Assignment #1: Formulating Problems as Search

Question 1: Missionaries and Cannibals

The “missionaries and cannibals” problem is a famous toy problem from AI. It’s formulation is as follows:

There are three missionaries and three cannibals on one side of a river. They have a single boat that can only hold two people. They need to get to the other side of the river. The boat requires at least one person to operate. So far, so good. The problem is that if at any time there are more cannibals than missionaries on one side of the river, the cannibals will eat the missionaries. This is a “bad thing.” The goal is to find a way to get all six people from one side to the other without anyone being eaten.

1.1. Describe the minimal problem space necessary for this problem, consisting of the following:

1. State representation

2 Start state

3. Goal state

4. Operators