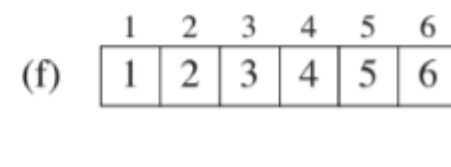
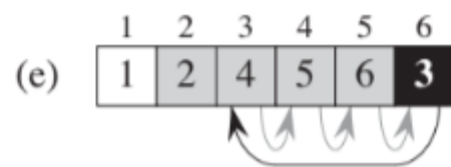
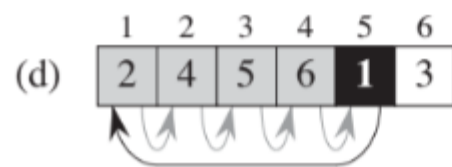
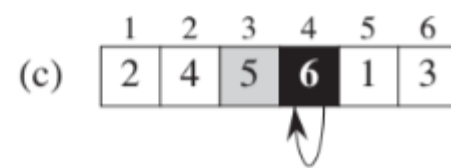
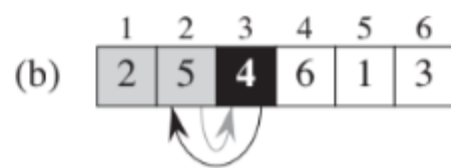
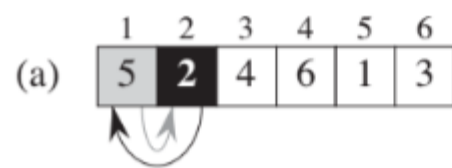
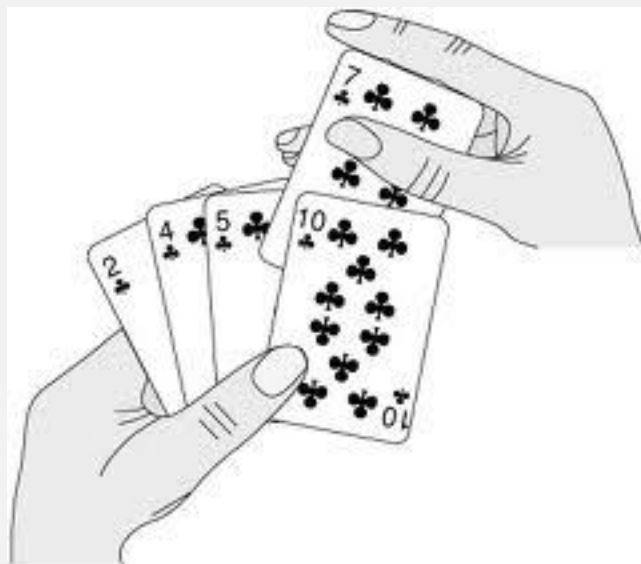


INSERT SORT



THE INCREMENTAL APPROACH

2	1	4	3
---	---	---	---

1	2	4	3
---	---	---	---

1	2	4	3
---	---	---	---

1	2	3	4
---	---	---	---



<https://visualgo.net/en/sorting>

"TALK IS CHEAP
SHOW ME THE CODE"

- Linus Torvalds



Cool! But...
How efficient is this?

SELECTION SORT



SELECTION SORT

4	1	3	2
---	---	---	---

1	4	3	2
---	---	---	---

4	1	3	2
---	---	---	---

1	4	3	2
---	---	---	---

4	1	3	2
---	---	---	---

1	2	3	4
---	---	---	---

1	2	3	4
---	---	---	---

1	4	3	2
---	---	---	---

1	2	3	4
---	---	---	---

1	4	3	2
---	---	---	---

1	2	3	4
---	---	---	---



<https://visualgo.net/en/sorting>

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BUBBLE SORT



THE INCREMENTAL APPROACH

4	1	3	2
---	---	---	---

1	3	2	4
---	---	---	---

4	1	3	2
---	---	---	---

1	3	2	4
---	---	---	---

1	4	3	2
---	---	---	---

1	3	2	4
---	---	---	---

1	4	3	2
---	---	---	---

1	2	3	4
---	---	---	---

1	3	4	2
---	---	---	---

1	2	3	4
---	---	---	---



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Cool! But...
How efficient is this?

REVIEW

WHAT IS THE RUNTIME COMPLEXITY OF INSERT SORT?

- a) $O(1)$
- b) $O(N)$
- c) $O(N^2)$

AND IF THE ARRAY IS ALREADY SORTED?

- a) $O(1)$
- b) $O(N)$
- c) $O(N^2)$

WHAT IS THE RUNTIME COMPLEXITY OF SELECTION SORT?

- a) $O(1)$
- b) $O(N)$
- c) $O(N^2)$

AND IF THE ARRAY IS ALREADY SORTED?

- a) $O(1)$
- b) $O(N)$
- c) $O(N^2)$

WHAT IS THE RUNTIME COMPLEXITY OF BUBBLE SORT?

- a) $O(1)$
- b) $O(N)$
- c) $O(N^2)$

AND IF THE ARRAY IS ALREADY SORTED?

- a) $O(1)$
- b) $O(N)$
- c) $O(N^2)$

EXERCISES

- What would you change in your Insert Sort and Bubble Sort to make them sort in reverse order? Can you code a function where the sorting order is provided as a parameter?