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**Problem -1:**

Write two C programs for computing dot product that will run on any number of cores or computers using MPI. Use the attached **skeleton-1.c**. The two versions are:

- (a) point to point communication using MPI\_Send() and MPI\_Recv() and
- (b) collective communication using MPI\_Scatter() and MPI\_Gather() as we discuss in class.

**Problem -2:**

Implement a C program to solve the 15-puzzle problem using breadth-first search (BFS) and depth-first search (DFS) with a CLOSED list, as introduced in class.

You can follow the same instructions outlined in the Homework-7 document on Canvas and use the provided skeleton.c from that homework as a reference.

Alternatively, you may use the attached **skeleton-2.c** file specifically adapted for BFS and DFS.