Performance Comparison Report:

***** This Test Was Done In Perfomance_test2.cpp and compiled To perfomance_test.2 file *****

Description:

We conducted an experiment to compare the performance of two ordered set implementations: OSULL (Ordered Set Implemented in an Unrolled Linked List) and OSLL (Ordered Set Implemented in a Doubly-Linked List). The experiment involved testing the data structures with a list size of 10,000 items and performing 1,000 operations (insertions, searches, and removals) on each data structure. We chose this setup to assess the efficiency of each implementation in handling a moderate-sized dataset and to evaluate their performance across various operations.

- Node Capacity: Not specified (default values used by the implementations)
- List Item Data Type: Integer
- List Size: 10,000 items
- Number of Operations: 1,000
- Space Estimate: OSULL and OSLL use additional space for maintaining linked list nodes, with OSULL likely requiring more due to its unrolled nature.

Summary of Data:

Operation	OSULL Time (seconds)	OSLL Time (seconds)
Insertion	0.002783	0.001659
Search	0.002422	0.001581
Removal	4.6e-05	1.8e-05

Interpretation:

The experiment results indicate that OSLL, implemented using a Doubly-Linked List, generally outperforms OSULL, implemented using an Unrolled Linked List, in terms of insertion and search operations. However, both implementations exhibit comparable performance in removal operations. OSLL demonstrates faster insertion and search times, making it more suitable for applications prioritizing these operations.

Additional Insights:

While OSLL showcased superior performance in most operations, it's worth noting that both data structures exhibited exceptionally fast removal times. This suggests that the choice between OSULL and OSLL should consider the specific requirements of the application, with OSLL being preferable for scenarios emphasizing fast insertion and search operations. Additionally, the experiment highlighted the importance of considering the underlying data structure and its implementation when optimizing performance for different use cases.

This report provides a concise summary of the experiment comparing OSULL and OSLL, highlighting their performance across various operations and offering insights for decision-making in selecting the appropriate data structure for specific applications.