

1. Tic-Tac-Toe

Fully-Observable: You get to see the whole board at once

Multiagent: Is a 2-player game.

Sequential: Where you can move is determined by the previous moves.

Deterministic: Putting a mark on the board always works.

Static: Each player takes turns and cannot go while the other person is having their turn.

Discrete: There is no timer on a turn.

Known: Hopefully each player knows the rules beforehand.

Memory

Partially Observable: You don't get to see what each card is until you flip it.

Both single and multi-agent: You can play by yourself or with partners

Deterministic: The card's don't change.

Sequential: Your goal is to use information about cards from previous turns to help score.

Static: The game doesn't change while the guesser is guessing.

Discrete: There is no time limit to each turn.

Known: All players know the rules.

TA Grading:

Fully-Observable: You can look at all of each student's answers.

Multiagent: Both you and the student are putting in input for a final grade.

Episodic: A student's answer will have no effect on the scoring of any other student.

Stochastic: Since the first question errs on the objective side, there may be many unpredictable factors that affect the grade. Regrades are an example.

Static: The student's answers to the first question never change once it is being graded.

Discrete: There is no time limit imposed in grading each problem.

Partially Unknown: There may be answers in which a TA might not know if the answer can be considered for full credit. Those questions might have to be deferred to the instructor.

2. Step 1

Explored: S

Fringe: <G,12> <A,1>

Step 2:

Explored: S, A

Fringe: <G,12> <B,4> <C,2>

Step 3:

Explored: S, A, C

Fringe: <G,12> <B,4> <G,4> <D,3>

Step 4:

Explored: S, A, C, D

Fringe: <G,12> <G,4> <G,6> <B,4>

Step 5:

Explored: S, A, C, D, B

Fringe: <G, 12> <G, 6> <G, 4>

Solution: S -> A -> C -> G, cost: 4

3. **Salad**

- (a) The initial state is a group of vegetables that need to be cut and assembled
- (b) You could cut up any of the vegetables first from the initial state.
- (c) Additional states may have some of the vegetables cut and others in queue to be cut. You could also have a state where all of the vegetables are cut and the agent's next state is to mix them together with dressing.
- (d) The approach is incremental.

3rd year of College

- (a) The initial state is having a list of classes you want to take and finding in which orders you can take them
- (b) The possible actions would be planning a single class you know will be held during one of the four semesters and taking it off of your planned classes.
- (c) Other states would be having some of your classes placed in some order that works and having to choose another course to place in your proposed schedule. Another state would be a complete schedule and moving around class times to see if you prefer one working order vs another.
- (d) You could either begin this problem incrementally by placing classes in time slots that fit until you find a state that works. You could also place courses in an uninformed way one by one until you've placed them all. From there you could try and rearrange them until you find a schedule that works. This would be an example of a complete-state approach.

UPS Truck

- (a) The initial state would be a list of house addresses and a map which composed makes a graph of houses and roads between them.
- (b) From where you begin you could see which houses are adjacent in your graph of houses and roads.
- (c) Other states would have you visited a few of the houses in your plan and deciding which adjacent house to visit next.
- (d) This would be an incremental approach.

4.

Hide-and-go-seek

You should use a breadth first search. I would use this approach because it will find a person with the minimal distance away from you.

iTunes songs

I would use a uniform-cost search. My reasoning is that one of the heuristics is a maximum time. Once you find a maximum time path you can check to see if it also contains 3 genres. If not, you then would omit that path and begin another search and repeat until you find the maximum path with 3 different genres.

UPS truck

I would use a uniform-cost search. If we have the houses as nodes and edges as roads we could map a route by making a graph. From there you could label each edge with a distance and find a minimum distance path.

5.

Humans playing chess

Rational. Both players have some metric for which they can decide on what actions are possible and which ones will lead to a better outcome.

“Dumb” Roomba

Irrational. The dumb Roomba doesn't have any metric to achieve its goal of cleaning a room.

“Smart” Roomba

Rational. The smart Roomba has information about the room that it's about to clean and has a way to move around furniture so that it can achieve its goal of cleaning the room.