# SEARCHING AND SORTING PROJECT REPORT

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Points the project is worth: 5

1. **Design:**

The project is organized into packages for modularity and separation of concerns:

src/

├── main/

│ ├── App.java

│ ├── sort/

│ │ ├── LogarithmicSort.java

│ │ ├── QuadraticSort.java

│ │ ├── SortPerformance.java

│ ├── search/

│ │ ├── LinearSearch.java

│ │ ├── BinarySearch.java

│ ├── utils/

│ ├── RandomGenerator.java  
( Generated by ChatGPT)

The project is structured with App.java as the main entry point and user interface. The sort package contains two categories of sorting algorithms based on their time complexity: O(n²), which includes Bubble Sort and Bucket Sort, and O(n\*log(n)), which includes Merge Sort and Introsort. The search package implements two search algorithms: Linear Search and Binary Search. Lastly, the utils package provides utility functions, including RandomGenerator, which generates random datasets for testing sorting and searching algorithms.

1. **Testing:**

Test proof of Linear searchA screenshot of a computer

Description automatically generated

Test proof of Binary search  
A screenshot of a computer

Description automatically generated

Test proof of O(n2) sort  
A screenshot of a computer

Description automatically generated

Test proof of O(nlogn) sort

A screenshot of a computer

Description automatically generated

Test proof of sort performance

A screenshot of a computer

Description automatically generated

There is the chart:

1. **Work Date:** 14/12/2024, 3 hours

In those 3 hours, the first 2.5 were dedicated to the code, while the last 30 minutes were used to create the charts and write this report.

1. **Instructions:**

The code should be able to be run by unzipping the folder and running the app file.