

CONSIDER TWO ALGORITHMS

- Algo X
- Input: $A[1...n]$
- Pseudocode:
- for $i=1$ to n
- for $j=1$ to n
- LightProcess($A[i]$)

- Cost of LightProcess:
- 5 msec

- Algo Y
 - Input: $A[1...n]$
 - Pseudocode:
 - for $i=1$ to n
 - HeavyProcess($A[i]$)
- Cost of HeavyProcess:
 - 5000 msec

CONSIDER TWO ALGORITHMS

- Which of the two algorithms is more efficient?
 - Algo X or Algo Y
- And WHY?

TIME TAKEN BY ALGO X

? Input: A[1...10]
? Pseudocode:
? for i=1 to n
? for j=1 to n
? LightProcess(A[i])

TIME TAKEN BY ALGO Y

? Input: A[1...10]
? Pseudocode:
? for i=1 to n
? HeavyProcess(A[i])

? ??? msec

? ??? msec

ALGO X VS. ALGO Y

TIME TAKEN BY ALGO X

? Input: A[1...10]
? Pseudocode:
? for i=1 to n
? for j=1 to n
? LightProcess(A[i])

When n = 10, 500 msec

TIME TAKEN BY ALGO Y

? **Input: A[1...10]**
? **Pseudocode:**
? **for i=1 to n**
? **HeavyProcess(A[i])**

When n = 10, 50000 msec

ALGO X VS. ALGO Y

TIME TAKEN BY ALGO X

? Input: A[1...1000]
? Pseudocode:
? for i=1 to n
? for j=1 to n
? LightProcess(A[i])

TIME TAKEN BY ALGO Y

? Input: A[1...1000]
? Pseudocode:
? for i=1 to n
? HeavyProcess(A[i])

When n = 1000, 5,000,000 msec

When n = 1000, 5,000,000 msec

ALGO X VS. ALGO Y

TIME TAKEN BY ALGO X

? Input: A[1...10000]
? Pseudocode:
? for i=1 to n
? for j=1 to n
? LightProcess(A[i])

When n = 10000, 500,000,000 msec

TIME TAKEN BY ALGO Y

? Input: A[1...10000]
? Pseudocode:
? for i=1 to n
? HeavyProcess(A[i])

When n = 10000, 50,000,000 msec

ALGO X VS. ALGO Y

TIME TAKEN BY ALGO X

? Input: A[1...100000]
? Pseudocode:
? for i=1 to n
? for j=1 to n
? LightProcess(A[i])

When n = 100000, 50,000,000,000
msec

TIME TAKEN BY ALGO Y

? Input: A[1...100000]
? Pseudocode:
? for i=1 to n
? HeavyProcess(A[i])

When n = 100000, 500,000,000 msec

ALGO X VS. ALGO Y