a

State definition

Encode each state as a 7-bit binary string.

B, W3, W2, W1, S3, S2, S1

F represents the boat; Wi represents each wolve; Sj represents each sheep

bool value, 0 represents being on the left side of river, 1 represents being on the right side of river

Initial state: 0000000

Goal state: 1111111

Successor function: For an input state, assume that the bool value of its highest bit (B) is x. Flip B, and 1 bit or 2 bits among the lower 6 bits of which bool value are x, from x to !x. For example, 1101111, 1011111, 1111111 are the only output states of the input 0001111.

Cost function: For each state transition, the cost is 1.

b