• Of course! Here are teacher-friendly notes on Bubble Sort, designed to be clear, easy to understand, and focused on key exam points.
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• ### **Teacher Notes: Bubble Sort Algorithm**
• #### **1
• Core Concept: What is Bubble Sort?**
• * **The Big Idea:** Bubble Sort is the simplest sorting algorithm
• It works by repeatedly stepping through the list, comparing adjacent pairs of elements, and swapping them if they are in the wrong order.
• * **Why the Name "Bubble"?** With each pass through the list, the largest unsorted element "bubbles up" to its correct position at the end, like an air bubble rising in water.
• * **Main Use Case:** It's primarily a teaching tool to introduce the concept of sorting algorithms
• It is **not** efficient for real-world applications with large datasets.
• #### **2
• How It Works: The Step-by-Step Logic**
• The algorithm can be broken down into "passes."
• 1
• **Start at the beginning** of the array.
• 2
• **Compare the first element with the second.** If the first is larger than the second, **swap them**.
• 3
• **Move to the next pair** (the second and third elements) and repeat the comparison and swap.
• 4
• **Continue this process** until you reach the end of the list
• This completes **one full pass**.
• 5
• **Key Result of Pass 1:** The largest element in the list is now at the very end.
• 6
• **Repeat the entire process** for the remaining unsorted part of the list (i.e., from the beginning to the second-to-last element).
• 7
• Keep making passes until a full pass completes with **no swaps**, which means the list is sorted.
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• #### **3
• Walkthrough Example (Crucial for Teaching)**
• Use a small array on the whiteboard
• Let's sort: **`[5, 1, 4, 2, 8]`**
• **Pass 1:** (Goal: Move the largest element, 8, to the end)
• * `[**5, 1**, 4, 2, 8]` -> 5 > 1? Yes