**W1D1 Solution**

***Question 1.***

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| **Input Data : 10**  \*\*\*\*\*\*\*\*\*\*\* algorithm1 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm1 Nano Time = 11200  algorithm1 Milli Time = 0  algorithm1 Largest Distance = 7  \*\*\*\*\*\*\*\*\*\*\* algorithm2 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm2 Nano Time = 15700  algorithm2 Milli Time = 0  algorithm2 Largest Distance = 9  \*\*\*\*\*\*\*\*\*\*\* algorithm3 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm3 Nano Time = 31701  algorithm3 Milli Time = 0  algorithm3 Largest Distance = 1  \*\*\*\*\*\*\*\*\*\*\* algorithm4 \*\*\*\*\*\*\*\*\*\*\*\*\*  maxEven = 8  minEven = 2  algorithm4 Nano Time = 26271101  algorithm4 Milli Time = 27  algorithm4 Largest Distance = 1 | **Input Data : 100**  \*\*\*\*\*\*\*\*\*\*\* algorithm1 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm1 Nano Time = 36599  algorithm1 Milli Time = 0  algorithm1 Largest Distance = 42  \*\*\*\*\*\*\*\*\*\*\* algorithm2 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm2 Nano Time = 622600  algorithm2 Milli Time = 0  algorithm2 Largest Distance = 93  \*\*\*\*\*\*\*\*\*\*\* algorithm3 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm3 Nano Time = 39000  algorithm3 Milli Time = 0  algorithm3 Largest Distance = 24  \*\*\*\*\*\*\*\*\*\*\* algorithm4 \*\*\*\*\*\*\*\*\*\*\*\*\*  maxEven = 98  minEven = 0  algorithm4 Nano Time = 30685200  algorithm4 Milli Time = 31  algorithm4 Largest Distance = 24 |
| **Input Data : 1000**  \*\*\*\*\*\*\*\*\*\*\* algorithm1 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm1 Nano Time = 316800  algorithm1 Milli Time = 0  algorithm1 Largest Distance = 517  \*\*\*\*\*\*\*\*\*\*\* algorithm2 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm2 Nano Time = 14393200  algorithm2 Milli Time = 15  algorithm2 Largest Distance = 996  \*\*\*\*\*\*\*\*\*\*\* algorithm3 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm3 Nano Time = 212900  algorithm3 Milli Time = 0  algorithm3 Largest Distance = 21  \*\*\*\*\*\*\*\*\*\*\* algorithm4 \*\*\*\*\*\*\*\*\*\*\*\*\*  maxEven = 998  minEven = 0  algorithm4 Nano Time = 29146299  algorithm4 Milli Time = 29  algorithm4 Largest Distance = 21 | **Input Data : 10000**  \*\*\*\*\*\*\*\*\*\*\* algorithm1 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm1 Nano Time = 1403200  algorithm1 Milli Time = 1  algorithm1 Largest Distance = 5011  \*\*\*\*\*\*\*\*\*\*\* algorithm2 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm2 Nano Time = 87300899  algorithm2 Milli Time = 88  algorithm2 Largest Distance = 9999  \*\*\*\*\*\*\*\*\*\*\* algorithm3 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm3 Nano Time = 2282601  algorithm3 Milli Time = 2  algorithm3 Largest Distance = 899  \*\*\*\*\*\*\*\*\*\*\* algorithm4 \*\*\*\*\*\*\*\*\*\*\*\*\*  maxEven = 9994  minEven = 0  algorithm4 Nano Time = 32442400  algorithm4 Milli Time = 33  algorithm4 Largest Distance = 899 |
| **Input Data : 100000**  \*\*\*\*\*\*\*\*\*\*\* algorithm1 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm1 Nano Time = 8190299  algorithm1 Milli Time = 8  algorithm1 Largest Distance = 49967  \*\*\*\*\*\*\*\*\*\*\* algorithm2 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm2 Nano Time = 6173160200  algorithm2 Milli Time = 6173  algorithm2 Largest Distance = 99993  \*\*\*\*\*\*\*\*\*\*\* algorithm3 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm3 Nano Time = 11890300  algorithm3 Milli Time = 12  algorithm3 Largest Distance = 7450  \*\*\*\*\*\*\*\*\*\*\* algorithm4 \*\*\*\*\*\*\*\*\*\*\*\*\*  maxEven = 99998  minEven = 4  algorithm4 Nano Time = 47116200  algorithm4 Milli Time = 48  algorithm4 Largest Distance = 7450 | **Input Data : 1000000**  \*\*\*\*\*\*\*\*\*\*\* algorithm1 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm1 Nano Time = 52174700  algorithm1 Milli Time = 52  algorithm1 Largest Distance = 499948  \*\*\*\*\*\*\*\*\*\*\* algorithm2 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm2 Nano Time = 966907228801  algorithm2 Milli Time = 966906  algorithm2 Largest Distance = 999997  \*\*\*\*\*\*\*\*\*\*\* algorithm3 \*\*\*\*\*\*\*\*\*\*\*\*\*  algorithm3 Nano Time = 34030700  algorithm3 Milli Time = 34  algorithm3 Largest Distance = 279370  \*\*\*\*\*\*\*\*\*\*\* algorithm4 \*\*\*\*\*\*\*\*\*\*\*\*\*  maxEven = 999998  minEven = 0  algorithm4 Nano Time = 78386600  algorithm4 Milli Time = 78  algorithm4 Largest Distance = 279370 |

Algorithm2 took the more time due to the time complixity of O(n2), while algorithm4 came third due to opening a stream each time for mapping the array to find the max, and for mapping the array to find the min ≈ O(2n), algorithm1 came second due to the new array which we needed extra some time for that ≈ O(n+c), while algorithm3 was the best as it just took one loop to find the needed from all the array O(n).

***Question 2.***

My attempt(s) trying to solve this problem 😓

A piece of paper with writing on it

Description automatically generated with medium confidence

Text, letter

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