GRAB A BYTE

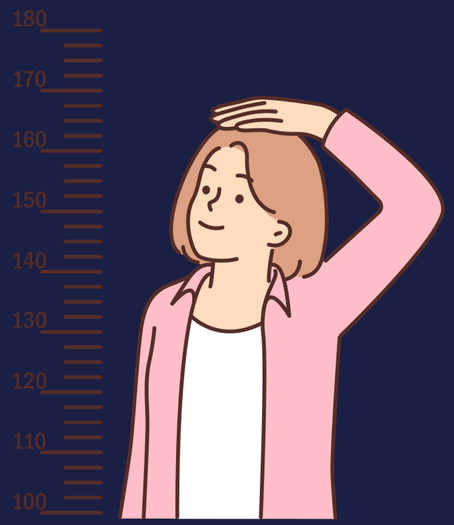
SELECTION SORT

BUBBLE SORT ALGORITHM

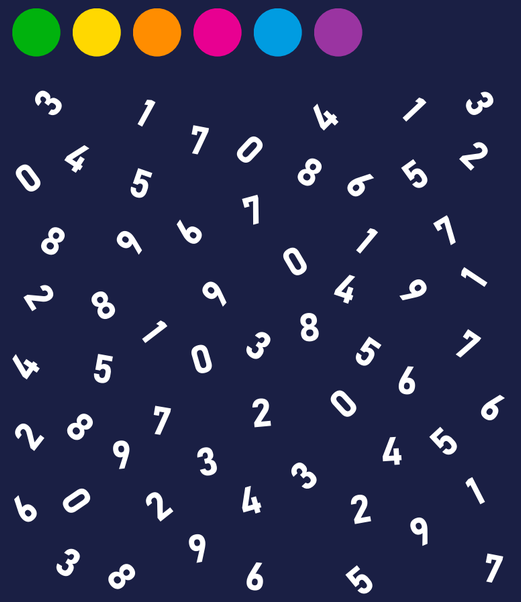
Last week we learned about the Bubble Sort Algorithm, which repeatedly swaps adjacent elements to sort a list step-by-step.

SELECTION SORT ALGORITHM

Today we will be learning the Selection Sort Algorithm.
It works by repeatedly finding the smallest element
and moving it to its correct position in the list.



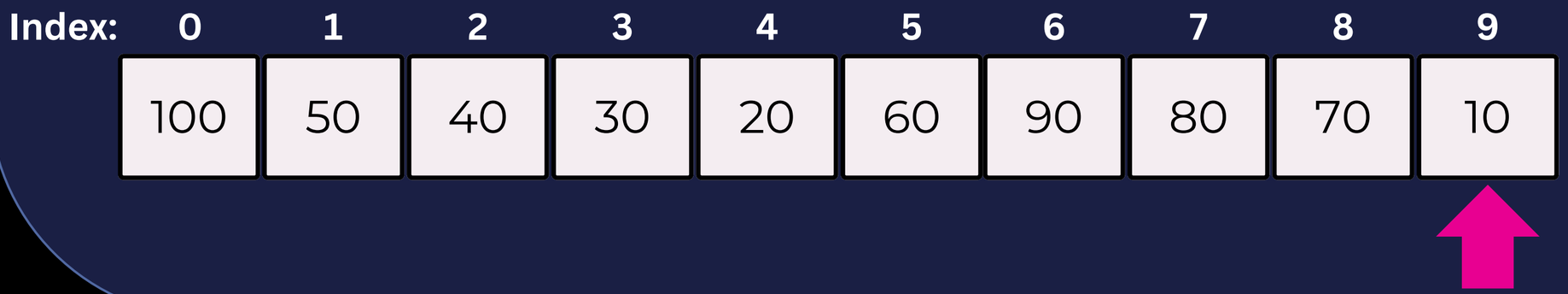
Selection Sort is like organizing a line of people from shortest to tallest by repeatedly picking the shortest person and moving them to the front.



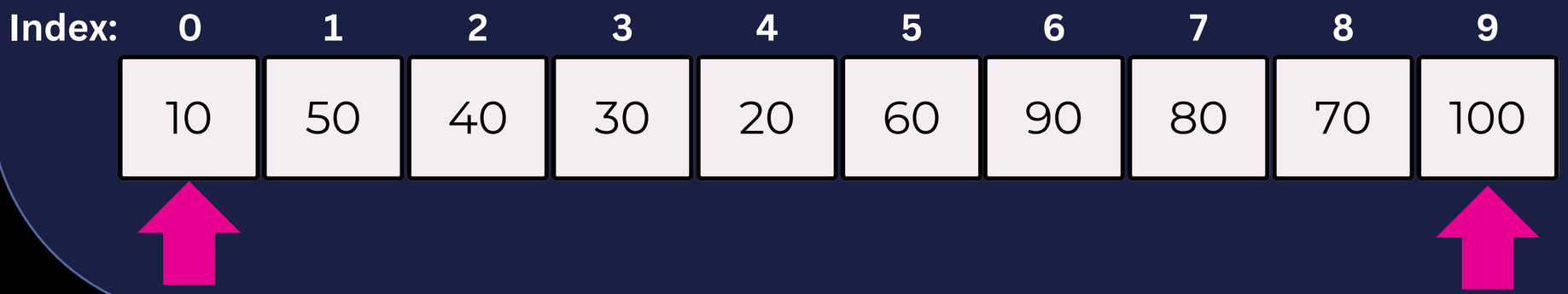
But Instead of People…
Let’s use a sequence of numbers instead!
We’ll organize them from smallest to largest by repeatedly selecting the smallest number and moving it to the front.

Lets consider an array of integer values:

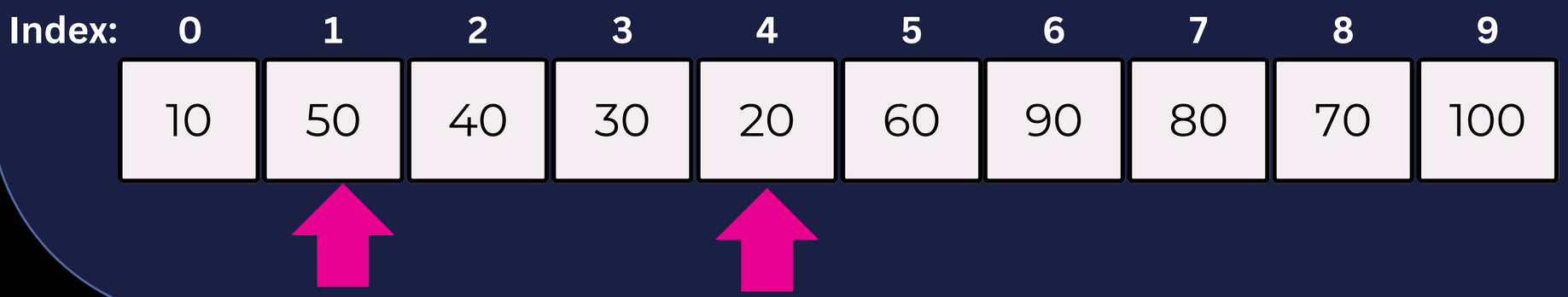
Look at the whole list and find the smallest number.



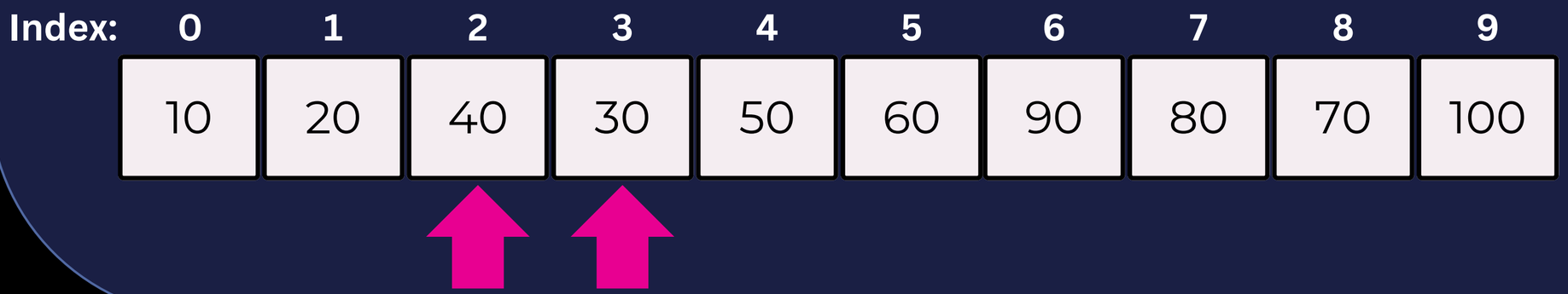
Swap that smallest number with the first number in the list.



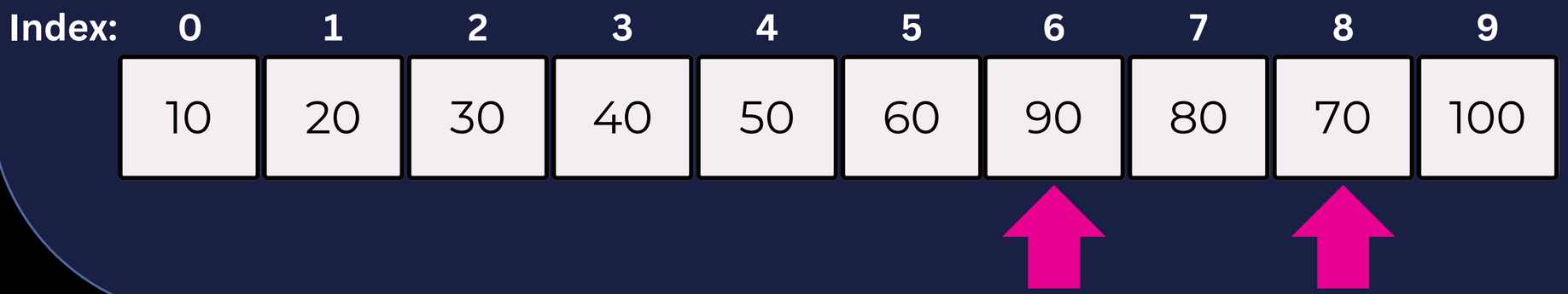
Repeat the process—find the smallest number in the remaining list and swap it with the second number.



Repeat the process—find the smallest number in the remaining list and swap it with the second number.



Repeat the process—find the smallest number in the remaining list and swap it with the second number.



Keep doing this until the entire list is sorted.

Index:	0	1	2	3	4	5	6	7	8	9
	10	20	30	40	50	60	70	80	90	100

THE PSEUDOCODE

```
array = [64, 25, 12, 22, 11]

FOR i from 0 to length of array - 1
 SET min_idx = i  number

  FOR j from i + 1 to length of array - 1
    IF array[j] < array[min_idx] THEN
      SET min_idx = j
    END IF
  END FOR
  SWAP array[i] and array[min_idx]
```

EXAMPLES REPLIT! PLEASE GO TO:

HTTPS://REPLIT.COM/@RIKKIEHRHART/GRABABYTE

UP NEXT

Feb 19 - Selection Sort
Feb 26 - Insertion Sort
Mar 5 - Merge Sort
Mar 12 - Quick Sort
SPRING BREAK!
Mar 26 - Breadth-First Search (BFS)
Apr 2 - Depth-First Search (DFS)
Apr 9 Hashing
Apr 16 - Dijkstra's Algorithm
Apr 23 - Dynamic Programming (Knapsack Problem)
Apr 30 - Union-Find
May 7 - Kruskal's Algorithm
May 14 - Prim's Algorithm

Questions? - rikki.ehrhart@g.ausitncc.edu

If you'd like the opportunity to run a Grab a Byte algorithm workshop, please let me know!