Session 35
Strategy 4: Transform-and-Conquer

📄 Lecture Summary

There is very little long-term value on spending more than one class (present clearest 5 out of 8 example problems in class; rest left as reading assignment). Focus on reduction strategy and highlight reduction elements (original problem question, reduced problem and its equivalent question). Time is better spent on covering the following chapter.

Transform by Problem Reduction

Review and compare transform-conquer techniques

Examples of Transform by Problem Reduction

1. Special case polynomial division (synthetic division) reduced to evaluating a polynomial
2. Relative point position reduced to computing a determinant
3. LCM computation reduced to GCD computation
4. Counting paths in graph reduced to exponentiation of a matrix
5. Reductions to graph problems (state-space search)

📄 Session Exercise

~~P24. Determine empirically the efficiency of least multiple (LCM) computation.~~

Detailed instructions
- Code Euclid's algorithm from 📖 Chapter 1
- Generate a reasonable run-time sequence
- Use Excel to investigate limits as m, n increase (check against n, log n, nlogn)

📖 **Exercise 6.6** • 1b, 2, 5

📄 Reading List

Reduction examples not covered in class are recommended reading. Ask questions in discussion forum if needed.)

📖 6.6

📄 Keywords

GCD, LCM, [problem] reduction, state-space