Algo 4/7 Notes

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4/7 - Notes by Roger Li, Patrick's code monkey

How to Deal with NP Completeness

Approximation Algorithm

- Algorithms that do not find the actual solution, but close to it
- In other fields, seen as an answer with a percent area of error
- Minimization Algo
  - R_{Alg} = max error over all inputs = (solution found by Alg / optimal solution)
- Bin Packing
  - Next fit = 1 open bin, adds element until overflow, shuts bin, opens new bin
  - $R_{NF} < 2$
    - Use even number of bins (1,…,2k)
    - Use odd number of bins (1,…,2k,2k+1)
    - Sum of a pair of bins is > 1
    - If NF uses 2k bins then weight > k
    - -----> Optimal >= k+1
    - 2k/ (k+1) < 2 and (2k + 1)/(k + 1) < 2
    - Shit makes sense when I pay attention :o
  - Variations
    - First Fit - put new objectc in 1st bin if it fits in