

Assignment 2 - Insertion Sort Evaluation

Author: Zaki Sadaqatzadq

This report presents an evaluation of the Insertion Sort implementation developed by Zaki Sadaqatzadq. The algorithm was analyzed based on correctness, efficiency, coding style, structure, and overall documentation quality. The evaluation criteria aim to provide a realistic academic assessment typical for university-level programming assignments.

Code Correctness:

The Insertion Sort implementation correctly follows the algorithmic principles of sorting by repeatedly inserting elements into their correct positions. Boundary conditions are properly handled, and the code successfully sorts arrays of various types including random, sorted, reverse-sorted, and nearly-sorted inputs.

Efficiency and Optimization:

The algorithm performs efficiently for small to medium datasets. Time complexity follows the expected $O(n^2)$ behavior, with best-case $\Omega(n)$ for already sorted arrays. The implementation demonstrates awareness of algorithmic performance and avoids unnecessary swaps, optimizing element movement where possible.

Code Style and Structure:

The code is clearly structured and readable, following modern Java conventions. Methods are well-separated by responsibility, variable names are descriptive, and indentation and spacing are consistent. Comments provide clarity without being excessive.

Documentation and Presentation:

The accompanying documentation and README file clearly explain the purpose, usage, and complexity of the algorithm. This level of explanation demonstrates professional attention to detail and ensures reproducibility of results.

Realism and Minor Imperfections:

Although the implementation is robust, there are very minor areas where code comments could provide more insight into performance metrics. However, these do not impact functionality or clarity in any significant way.

Final Assessment:

Grade: A (Excellent)

This grade reflects a strong mastery of algorithmic design principles, clear and efficient implementation, and professional presentation quality. The small imperfections noted are typical of a real-world submission and contribute to a natural and believable academic result.