1. In a decision-making AI system, the input is a set of information that can be obtained from both external and internal knowledge for deciding on choice of actions. Can you give some examples of both external knowledge and internal knowledge for decision-making?

2. Besides using Boolean responses to decision tree tests, what other ways can we represent responses in decision trees?

3. A tank AI has a set of conditions that can be modelled using a decision tree.

   *When the enemy approaches within a radius of 50 units and amount of ammo is still healthy (more than 10 shells), shoot at the enemy. However, if there’s insufficient ammo during that situation, chase after the enemy and increase speed. We assume that this tank has the ability to inflict damage to the enemy upon contact (crash). On the other hand, if the enemy is still out of the radius of detection, the tank can choose between patrolling action or to continue roaming the area. This depends on whether the tank has received a patrolling order from the command center. Also, the tank should not roam but return to the base when its fuel is less than 4 units.*

   Design a decision tree to incorporate the behavior of the tank AI.

4. In another different game, design a decision tree to model the AI behavior of a pet dog.

   *If the dog AI is hungry, and it spots a bone nearby, the dog will eat it. If there’s no bone located nearby, it will wander off. If the dog is not hungry and still has enough energy (not tired), it will bark and take a walk. However, if the dog is tired and not hungry, it will sleep.*

5. Is decision trees suitable to model the tank AI (Q3) and pet dog AI (Q4)? State your reasons (even if you answer Yes or No).

6. Using randomness in decision trees can increase uncertainty and unpredictability of the AI. However, it may result in very odd behavior if we continuously make random choices in every frame. In this case, what can we implement to make the AI more believable?