QuickSort

1. QuickSort

- **Why Important**: QuickSort is one of the fastest general-purpose sorting algorithms for large datasets. It works **in-place** and has an average complexity of **O(N log N)**.
- **Where It's Useful**:
  - Sorting large datasets like vertex buffers, meshes, or texture indices.
  - Preparing data for **draw calls**: Sorting objects by material, shader, or texture to minimize state changes on the GPU.
  - Sorting elements for **visibility** or **depth-sorting** in transparent objects.

Example:

- Unity and Unreal **sort renderable objects** back-to-front or front-to-back using QuickSort for transparency or depth optimization.

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