GROUP HOMEWORK 1

The Missionaries and Cannibals problem

There are three missionaries and three cannibals who need to cross a river. They have a boat that can carry up to two people at a time. The challenge is to find a sequence of boat trips that successfully transports all individuals across the river without ever leaving a group of missionaries in one place outnumbered by cannibals, as the cannibals would then eat the missionaries.

Constraints

1. The boat can carry a maximum of two people at a time.

2. At no point should the number of cannibals on either side of the river exceed the number of missionaries on the same side (including the boat), unless there are no missionaries present on that side.

3. The boat must have at least one person on board to cross the river.

4. All individuals (missionaries and cannibals) start on the same side of the river.

Requirements

1. **Draw** a directed graph to represent *states* and *transitions* (using **draw.io** or **powerpoint**)