# Solving the Spiral Game: A Q-learning Algorithm Approach

this program solves the spiral game using the Q-Learning algorithm. The environment given to the program consists of a series of traversable paths marked in white. To discretize and digitize the roads, we convert them into small unit squares. The starting point of the agent's movement is also determined. The goal is to get out of this environment, which is achieved by reaching the end point. It is also important that the agent passes all the flags in the environment. In the figure below, they are indicated in red. W means Way, B means Block, F means Flag, A means Agent, and T means Target.

| A | B | W | W | W | W | W | W | W | W |
|---|---|---|---|---|---|---|---|---|---|
| W | W | W | F | W | B | W | W | W | W |
| F | W | W | W | W | B | F | W | W | W |
| B | B | W | B | B | W | B | W | W | W |
| W | F | B | W | B | F | B | B | B | W |
| W | W | B | W | B | W | W | W | W | W |
| W | W | W | W | W | W | W | W | W | W |
| W | F | W | W | W | W | B | B | B | B |
| W | B | B | B | B | B | W | W | W | W |
| W | W | W | W | W | W | W | B | F | T |