

Succinct Representation of Labeled Graphs

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Seminar on Algorithms for Compressed Graphs

Presentation-Date

Note for the Slide Discussion

- graphics will be replaced in a later version by own graphics and some will be animated.
- Key points are not fixed, they just represent what should be explained on the slides.

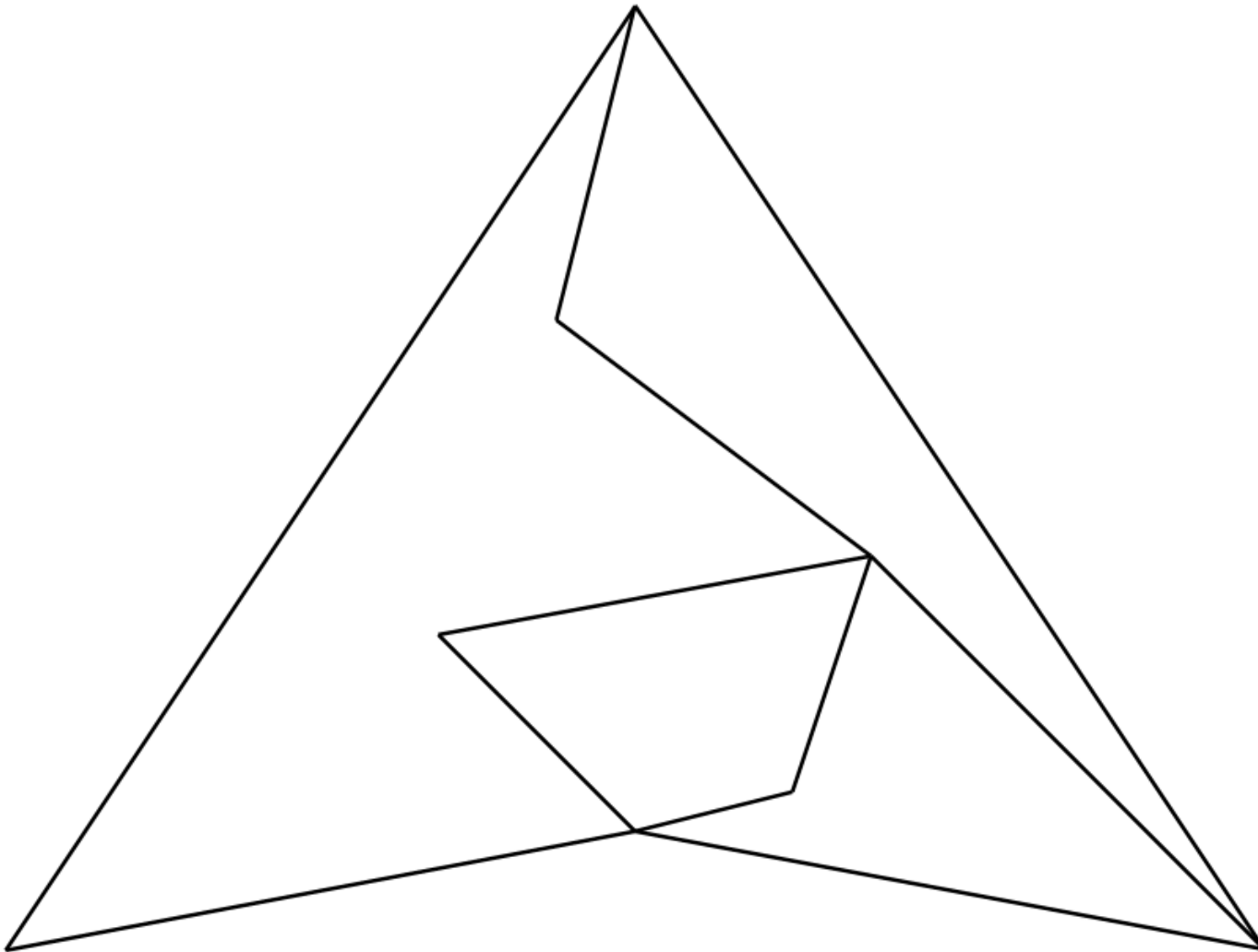
Motivation

- Large Graphs
 - ...
-
- Goal/Advantage from this topic

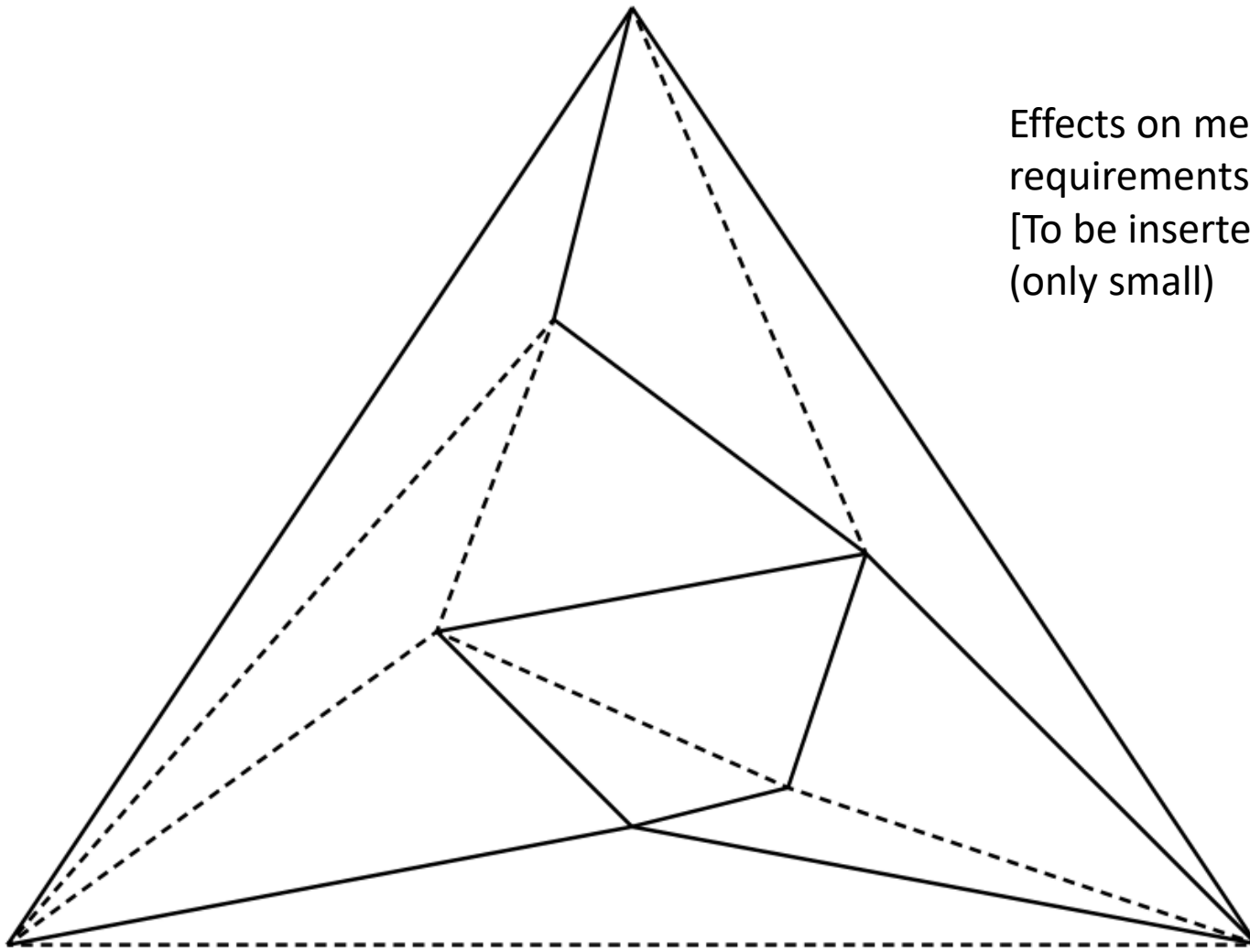
Outline

- Triangulated Graphs
 - Creation of the Spanning Trees
 - Generate the parenthesized representation
 - Extension for labels using the example of edge (or vertices) labels
- Extended for planar graphs
- (Rough explanation for k-page Graph)

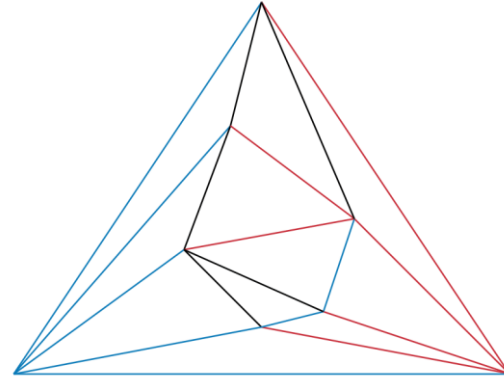
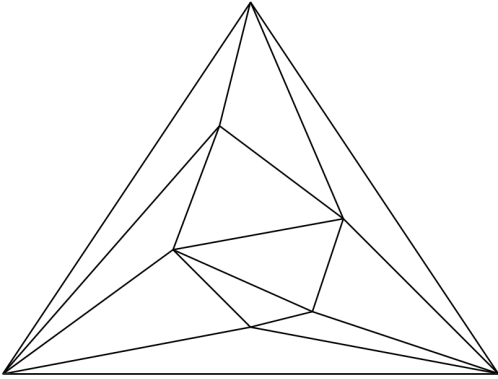
Planar Graphs



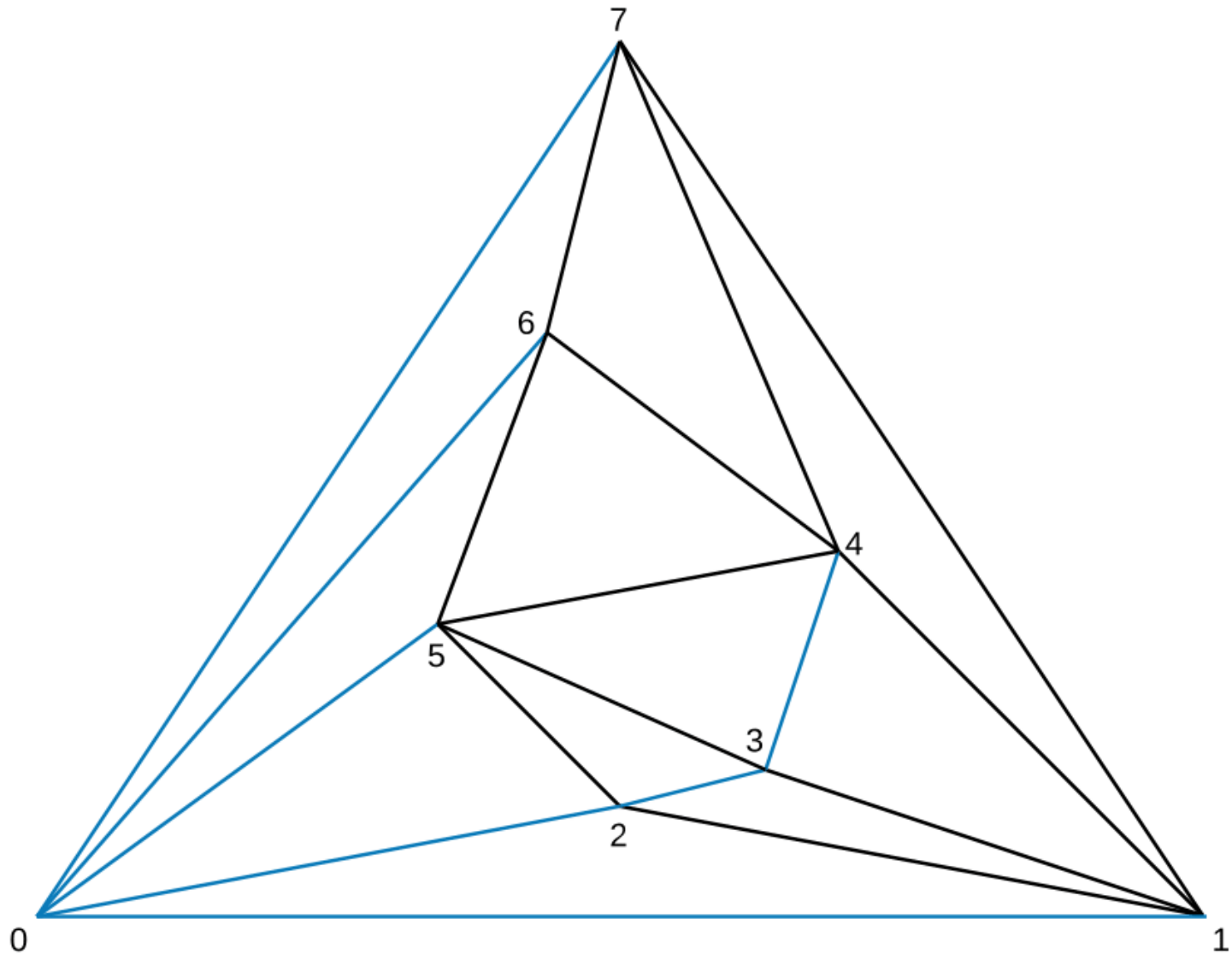
Triangulated Graphs



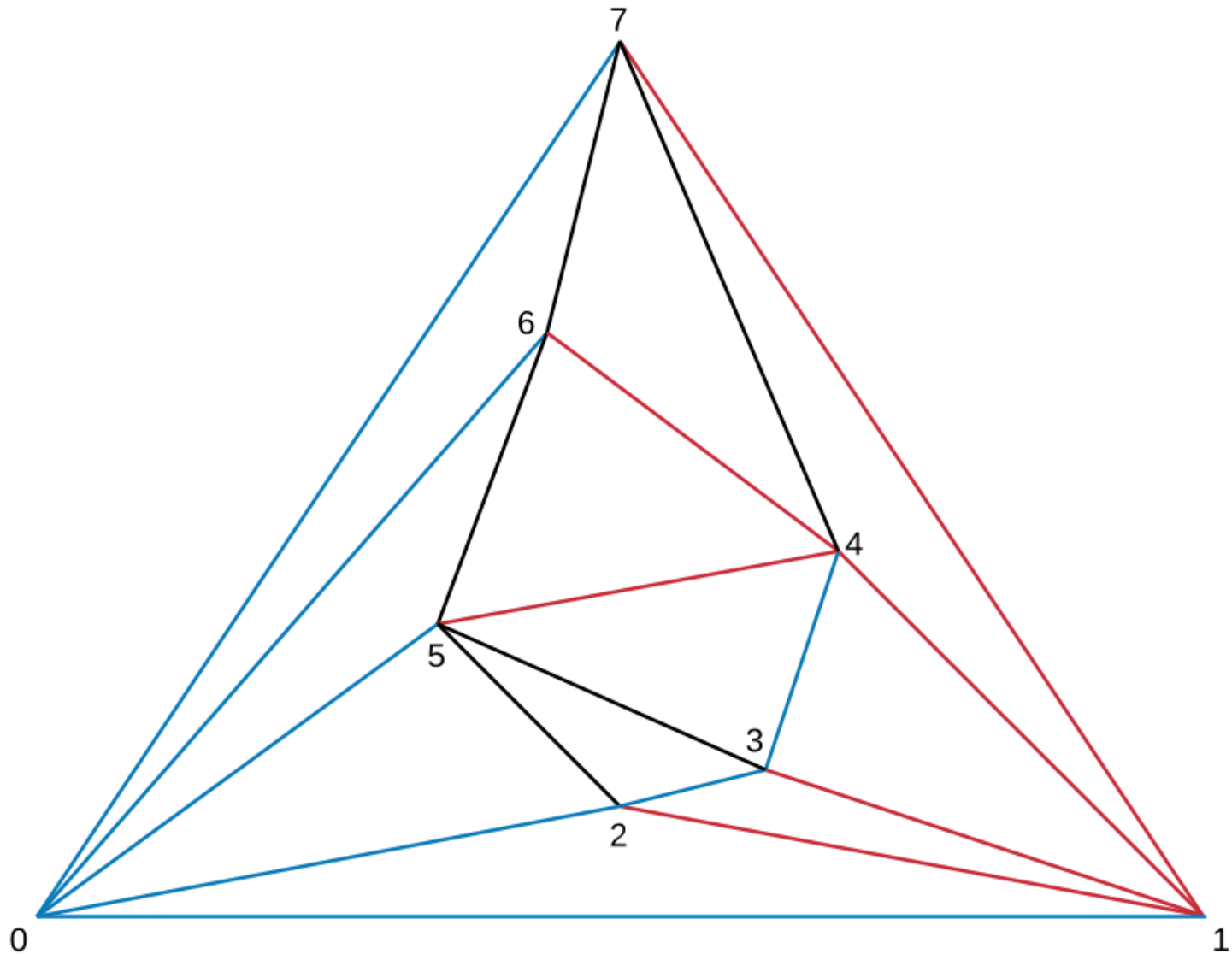
Effects on memory
requirements
[To be inserted]
(only small)



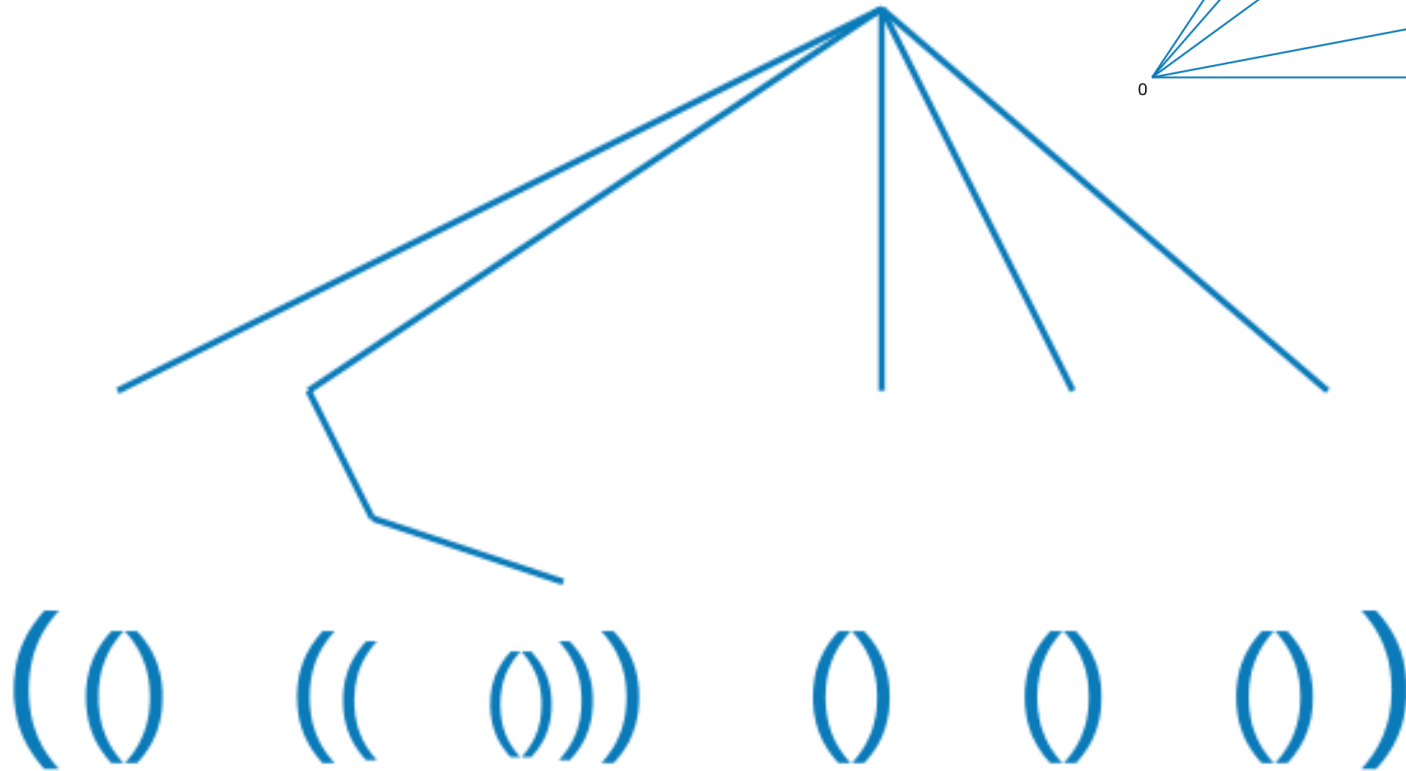
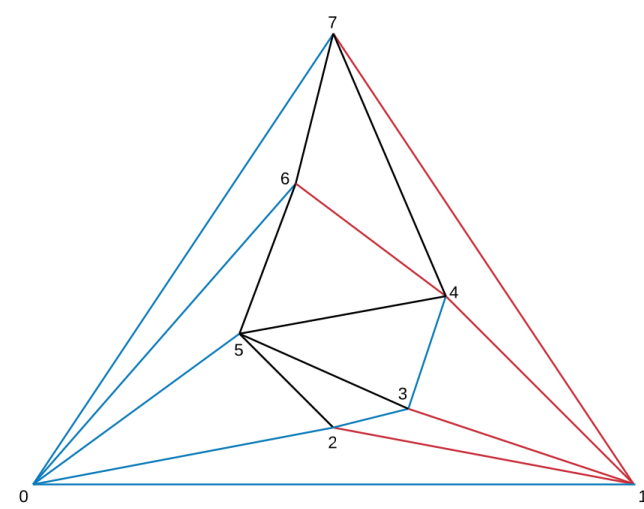
First Tree – Canonical Spanning Tree



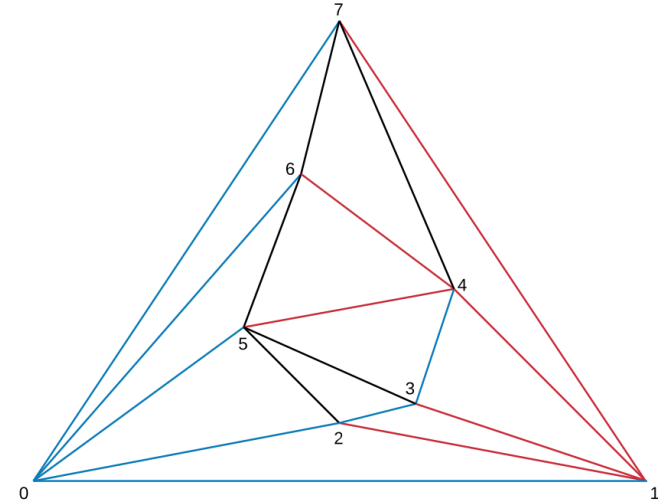
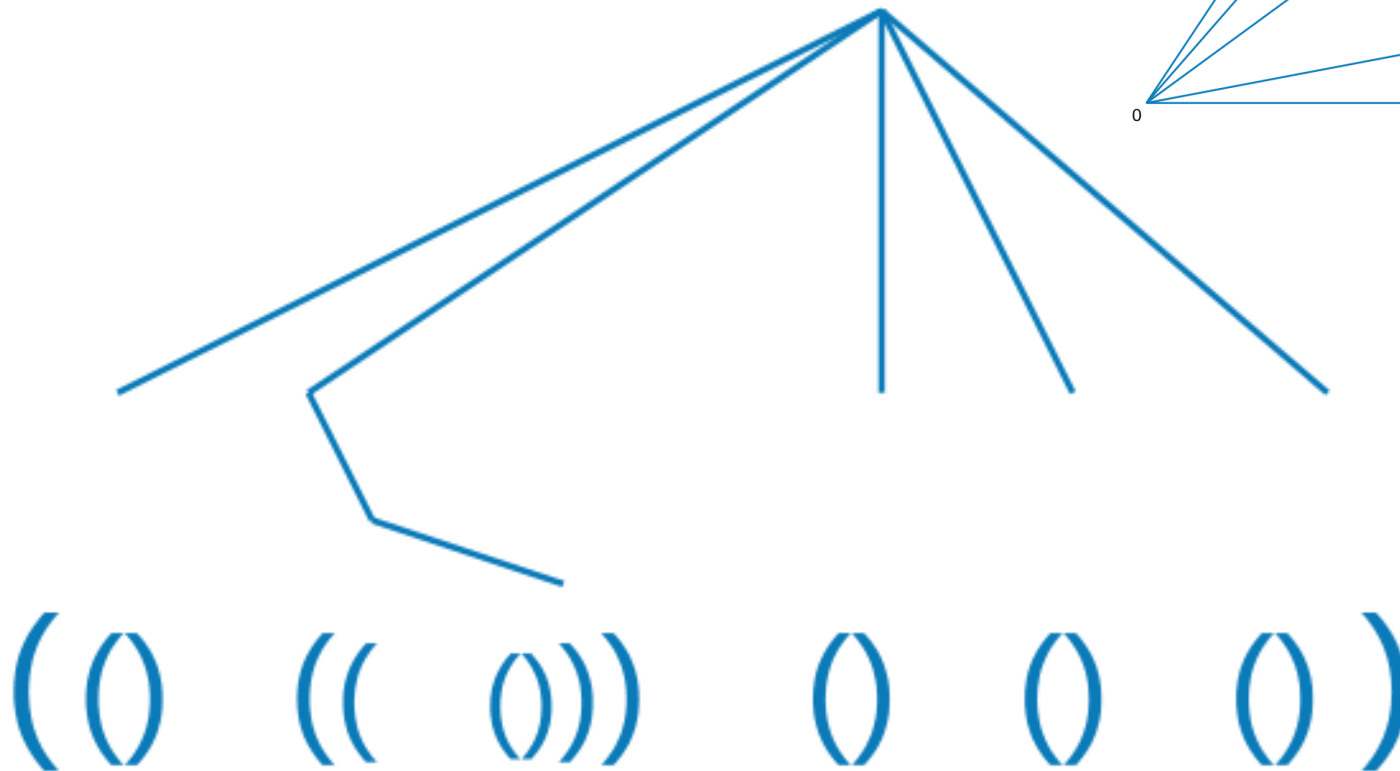
Second Tree



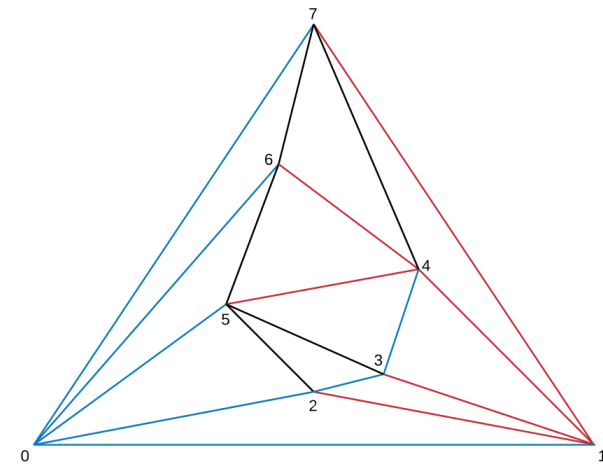
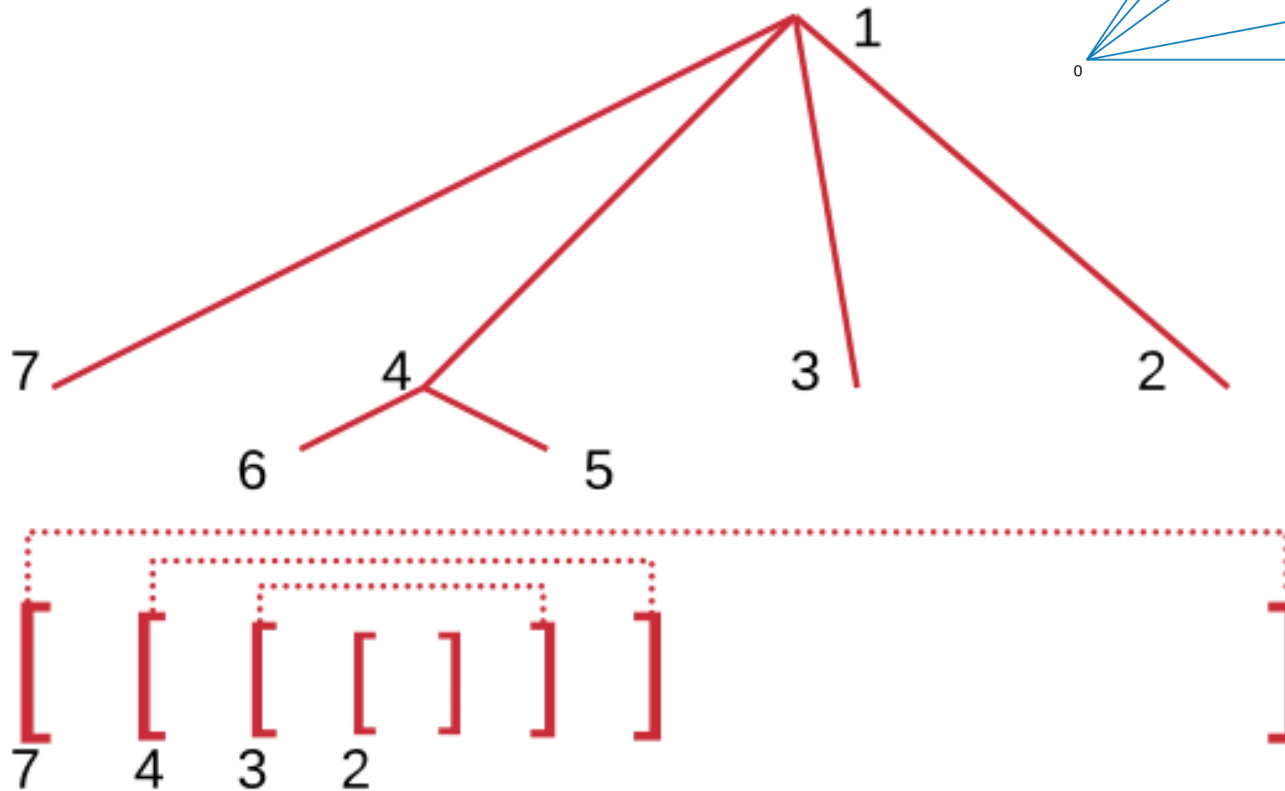
Parenthesis



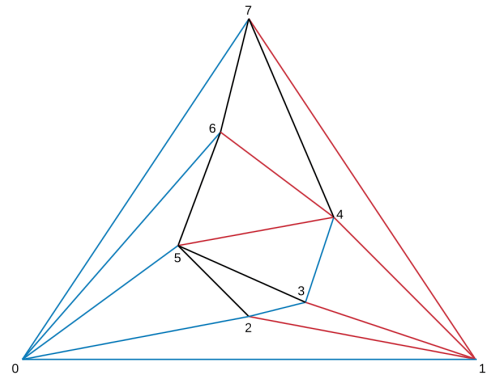
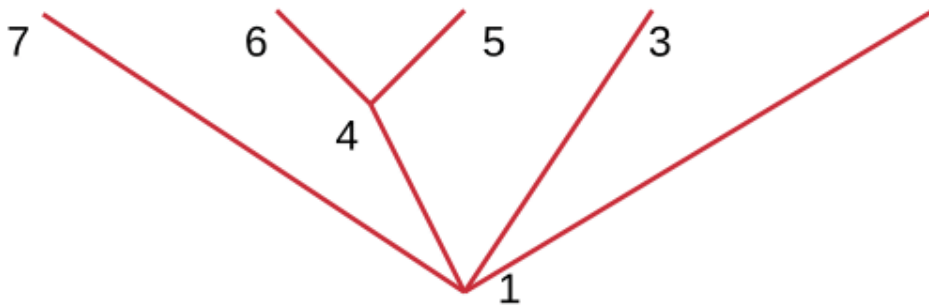
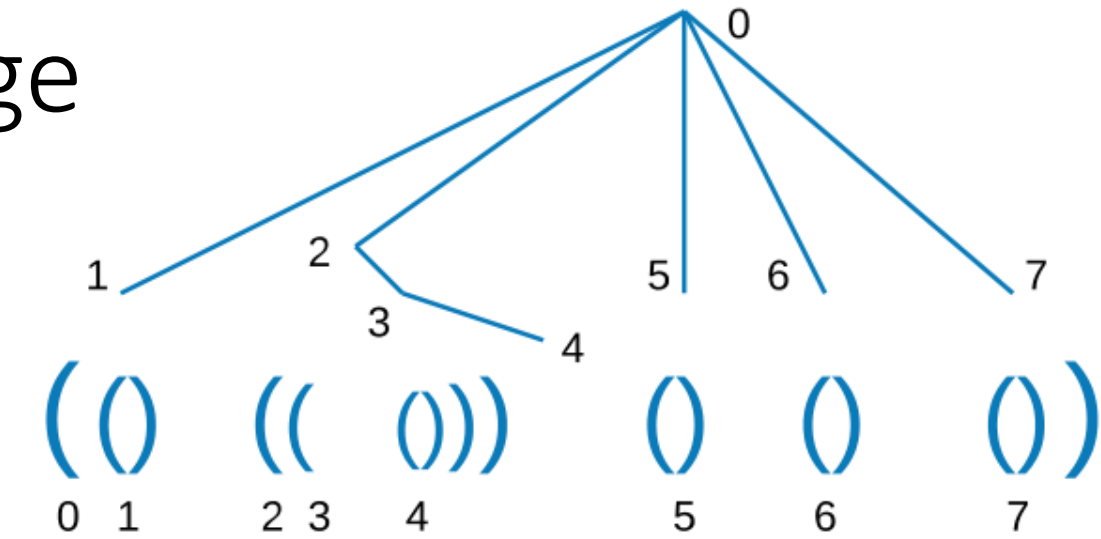
Parenthesis



Parenthesis



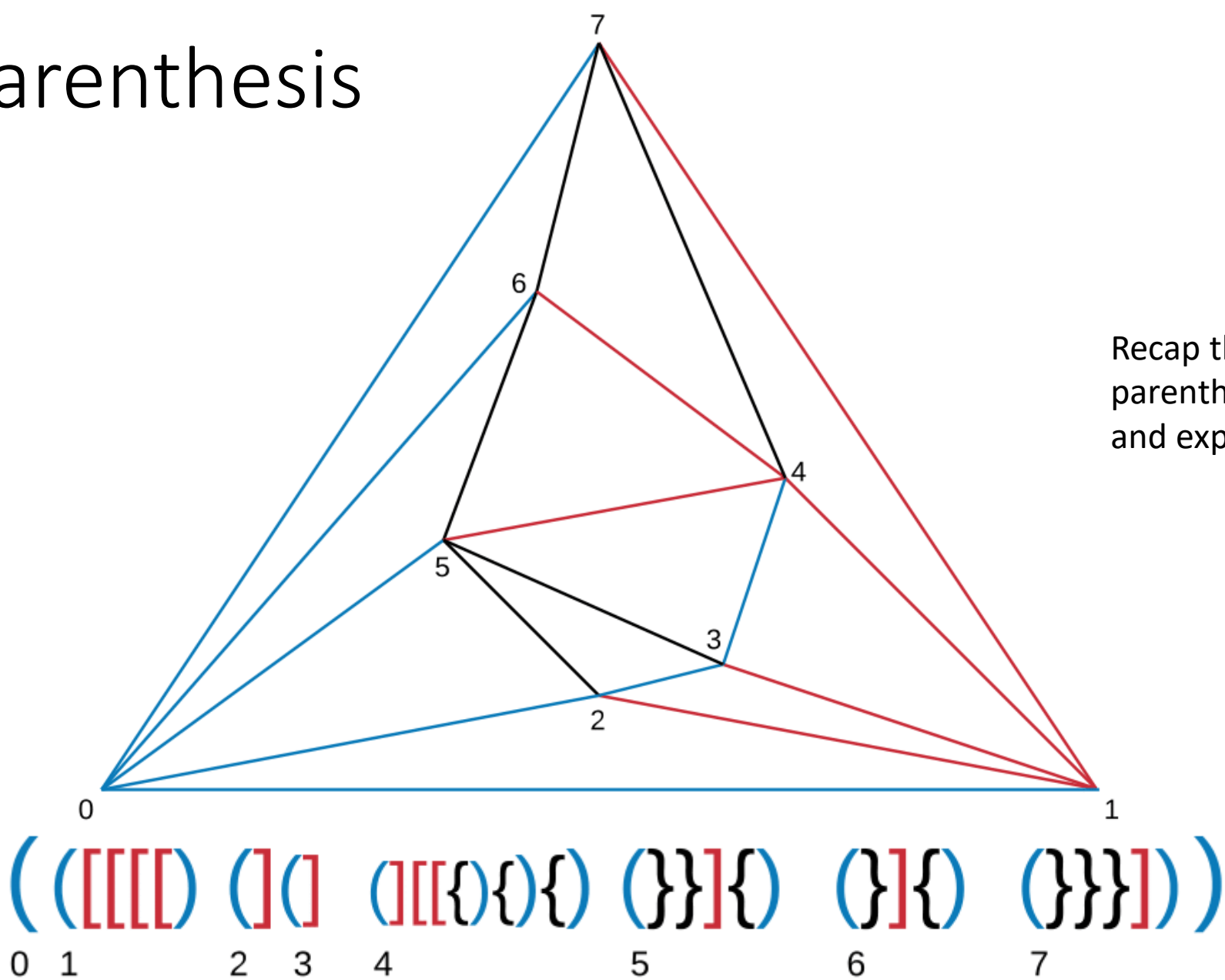
Merge



[TODO]
Also for the third
parantesi

Parenthesis

Recap the parenthesis and explain



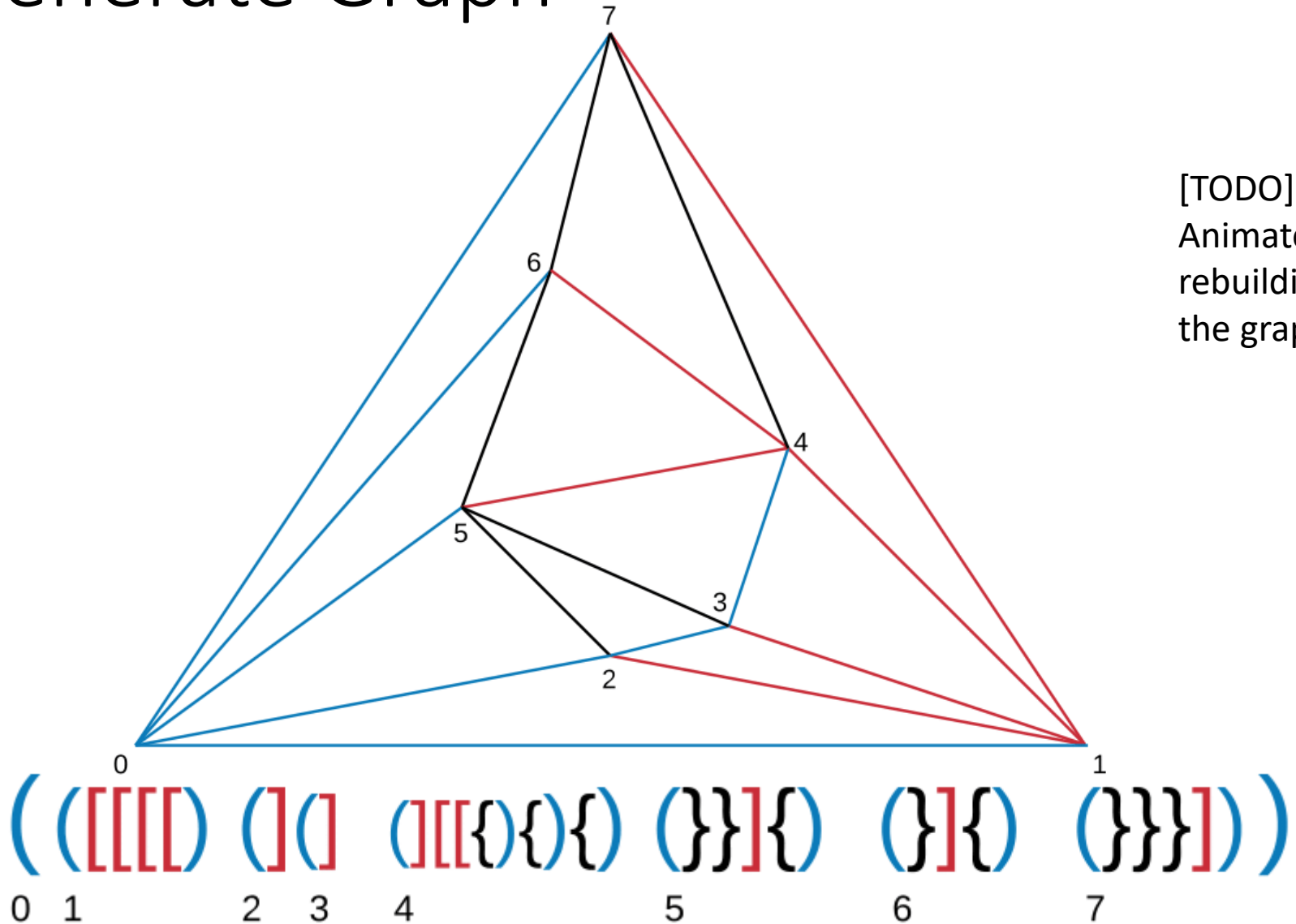
Parenthesized representation

- Some written infos:
- Eg. Each type of parenthesis alone always forms a correct parenthesis
- Explain memory requirements
- Supported functions

0 1 2 3 4 5 6 7

(([[[(] (] ([[{ { } } (} }] { (}] { (} } }]))

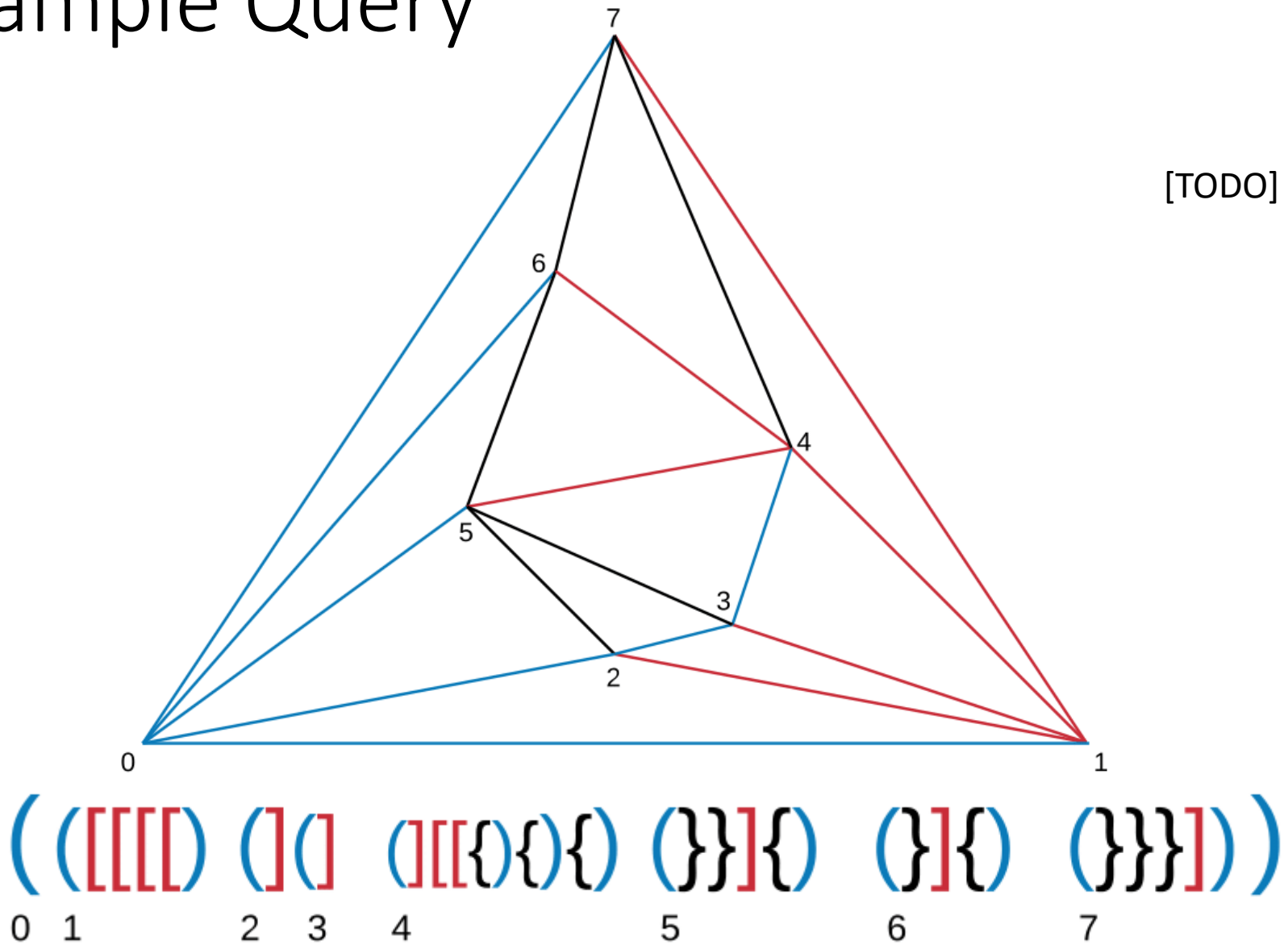
Generate Graph



[TODO]
Animated
rebuilding
the graph

Sample Query

[TODO]



Parenthesized representation

- Why to use the parentheses
- Explain Results and supported functions

Extension

- Labeled Graphs: As always with a mapping from node id to Label
- [Some more words to it, depending on how much time remains]

Summary

- Recap shortly
- Embed results
 - Compression of the space to the information-theoretic minimum. Runtimes like uncompressed

End

Thank you for your attention!