Federal University of Ouro Preto
PCC104 - Project and Analysis of Algorithms
Divide and Conquer

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1 Recommended Reading

- Chapter 4 - *Introduction to the Design and Analysis of Algorithms (3rd Edition)* by Anany Levitin
- Book - *Problem Solving with Algorithms and Data Structures using C++* (available at: `https://runestone.academy/runestone/books/published/cppds/index.html#`)

2 Practical Activities

1. Implement the *Insertion Sort* algorithm.
2. Implement the binary search algorithm.
3. Implement an algorithm for the *fake coin problem.*
4. Implement the *interpolation search* method.

For each implementation, present the time complexity analysis of the algorithm. This analysis should include:

- A mathematical expression defining the cost of the algorithm (recurrence relation for recursive algorithms or summation for iterative ones).
- Calculation of the cost function.
- Indication of the efficiency class (O or Θ). The indication of the class should be justified. You can prove it using the definition, the limit, the master theorem, or results demonstrated in class.