Phang Teng Fone 1003296 HW8 (Week 11)

1. a) Propositional Value: - isAt (x,y)
- road (x,y)
- isIn (x,y

b) Operators:

i) move (x,y)

pre: isAt (Truck, x), road(x,y)
add: isAt (Truck, y)
del: isAt (Truck, x)

(ii) load (x)

pre: isAt (package, x), isAt (Truck, x)
add: isIn (truck, package)
del: isAt (package, x)

(iii) unload (x)

pre: isAt (Truck, x), isIn (Truck, Package)
add: isAt (Package, x)
del: isIn (Truck, Package)

c) isAt (Truck, a), road (a,b), road (b,c), isAt (Package, c)
d) isAt (Package, b)

2. a) move (a, b) → move (b, c) → load (c) → move (c, b) → unload (b)

b) Operators:

i) move (x, y)

pre: isAt (Truck, x), road (x, y)

add: isAt (Truck, y)

~~del: isAt (Truck, x)~~

(ii) load (x)

pre: isAt (package, x), isAt (Truck, x)

add: isIn (truck, package)

~~del: isAt (package, x)~~

(iii) unload (x)

pre: isAt (Truck, x), isIn (Truck, Package)

add: isAt (Package, x)

~~del: isIn (Truck, Package)~~

Remove all delete conditions.

2.c) F_0 : isAt (Truck, a), road(a,b), road (b,c), isAt (Package, c)

A_0 : move (a,b)

F_1 : isAt (Truck, a), road(a,b), road (b,c), isAt (Package, c),
isAt (Truck, b)

A_1 : move (b, c)

F_2 : isAt (Truck, a), road(a,b), road (b,c), isAt (Package, c),
isAt (Truck, b), is At (Truck, c)

A_2 : load (c)

F_3 : isAt (Truck, a), road(a,b), road (b,c), isAt (Package, c),
isAt (Truck, b), is At (Truck, c), isIn (Truck, Package)

A_3 : unload (a), unload (b), unload (c)

F_4 : isAt (Truck, a), road(a,b), road (b,c), isAt (Package, c),
isAt (Truck, b), is At (Truck, c), isIn (Truck, Package),
isAt (Package, A), isAt (Package, B)

3. a) move (a,b) → move (b,c) → load (c) → unload (b). h_+ Heuristic

b) $h_{add} = 4$. Sum of all goal facts. Given goals isAt (Package, B) = 4 //

c) $h_{max} = 4$. Single most costly goal; still isAt (Package, B) = 4 //

4. F0 : m

A0 : A

F1 : m, n, o

A1 : B

F2 : m, n, o, p

a) $h_t = 2$ Total amount of action : A0 & A1 : 2

b) $h_{add} = 4$ 0(m) + 1(n) + 1(o) + 2(p) = 4

c) $h_{max} = 2$ max : 2(p) = 2

5. F0 : p

A0 : C

F1 : p, m

A1 : A

F2 : p, m, n, o

a) $h_t = 2$ Total amount of action : A0 & A1 : 2

b) $h_{add} = 5$ 0(p) + 1(m) + 2(n) + 2(o) = 5

c) $h_{max} = 2$ max : 2 (n/o) = 2