CS1571
Fall 2019
10/28 In-Class Worksheet

Name:Simran Gidwani
Where were you sitting in class today: Back right

A. Pre-Reflection

On a scale of 1-5, with 5 being most confident, how well do you think you could execute these learning objectives:

15.1 Define planning algorithms _____
15.2 Create an action representation for a planning algorithm _____
15.3 Explain a forward planning approach _____
15.4 Explain a backward planning approach _____

B. Create an action representation for a planning algorithm

There are 3 blocks on a table: A, B, and C. Blocks can either be placed directly on a table, or on top of another block. Blocks can be moved down to another table or on top of another block. If block A is on top of block B, it is represented as On(A,B). If block A is on top of the table, it is represented as On(A, Table).

Define an action representation for moving blocks within this space. Your action representation should have the action definition, preconditions, and effects.

Action : Place(b, x, y)

Pre-Conditions: On(b, x) ^ Clear(b) ^ Clear(y)^ Block(b) ^ Block(y) ^ (b != x) ^ (b != y) ^ (x != y)

Effects: Add list: On(b, y) ^ Clear(x)
Delete List: ~On(b,x) ^ ~Clear(y)

Action : PlaceOnTable(x, y)

Preconditions: On(b, x) ^ Clear(b) ^ Block(b) ^ (b !=x)

Effect: Add list: On(b, Table) ^ Clear(x)
Delete list: On(b,x)

2. Define your initial state and goal state in first-order logic, given that in the initial state B is on the table and C is stacked on A, and in the goal state A is stacked on B, which is stacked on C.

Initial state: On(B, Table) ^ On(C, A) ^ On(A, Table) ^ Clear(C) ^ Clear(B) ^ Block(A) ^ Block(B) ^ Block(C)

Goal State: On(A, B) ^ On (B, C)

C. Forward Planning & Backward Planning

3. How many new states can be generated from our initial state?

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4. Given the starting state above, list two possible actions from that state, and the effects each action has on the state.

On(C, Table)
Effects: add list – Clear(A)
delete list –
On(B, C)
Effects: add list – On(A, Table), On(C, A), On(B, C)
Clear list – On(B, Table)

5. Given the goal state specified in your description, list all new goals generated in the first step of a backward search.

D. Post-Reflection

On a scale of 1-5, with 5 being most confident, how well do you think you could execute these learning objectives:

15.1 Define planning algorithms _____
15.2 Create an action representation for a planning algorithm _____
15.3 Explain a forward planning approach _____
15.4 Explain a backward planning approach _____