



The x-axis represents the input size N . The y-axis represents the amount of time (in seconds) that it takes for each algorithm to run on input size N .

The algorithms behave as expected as the input size N grows. The brute force implementation, with a time complexity of $O(n^2)$, grows significantly in time compared to the divide-and-conquer approaches. The optimal solution runs slightly faster than the basic implementation.

| ■■■■■■■■■■■■■■■■■■■■ | Brute | Basic | Optimal |
|----------------------|----------------|-----------------|----------------|
| $N = 10^2$ | 0.01 s | 0.008 s | 0.01 s |
| $N = 10^3$ | 0.066 s | 0.025 s | 0.049 s |
| $N = 10^4$ | 2.105 s | 0.184 s | 0.145 s |
| $N = 10^5$ | 3 min, 44.33 s | 1.068 s | 1.149 s |
| $N = 10^6$ | ————— | 14.885 s | 8.509 s |
| $N = 10^7$ | ————— | 1 min, 11.689 s | 1 min, 4.669 s |