

benchmark.py Documentaion

Imports

- **time**: Used for measuring the execution time of the sorting algorithms.
- **random**: Used to generate random arrays for sorting.
- **matplotlib.pyplot as plt**: Used for plotting the results of the benchmarks.
- **psutil** and **platform**: These are commonly used to gather system information (though not directly used in the code snippet displayed).
- **Sorting functions**: The `insertion_sort`, `selection_sort`, and `bubble_sort` functions are imported from their respective modules.

Function: `benchmark_sort(sort_func, sizes)`

- **Purpose**: This function benchmarks a given sorting function across different input sizes.
- **Parameters**:
 - `sort_func` (function): The sorting function to be benchmarked. This can be `insertion_sort`, `selection_sort`, or `bubble_sort`.
 - `sizes` (list): A list of integer values representing the sizes of the arrays to be sorted. The function will benchmark the sorting function for each size in this list.
- **Returns**:
 - `list`: A list of elapsed times corresponding to each input size. Each time represents the time taken by the sorting function to sort an array of that size.
- **Description**:
 - The function iterates over the given sizes, generates a random array of each size, and measures the time taken by the `sort_func` to sort the array.
 - The elapsed time for each size is recorded and returned as a list.

System Information:

Processor: i386

CPU Cores: 4

RAM: 8.00 GB

Benchmarking Insertion Sort

Benchmarking Selection Sort

Benchmarking Bubble Sort

