A screenshot of a computer

Description automatically generated

**When to Use Each:**

**Vector Sort**: Best for large datasets, low memory usage, and when speed is critical.

**List Sort**: Best for linked data structures, when stability is required, or when frequent insertions/deletions are needed.

**Reasons for Differences:**

**Vector Sort** benefits from contiguous memory (cache efficiency).

**List Sort** uses a linked structure, requiring more memory and additional merging steps in Merge Sort, leading to slower performance.

**Differences in Performance:**

**Vector Sort (std::sort)**: Faster for all data sizes; takes 20ms for 100,000 elements.

**List Sort (std::list::sort)**: Slower; takes 24ms for 100,000 elements. The gap grows with larger datasets.