

CSE 318: Offline Assignment 1

The missionaries and cannibals problem, which is a famous problem in AI, is usually stated as follows. **Three missionaries** and **three cannibals** are on one side of a river, along with a **boat** that can hold **one or two people**. Find a way to get everyone to the other side without ever leaving a group of missionaries in one place **outnumbered** by the cannibals in that place.

In this assignment, your task is to do the problem formulation so it can be solved by searching, and do the computer implementation in order to experimentally compare the performance of the **BFS** and the **DFS** search strategy.

For performance comparison, you may use **time**, number of **nodes explored**, number of **nodes expanded**, **effective branching factor** etc.

In addition, your computer implementation needs to be able to deal with a **scaled-up** version of this problem (for example, a problem with five missionaries and five cannibals). The implementation may have ***m*** number of missionaries, ***c*** number of cannibals and ***k*** number of maximum allowable passengers in the boat. There should a search cut-off limit (for example, termination after **30** seconds, or after **1,000,000** nodes have been expanded) which you should be able to vary.