Uninformed Search Tutorial

Question 1:
Give a suitable search state representation (all information that is relevant for choosing the next search step etc.), the initial state, operators, path cost function, goal test for the following problems. Note there are several possible formulations that may have an impact on search time:

- 8 queens problem: put 8 queens on a chessboard so that they don't attack each other.
- You want to find the phone number of Mr. John Smithoh who lives in Sydney. You have phone directory books ordered by city name. What happens if you don't know his family name.
- The missionaries and cannibals: 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.
    - Draw a diagram of the complete state space
    - Implement and solve the problem optimally using an appropriate search algorithm. Is it a good idea to check for repeated states?
    - Why do you think people have a hard time solving this puzzle given that the state space is so simple?

Question 2:

- Describe a search space (i.e. a search problem), where iterative deepening performs much worse than depth first search.
- Describe a search space, where breadth first performs much worse than depth first search.
- Describe a search space, where depth first performs much worse than breadth first search.