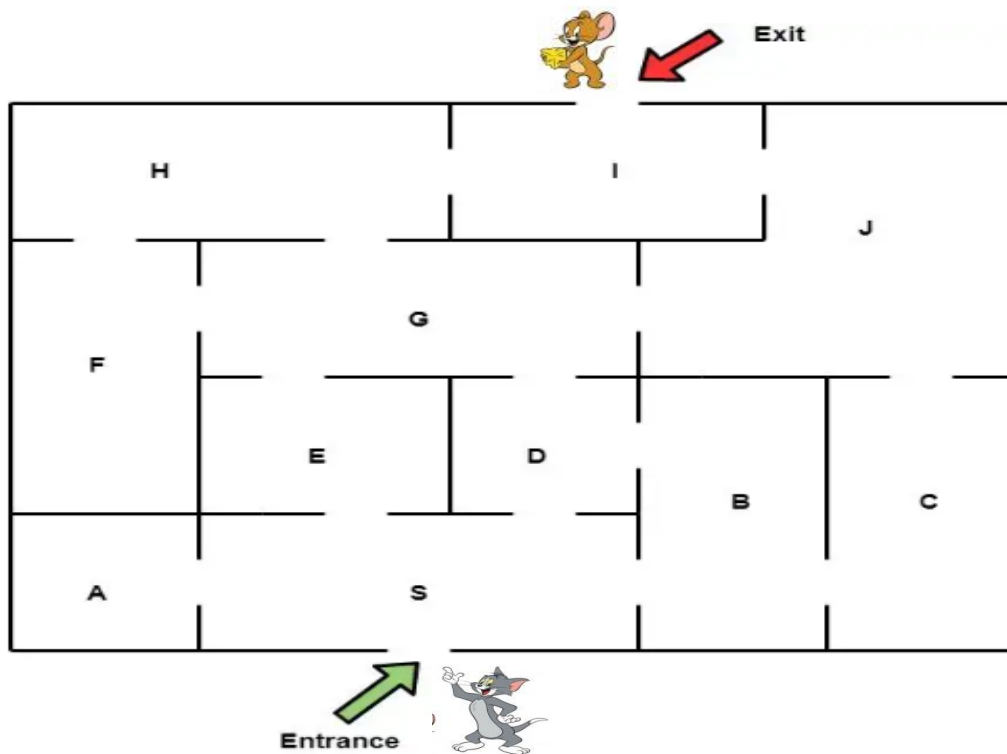


Problem 1: Suppose there is a maze such as the image shown below, where Tom wants to navigate from the entrance to the exit to catch the Jerry. As an AI expert you want to help Tom to catch the Jerry.



Q1. Formulate the problem in terms of Graph (V,E) .

Q2. Suggest at least two blind search strategies to Tom to find possible navigation path.

Q3. How can Tom navigate from the entrance to the exit with the less possible movements (Explain in detail).

Q4. Find the minimum cost path from the entrance to the exit if the cost of movement from one room to another room is given by $C = |X - Y|$, where X and Y represent the numeric equivalent value of room name respectively (A=1,B=2,C=3....Z=26).

(For example: Cost of movement from room S to A = $|19 - 1| = 18$)

Problem 2: Suppose you are given two jugs (4-gallon one and 3-gallon one). Neither has any measuring marked on it. There is a pump, which can be used to fill the jugs with water. How can you get exactly 2 gallons of water into 4-gallon jug?

Q1. Show the state space representation for above problem.

Q2. Suggest an algorithm to solve water jug problems.

Q3. Check whether suggested algorithm work correctly if you have 2 jugs, a 5- gallon and the other 3-gallon with no measuring marker on them. There is endless supply of water through tap and your task is to get 4-gallon of water in the 5-g jug.

Problem 3: A farmer wants to transfer his three belongings, a wolf, a goat and a cabbage, by a boat from the left bank of a river to its right bank. The boat can carry at most two items including the farmer. If unattended, the wolf may eat up the goat and the goat may eat up the cabbage. How should the farmer plan to transfer the items?

Q1. Write the legal and illegal states in above problem.

Q2. Show the state space representation for above problem.

Q3. Suggest an algorithm to solve water jug problems.