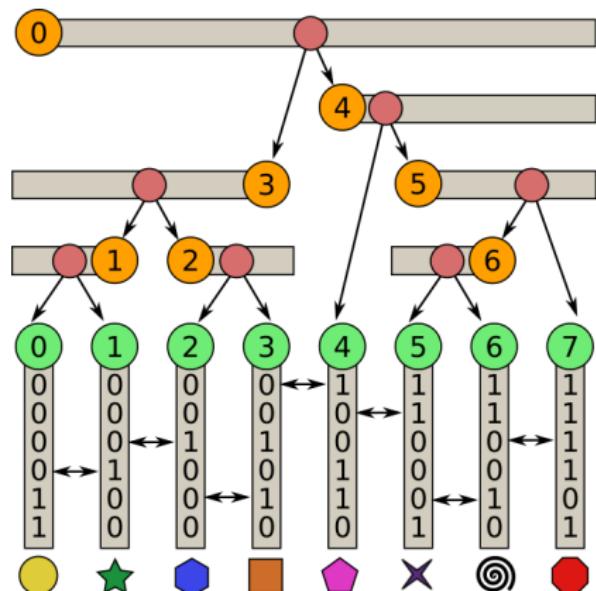
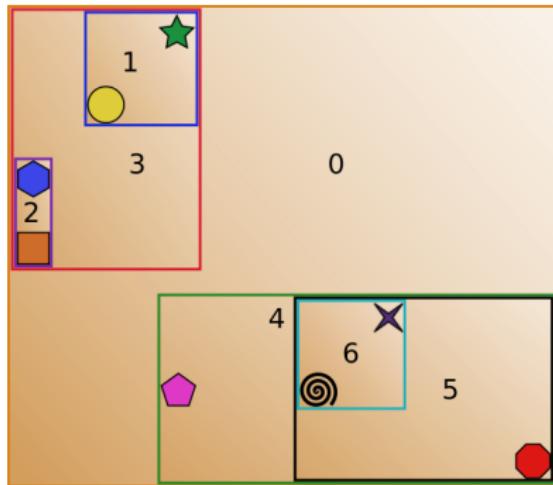
# Determine Full Range



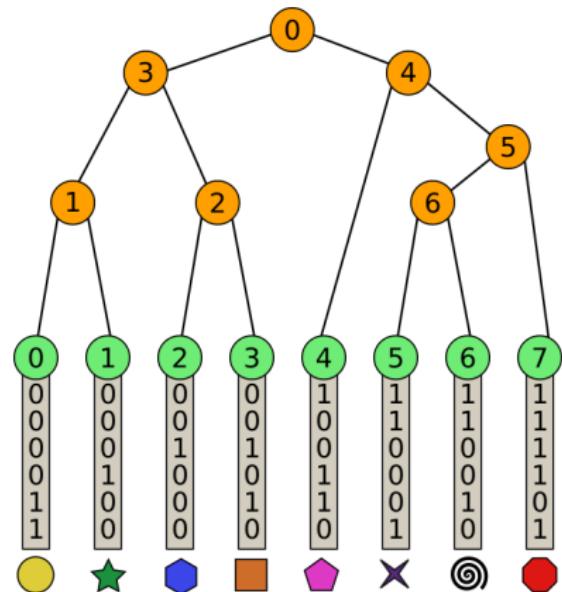
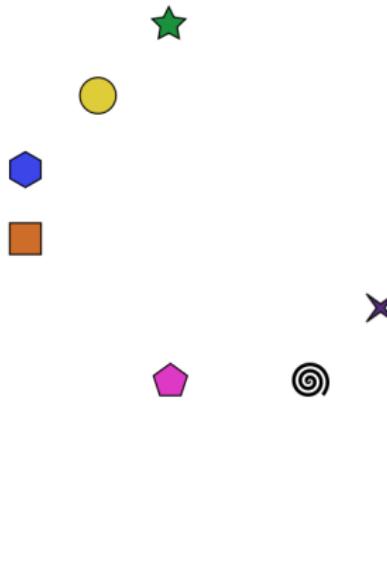
## Determine Split Location



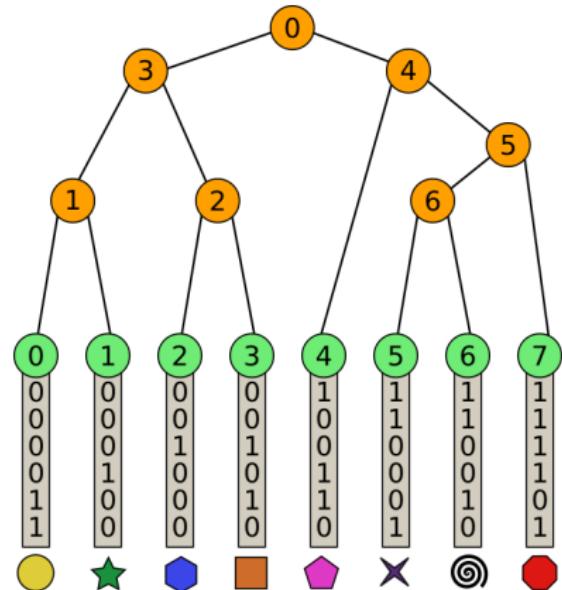
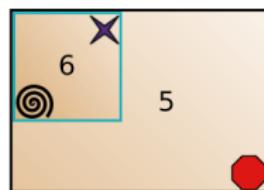
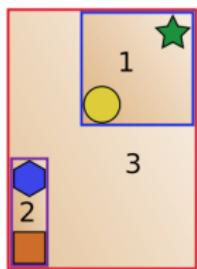
## Determine Children



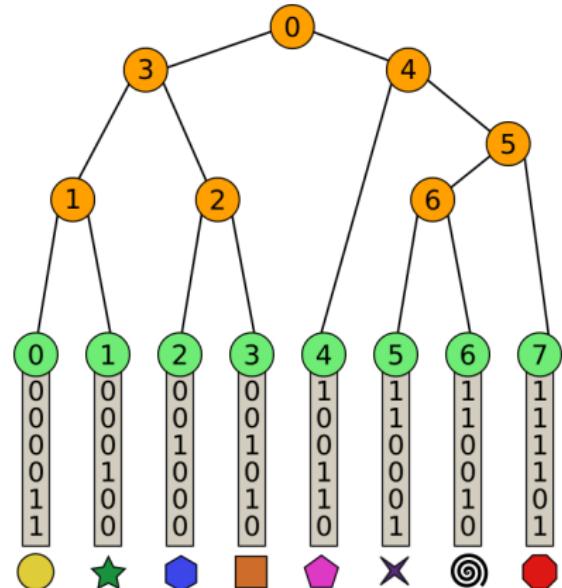
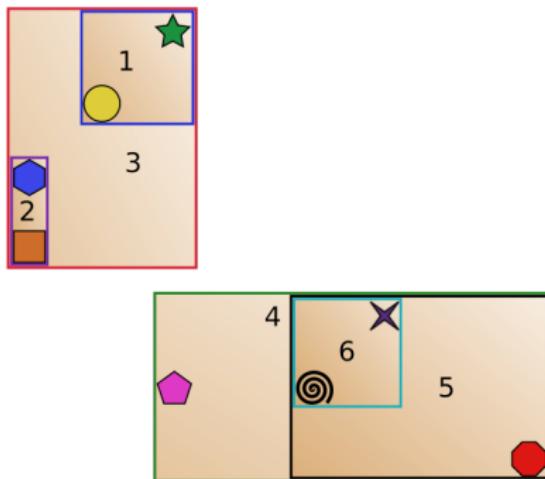
# Fitting Boxes



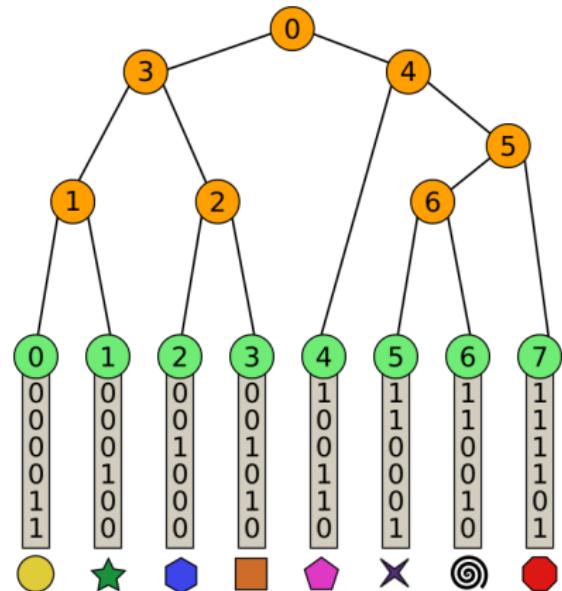
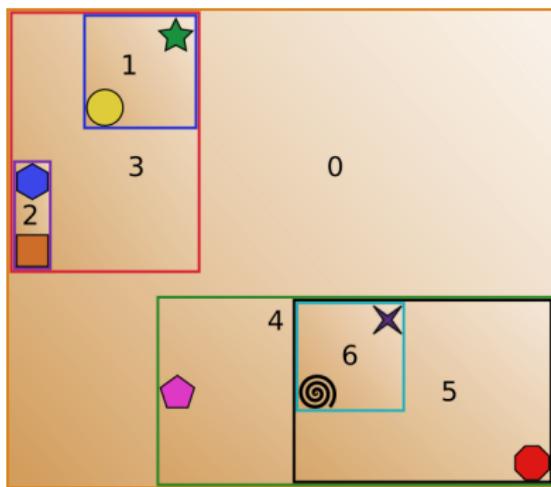
# Fitting Boxes



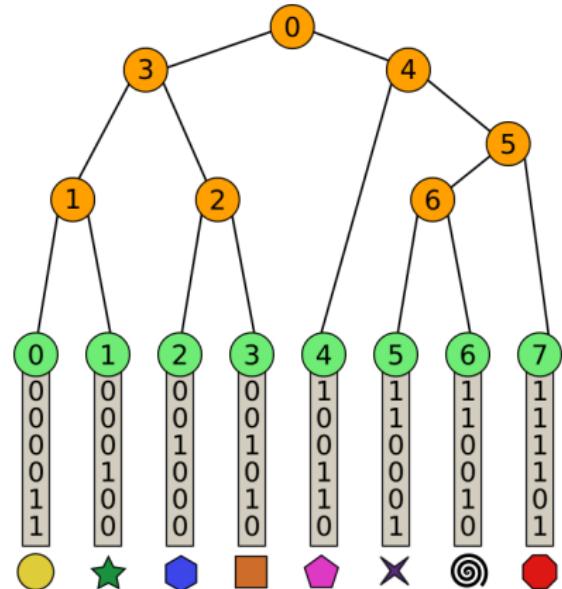
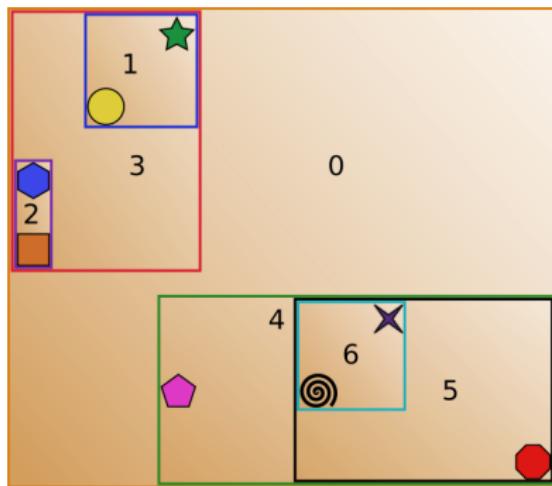
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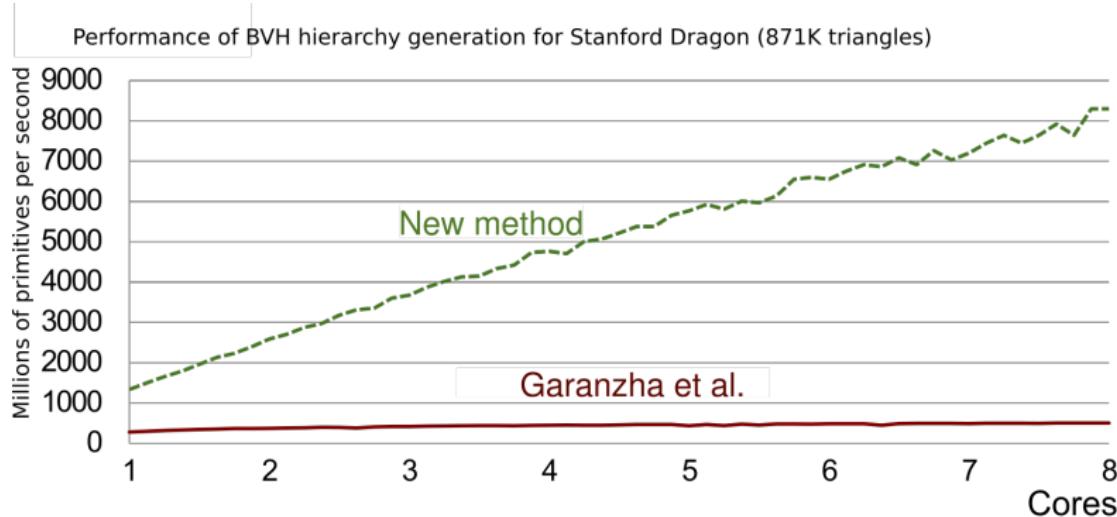
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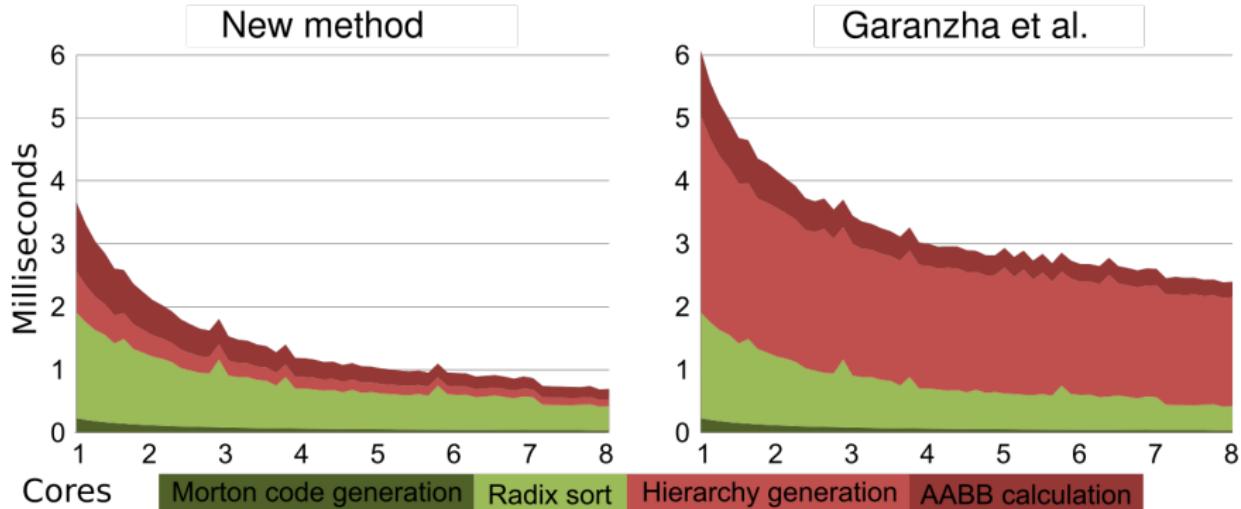
# Fitting Boxes



# Results



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# Questions?

