Artificial Intelligence (CS 534)
Assignment 2 (80 pts total)
Due: Sept. 30th, <u>BEFORE CLASS</u>

1. **Chapter 3, Ex 3.13** (14 points)
   Prove that GRAPH-SEARCH satisfies the graph separation property illustrated in Fig- ure 3.9.

2. **Chapter 3, Ex 3.16** (16 points)
   A basic wooden railway set contains the pieces shown in Figure 3.32.

3. **Chapter 3, Ex. 3.26** (16 points)
   Consider the unbounded version of the regular 2D grid shown in Figure 3.9.

4. **Chapter 4, Ex. 4.3** (20 points)
   <u>Note</u>: Please ignore the second part of 4.3.a, which asks for the following, "Compare the results with optimal solutions obtained from the A∗ algorithm with the MST heuristic (Exercise 3.30)."
   In this exercise, we explore the use of local search methods to solve TSPs of the type defined in Exercise 3.30.

5. **Chapter 4, Ex. 4.5** (14 points)
   <u>Note</u>: Provide the updated algorithm first and then provide the required reasoning.
   The AND-OR-GRAPH-SEARCH algorithm in Figure 4.11 checks for repeated states only on the path from the root to the current state.