Exercise 1
Implement a parallel hash join algorithm using the following techniques:

1. **Chaining with locking**: Implement your parallel hash join using a hash table with fine-grained locking (one lock per chain). You can try out the different mutex variants provided by Intel TBB [https://www.threadingbuildingblocks.org/docs/help/reference/synchronization/mutexes/mutex_concept.htm](https://www.threadingbuildingblocks.org/docs/help/reference/synchronization/mutexes/mutex_concept.htm).

2. **Chaining**: Avoid using locks in this implementation. You should make use of `compare and exchange` provided by `<atomic>`.

3. **Linear probing**: Similar to Chaining, you should make use of `compare and exchange`.

Please add your implementation to the `hashjoinskeleton.cpp` provided on the website. Compare your implementation against the provided STL implementation. You may use `parallel_for` provided by Intel TBB.