Data Structures II : Divide and Conquer

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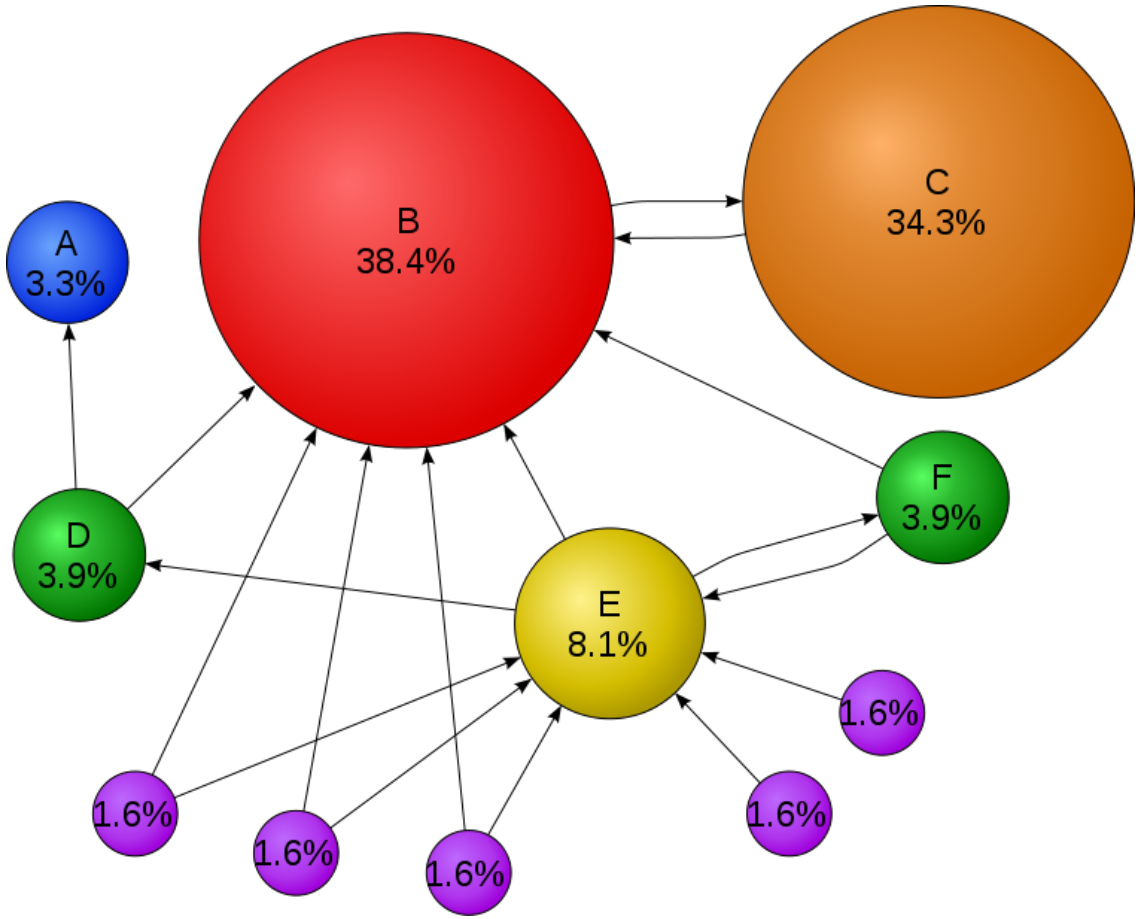
Cocktail of the day: Gin Tonic

Disclaimer: Keep alcohol out of the hands of minors.

Cocktail of the day: Gin Tonic

- 50 ml of tonic water
- 30 ml of gin

Google uses searching algorithms



https://en.wikipedia.org/wiki/PageRank

Divide and Conquer

- A divide and conquer algorithm works by recursively breaking down a problem into two or more sub-problems until these become simple enough to be solved directly.
- The solutions to the sub-problems are then combined to give a solution to the original problem.
- The correctness of a divide and conquer algorithm is usually proved by mathematical induction, and its computational cost is often determined by solving recurrence relations.

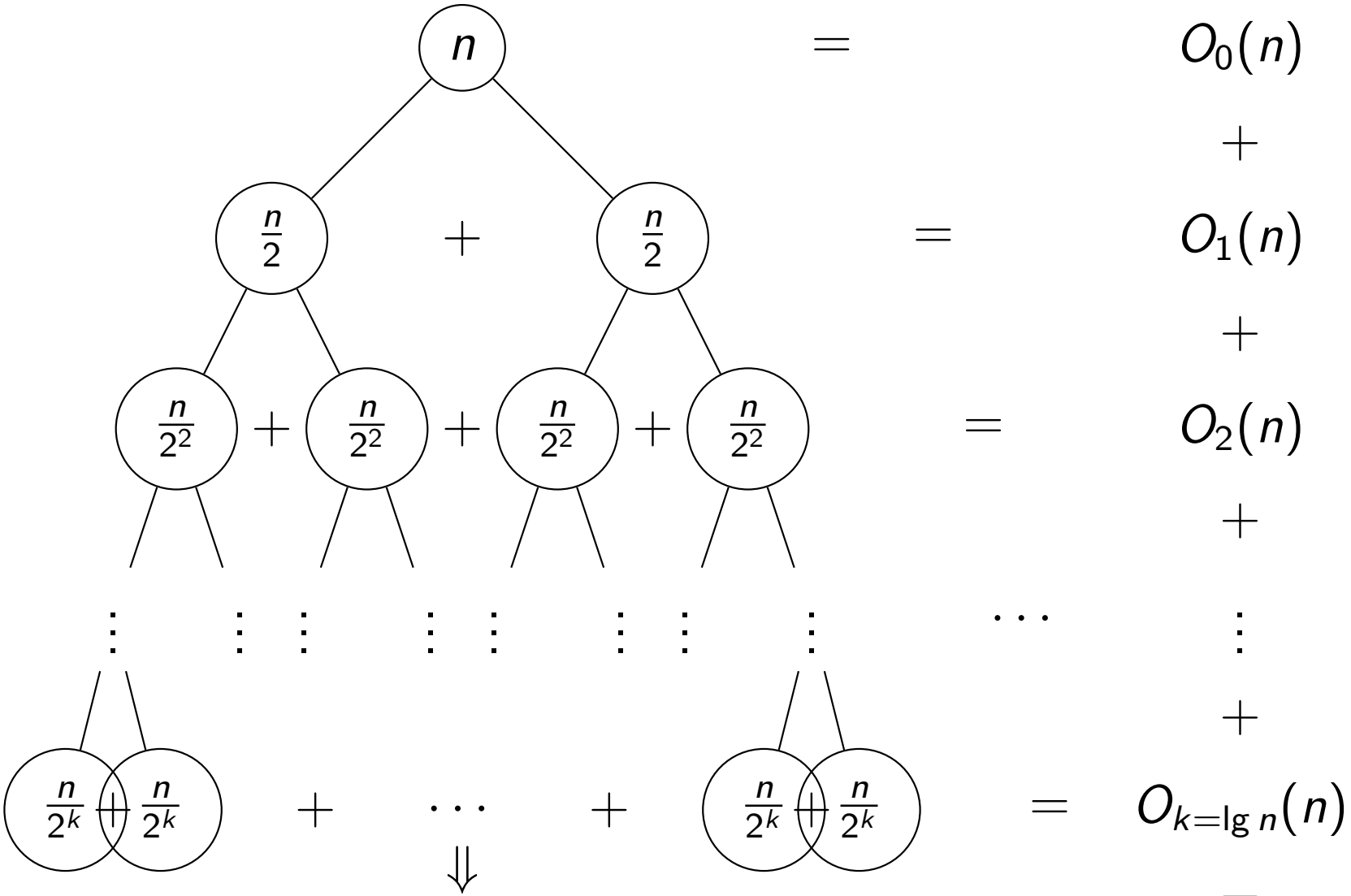
Examples: Sorting Algoritms

- Heapsort
- MergeSort
- Quicksort
- Introsort

Merge Sort

- Sound:
  `https://www.youtube.com/watch?v=ZRPoEKHXTJg`
- Dance:
  `https://www.youtube.com/watch?v=XaqR3G_NVoo`
- Analysis:
  `http://www.sorting-algorithms.com/merge-sort`

Merge Sort



Quick Sort

- Sound:
  `https://www.youtube.com/watch?v=8hEyhs3OV1w`
- Dance:
  `https://www.youtube.com/watch?v=5wD9Tmd6sJk`
- Analysis:
  `http://www.sorting-algorithms.com/quick-sort`

References

- Please learn how to reference images, trademarks, videos and fragments of code.
- Avoid plagiarism

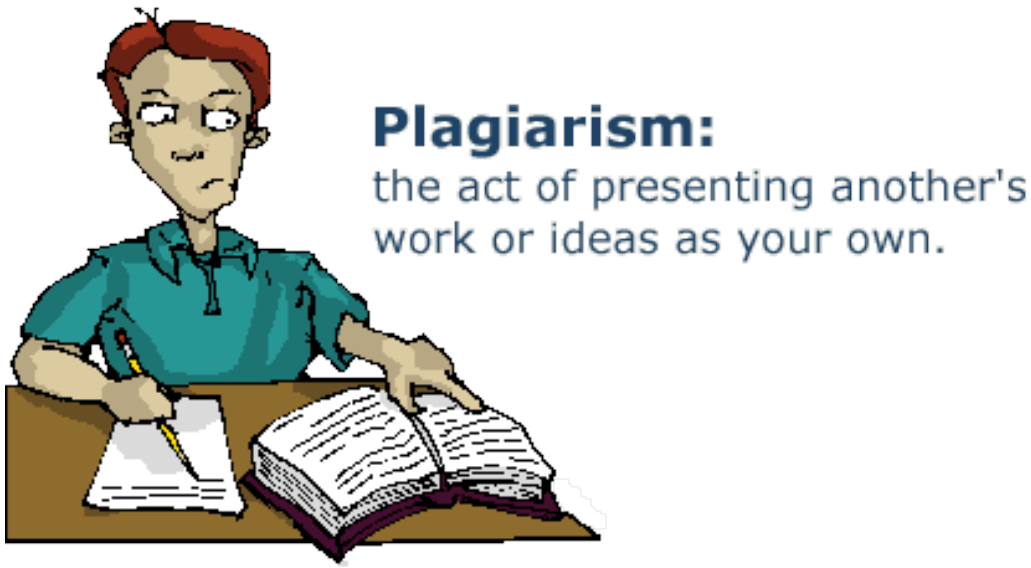


Figure: Figure about plagiarism, University of Malta [Uni09]

References

University of Malta.

Plagarism — The act of presenting another's work or ideas as your own, 2009.

[Online; accessed 29-November-2013].

Further Reading

- Divide and Conquer
  - R.C.T Lee et al., Introduction to the design and analysis of algorithms, Chapter 4: Divide and Conquer.