The Labyrinth Description

The myth of Theseus and the Minotaur within the Labyrinth of Crete is one of the most famous stories of ancient Greek Methodology. The story is told by the hero Theseus, a mythical king and founder-hero of Athens. The Minotaur is a giant, ferocious creature that has been imprisoned in the Labyrinth of Crete. The Minotaur is said to be the most dangerous foe in the Labyrinth. Whereas in the story the hero must find and defeat the Minotaur, in this interview question the hero and the Minotaur both wish to enter and escape the Labyrinth without ever having the possibility to fight.

Given a square labyrinth as in Figure 1 of size n^2 with $n > 4$, with 2 entry points (blue squares) and 2 exit points (red squares) on the border of the labyrinth. Plan a set of paths from each entry point to a unique exit point; such that, no two paths pass through the same exact coordinate point. If no such set of paths exists then the labyrinth is impossible to escape without conflict and should be detected. Traversal of the labyrinth is allowed via any white square.

Likewise, an example of a labyrinth which has no solution is shown in Figure 2.
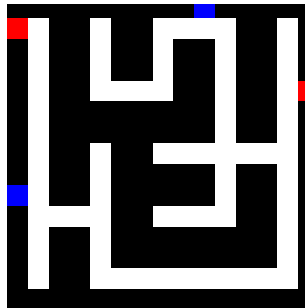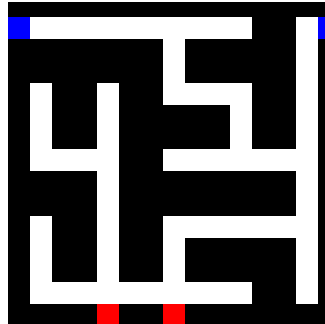

Figure 1: An example of a labyrinth with a solution.

Figure 2: An example of a labyrinth without a solution.