

1 Definition of initial Domain.pddl

```
1 (define (domain specific_plan)
2   (:requirements :strips :typing)
3   (:types agent tool location operation)
4   (:predicates
5     (at ?a - agent ?l - location)
6     (move_to_workstation_done ?a - agent)
7     (move_to_done ?a - agent)
8     (holding ?a - agent ?t - tool)
9     (tool_at ?t - tool ?l - location)
10    (can_operate ?t - tool ?op - operation)
11    (wait_done ?a - agent)
12    (pick_done ?a - agent)
13    (place_done ?a - agent)
14    (pick_op22_co_done)
15    (place_op22_co_done)
16    (pick_op23_co_done)
17    (place_op23_co_done)
18    (pick_op32_done)
19    (place_op32_done)
20    (pick_op33_done)
21    (place_op33_done)
22  )
23
24  ;; Generic Move Action
25  (:action move_to
26    :parameters (?a - agent ?from - location ?to - location)
27    :precondition (at ?a ?from)
28    :effect (and
29      (at ?a ?to)
30      (not (at ?a ?from))
31      (move_to_done ?a))
32  )
33
34  ;; Move to Workstation Action
35  (:action move_to_workstation
36    :parameters (?a - agent ?from - location ?to - location)
37    :precondition (at ?a ?from)
38    :effect (and
39      (at ?a ?to)
40      (not (at ?a ?from))
41      (move_to_workstation_done ?a))
42  )
43
44  ;; Pick OP22_CO Action
45  (:action pick_op22_co
46    :parameters (?a - agent ?t - tool ?l - location)
47    :precondition (and (tool_at ?t ?l)
48      (can_operate ?t op22_co) (at ?a ?l) (move_to_done ?a))
49    :effect (and
50      (holding ?a ?t)
51      (not (tool_at ?t ?l))
52      (pick_op22_co_done))
53  )
54
55  ;; Place OP22_CO Action
56  (:action place_op22_co
57    :parameters (?a - agent ?t - tool)
58    :precondition (and (holding ?a ?t) (pick_op22_co_done)
59      (can_operate ?t op22_co) (at ?a loc_workstation))
60    :effect (and
61      (tool_at ?t loc_workstation)
62      (not (holding ?a ?t))
63      (place_op22_co_done))
64  )
65
66  ;; Waiting Action
67  (:action wait
68    :parameters (?a - agent)
69    :precondition (and (place_op22_co_done))
70    :effect (wait_done ?a)
71  )
72
73  ;; Pick OP32 Action
74  (:action pick_op32
75    :parameters (?a - agent ?t - tool ?l - location)
76    :precondition (and (wait_done ?a) (tool_at ?t ?l)
77      (can_operate ?t op32) (at ?a ?l) (move_to_done ?a))
78    :effect (and
79      (holding ?a ?t)
80      (not (tool_at ?t ?l))
81      (pick_op32_done))
82  )
83
84  ;; Place OP32 Action
```

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85 (:action place_op32
86   :parameters (?a - agent ?t - tool)
87   :precondition (and (holding ?a ?t) (pick_op32_done)
88     (can_operate ?t op32) (at ?a loc_workstation))
89   :effect (and
90     (tool_at ?t loc_workstation)
91     (not (holding ?a ?t))
92     (place_op32_done))
93 )
94
95 ;; Pick OP23_CO Action
96 (:action pick_op23_co
97   :parameters (?a - agent ?t - tool ?l - location)
98   :precondition (and (place_op32_done) (tool_at ?t ?l)
99     (can_operate ?t op23_co) (at ?a ?l) (move_to_done ?a))
100   :effect (and
101     (holding ?a ?t)
102     (not (tool_at ?t ?l))
103     (pick_op23_co_done))
104 )
105
106 ;; Place OP23_CO Action
107 (:action place_op23_co
108   :parameters (?a - agent ?t - tool)
109   :precondition (and (holding ?a ?t) (pick_op23_co_done)
110     (can_operate ?t op23_co) (at ?a loc_workstation))
111   :effect (and
112     (tool_at ?t loc_workstation)
113     (not (holding ?a ?t))
114     (place_op23_co_done))
115 )
116
117 ;; Pick OP33 Action
118 (:action pick_op33
119   :parameters (?a - agent ?t - tool ?l - location)
120   :precondition (and (place_op23_co_done) (tool_at ?t ?l)
121     (can_operate ?t op33) (at ?a ?l) (move_to_done ?a))
122   :effect (and
123     (holding ?a ?t)
124     (not (tool_at ?t ?l))
125     (pick_op33_done))
126 )
127
128 ;; Place OP33 Action
129 (:action place_op33
130   :parameters (?a - agent ?t - tool)
131   :precondition (and (holding ?a ?t) (pick_op33_done)
132     (can_operate ?t op33) (at ?a loc_workstation))
133   :effect (and
134     (tool_at ?t loc_workstation)
135     (not (holding ?a ?t))
136     (place_op33_done))
137 )

```

Definition of initial Problem.pddl

```

1 (define (problem task)
2   (:domain specific_plan)
3   (:objects
4     agent_r - agent
5     tool_op22_co tool_op23_co tool_op32 tool_op33 - tool
6     loc_base loc_workstation - location
7     op22_co op23_co op32 op33 - operation
8   )
9   (:init
10    (at agent_r loc_base)
11
12    (tool_at tool_op22_co loc_workstation)
13    (tool_at tool_op23_co loc_workstation)
14    (tool_at tool_op32 loc_workstation)
15    (tool_at tool_op33 loc_workstation)
16
17    (can_operate tool_op22_co op22_co)
18    (can_operate tool_op23_co op23_co)
19    (can_operate tool_op32 op32)
20    (can_operate tool_op33 op33)
21  )
22 )
23 (:goal (and
24   (place_op33_done)
25 ))
26 )

```