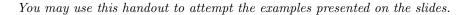
Worksheet: L09 – Planning Graphs

CSCI-534: Robot Planning & Manipulation Spring 2020

http://www.neil.dantam.name/rpm/B09-graphplan.pdf



1. Construct the planning graph for the domain in Figure 1.



Figure 1: Cake Domain

2. Draw one level of the planning graph for the domain in Figure 2. You may omit the following constant predicates to make the drawing neater: plane(?x), cargo(?x), airport(?x).

```
(define (domain air-cargo)
(:predicates (plane ?x) (cargo ?x)
(airport ?x) (at ?x ?y))
(:action fly :parameters (?p ?x ?y)
                                                                              (define (problem air)
                                                                                 (:domain air-cargo)
                                                                                 (:objects cargo-0 cargo-1
                                                                                              plane-0 plane-1
               : {\bf precondition}
  (and (plane ?p) (airport ?x) (airport ?y)
(at ?p ?x))
:effect (and (not (at ?p ?x)) (at ?p ?y)))
(:action load :parameters (?c ?p ?a)
                                                                                              ATL SFO)
                                                                                 (:init (cargo cargo-0)
                                                                                           (cargo cargo-1)
                                                                                           (plane plane-0)
                : precondition
                                                                                           (plane plane-1)
  (airport ATL)
                                                                                           (airport SFO)
                                                                                           (at plane-0 ATL)
                                                                                           (at plane-1 SFO)
               precondition
                                                                                           (at cargo-0 ATL)
               (and (cargo ?c) (plane ?p) (airport ?a)
(at ?c ?p) (at ?p ?a))
:effect (and (not (at ?c ?p)) (at ?c ?a))))
                                                                                           (at cargo-1 SFO))
                                                                                 (: goal (and (at cargo-0 SFO)
                                                                                                 (at cargo-1 ATL))))
                                  (a)
                                                                                                  (b)
```

Figure 2: Air Cargo Domain