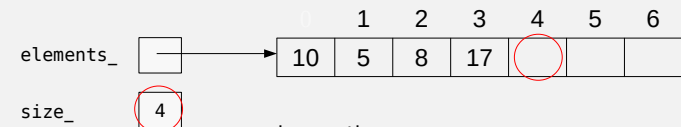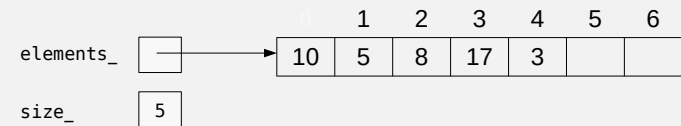## Figuring Out Array Operations

Strategy –

- create an example (not too big, not too small)
- draw before and after pictures
- identify what needs to be changed
- make the changes

- consider special cases – empty, first thing, last thing, …
  - create an example
  - draw before and after pictures
  - trace current algorithm
  - if something goes wrong, fix general case or write code to identify the case and do the right thing
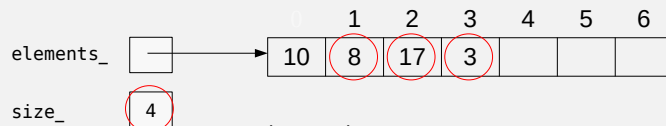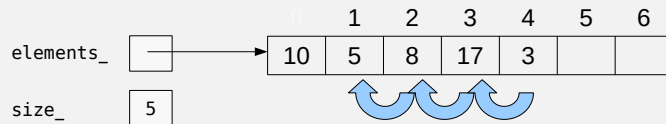
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## Figuring Out Array Operations

removeAtEnd() –



observations –
– size decreases by 1
– only one slot changes in the array

---
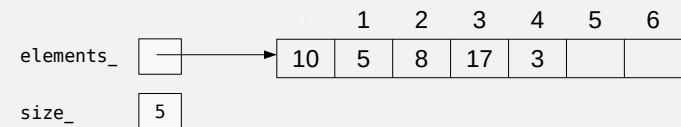
## Figuring Out Array Operations

removeAt(1) –



observations –
– size decreases by 1
– many things in the array change → loop
– new value for slot i is what was at slot i+1
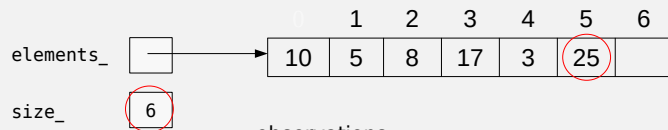
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## Figuring Out Array Operations

removeAt special cases –
- removeAt(0)
- removeAt(4)

# Figuring Out Array Operations

insertAtEnd(25) –

elements_ → [10 | 5 | 8 | 17 | 3 | | ]  (0 1 2 3 4 5 6)

size_  5

elements_ → [10 | 5 | 8 | 17 | 3 | (25) | ]  (0 1 2 3 4 5 6)

size_  (6)

observations –
– size increases by 1
– only one slot changes – slot size_

---

# Figuring Out Array Operations

insertAt(1,25) –

elements_ → [10 | 5 | 8 | 17 | 3 | | ]  (0 1 2 3 4 5 6)

size_  5

elements_ → [10 | (25) | (5) | (8) | (17) | (3) | ]  (0 1 2 3 4 5 6)

size_  (6)

observations –
– size increases by 1
– many things in the array change → loop
– new value for slot i is what was at slot i-1
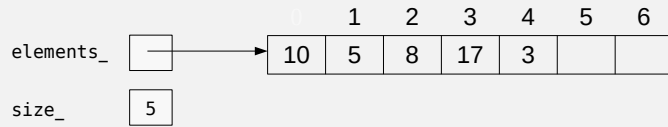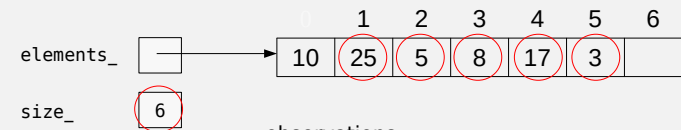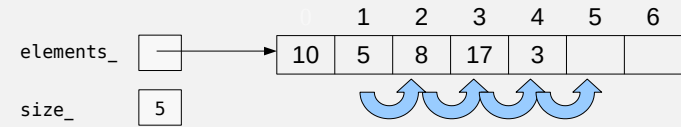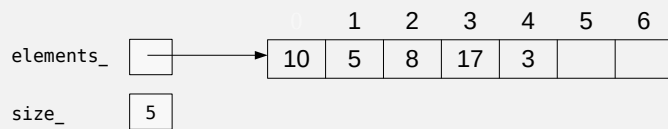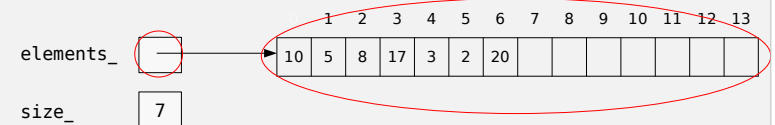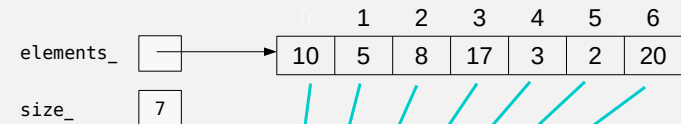
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# Figuring Out Array Operations

insertAt special cases –
• insertAt(0,25)
• insertAt(4,25)
• insertAt(5,25)

elements_ → [10 | 5 | 8 | 17 | 3 | | ]  (0 1 2 3 4 5 6)

size_  5

---

# Figuring Out Array Operations

growing the array –

elements_ → [10 | 5 | 8 | 17 | 3 | 2 | 20]  (0 1 2 3 4 5 6)

size_  7

elements_ → [10 | 5 | 8 | 17 | 3 | 2 | 20 | | | | | | | ]  (0 1 2 3 4 5 6 7 8 9 10 11 12 13)

size_  7

observations –
– need new, larger array
– many things in the array change → loop
– new value for slot i is what was at slot i