

Plan Validation Report

VAL

May 13, 2013

1 Domain and Problem

Domain: yandi

Problem: two_connected_pits

2 Plan: plan

2.1 Plan

Plan size: 43

Time	Action
1:	(move l_4_1 node_4_1 node_4_2)
2:	(move l_6_1 node_6_1 node_6_2)
3:	(send-instructions)
4:	(move l_4_1 node_4_2 node_4_3)
5:	(move l_6_1 node_6_2 node_6_3)
6:	(send-instructions)
7:	(move l_4_1 node_4_3 node_4_4)
8:	(move l_6_1 node_6_3 node_6_4)
9:	(send-instructions)
10:	(dig-block l_6_1 block-node_6_4 node_6_4)
11:	(dig-block l_4_1 block-node_4_4 node_4_4)
12:	(update-tonnes)
13:	(reset-extracted)
14:	(send-instructions)
15:	(move l_4_1 node_4_4 node_4_5)
16:	(move l_6_1 node_6_4 node_6_5)
17:	(send-instructions)

18: (dig-block l_6_1 block-node_6_5 node_6_5)
 19: (dig-block l_4_1 block-node_4_5 node_4_5)
 20: (update-tonnes)
 21: (reset-extracted)
 22: (send-instructions)
 23: (move l_4_1 node_4_5 node_4_6)
 24: (move l_6_1 node_6_5 node_6_6)
 25: (send-instructions)
 26: (dig-block l_6_1 block-node_6_6 node_6_6)
 27: (dig-finish-build l_4_1 block-node_4_6 node_4_6)
 28: (update-tonnes)
 29: (reset-extracted)
 30: (check-grade-and-load-trains)
 31: (send-instructions)
 32: (dig-block l_4_1 block-node_4_6 node_4_6)
 33: (update-tonnes)
 34: (reset-extracted)
 35: (move l_6_1 node_6_6 node_6_7)
 36: (send-instructions)
 37: (dig-block l_6_1 block-node_6_7 node_6_7)
 38: (update-tonnes)
 39: (move l_4_1 node_4_6 node_4_7)
 40: (reset-extracted)
 41: (send-instructions)
 42: (dig-block l_4_1 block-node_4_7 node_4_7)
 43: (update-tonnes)

2.2 Plan To Validate

Time	Happening
1:	(move l_4_1 node_4_1 node_4_2)
2:	(move l_6_1 node_6_1 node_6_2)
3:	(send-instructions)
4:	(move l_4_1 node_4_2 node_4_3)
5:	(move l_6_1 node_6_2 node_6_3)

6: (send-instructions)
7: (move l_4_1 node_4_3 node_4_4)
8: (move l_6_1 node_6_3 node_6_4)
9: (send-instructions)
10: (dig-block l_6_1 block-node_6_4 node_6_4)
11: (dig-block l_4_1 block-node_4_4 node_4_4)
12: (update-tonnes)
13: (reset-extracted)
14: (send-instructions)
15: (move l_4_1 node_4_4 node_4_5)
16: (move l_6_1 node_6_4 node_6_5)
17: (send-instructions)
18: (dig-block l_6_1 block-node_6_5 node_6_5)
19: (dig-block l_4_1 block-node_4_5 node_4_5)
20: (update-tonnes)
21: (reset-extracted)
22: (send-instructions)
23: (move l_4_1 node_4_5 node_4_6)
24: (move l_6_1 node_6_5 node_6_6)
25: (send-instructions)

26: (dig-block l_6_1 block-node_6_6 node_6_6)
 27: (dig-finish-build l_4_1 block-node_4_6 node_4_6)
 28: (update-tonnes)
 29: (reset-extracted)
 30: (check-grade-and-load-trains)
 31: (send-instructions)
 32: (dig-block l_4_1 block-node_4_6 node_4_6)
 33: (update-tonnes)
 34: (reset-extracted)
 35: (move l_6_1 node_6_6 node_6_7)
 36: (send-instructions)
 37: (dig-block l_6_1 block-node_6_7 node_6_7)
 38: (update-tonnes)
 39: (move l_4_1 node_4_6 node_4_7)
 40: (reset-extracted)
 41: (send-instructions)
 42: (dig-block l_4_1 block-node_4_7 node_4_7)
 43: (update-tonnes)

2.3 Plan Validation

Time Details

- 1: Checking Happening... ...OK!
 Deleting (at l_4_1 node_4_1)
 Deleting (clear node_4_2)
 Deleting (free l_4_1)
 Adding (at l_4_1 node_4_2)
 Adding (clear node_4_1)
 Increasing (**total-cost**) (0) by 0.
 Decreasing (**digger-remaining-time l_4_1**) (168) by 0.25.
- 2: Checking Happening... ...OK!
 Deleting (at l_6_1 node_6_1)
 Deleting (clear node_6_2)
 Deleting (free l_6_1)
 Adding (at l_6_1 node_6_2)
 Adding (clear node_6_1)
 Increasing (**total-cost**) (0) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (168) by 0.25.
- 3: Checking Happening... ...OK!
 Adding (free l_4_1)
 Adding (free l_6_1)
 Increasing (**total-cost**) (0) by 1.
- 4: Checking Happening... ...OK!
 Deleting (at l_4_1 node_4_2)
 Deleting (clear node_4_3)
 Deleting (free l_4_1)
 Adding (at l_4_1 node_4_3)
 Adding (clear node_4_2)
 Increasing (**total-cost**) (1) by 0.
 Decreasing (**digger-remaining-time l_4_1**) (167.75) by 0.25.
- 5: Checking Happening... ...OK!
 Deleting (at l_6_1 node_6_2)
 Deleting (clear node_6_3)
 Deleting (free l_6_1)
 Adding (at l_6_1 node_6_3)
 Adding (clear node_6_2)
 Increasing (**total-cost**) (1) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (167.75) by 0.25.

- 6: Checking Happening... ...OK!
 Adding (free l_4_1)
 Adding (free l_6_1)
 Increasing (**total-cost**) (1) by 1.
- 7: Checking Happening... ...OK!
 Deleting (at l_4_1 node_4_3)
 Deleting (clear node_4_4)
 Deleting (free l_4_1)
 Adding (at l_4_1 node_4_4)
 Adding (clear node_4_3)
 Increasing (**total-cost**) (2) by 0.
 Decreasing (**digger-remaining-time l_4_1**) (167.5) by 0.25.
- 8: Checking Happening... ...OK!
 Deleting (at l_6_1 node_6_3)
 Deleting (clear node_6_4)
 Deleting (free l_6_1)
 Adding (at l_6_1 node_6_4)
 Adding (clear node_6_3)
 Increasing (**total-cost**) (2) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (167.5) by 0.25.
- 9: Checking Happening... ...OK!
 Adding (free l_4_1)
 Adding (free l_6_1)
 Increasing (**total-cost**) (2) by 1.
- 10: Checking Happening... ...OK!
 Deleting (free l_6_1)
 Deleting (not-update-tonnage)
 Adding (update-tonnage)
 Increasing (**total-cost**) (3) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (167.25) by 16.6667.
 Decreasing (**tonnage build**) (280000) by 50000.
 Increasing (**grade-tonnage build**) (0) by 30000.
 Updating (**tonnage-extracted block-node_6_4**) (0) by 50000 as-
 signment.
- 11: Checking Happening... ...OK!

Deleting (free l_4_1)
 Deleting (not-update-tonnage)
 Adding (update-tonnage)
 Increasing (**total-cost**) (3) by 0.
 Decreasing (**digger-remaining-time l_4_1**) (167.25) by 16.6667.
 Decreasing (**tonnage build**) (230000) by 50000.
 Increasing (**grade-tonnage build**) (30000) by 30000.
 Updating (**tonnage-extracted block-node_4_4**) (0) by 50000 assignment.

12: Checking Happening... ...OK!
 Deleting (not-reset-tonnage)
 Deleting (update-tonnage)
 Adding (reset-tonnage)
 Adding (not-update-tonnage)
 Increasing (**total-cost**) (3) by 0.
 Decreasing (**tonnage block-node_4_4**) (50000) by 50000.
 Decreasing (**tonnage block-node_4_5**) (50000) by 0.
 Decreasing (**tonnage block-node_4_6**) (50000) by 0.
 Decreasing (**tonnage block-node_4_7**) (50000) by 0.
 Decreasing (**tonnage block-node_6_4**) (50000) by 50000.
 Decreasing (**tonnage block-node_6_5**) (50000) by 0.
 Decreasing (**tonnage block-node_6_6**) (50000) by 0.
 Decreasing (**tonnage block-node_6_7**) (50000) by 0.
 Decreasing (**tonnage build**) (180000) by 0.

13: Checking Happening... ...OK!
 Deleting (reset-tonnage)
 Adding (not-reset-tonnage)
 Increasing (**total-cost**) (3) by 0.
 Updating (**tonnage-extracted block-node_4_4**) (50000) by 0 assignment.
 Updating (**tonnage-extracted block-node_4_5**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_4_6**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_4_7**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_6_4**) (50000) by 0 assignment.
 Updating (**tonnage-extracted block-node_6_5**) (0) by 0 assignment.

- Updating (**tonnage-extracted block-node_6_6**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_6_7**) (0) by 0 assignment.
 Updating (**tonnage-extracted build**) (0) by 0 assignment.
- 14:** Checking Happening... ...OK!
 Adding (free l_4_1)
 Adding (free l_6_1)
 Increasing (**total-cost**) (3) by 1.
- 15:** Checking Happening... ...OK!
 Deleting (at l_4_1 node_4_4)
 Deleting (clear node_4_5)
 Deleting (free l_4_1)
 Adding (at l_4_1 node_4_5)
 Adding (clear node_4_4)
 Increasing (**total-cost**) (4) by 0.
 Decreasing (**digger-remaining-time l_4_1**) (150.583) by 0.25.
- 16:** Checking Happening... ...OK!
 Deleting (at l_6_1 node_6_4)
 Deleting (clear node_6_5)
 Deleting (free l_6_1)
 Adding (at l_6_1 node_6_5)
 Adding (clear node_6_4)
 Increasing (**total-cost**) (4) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (150.583) by 0.25.
- 17:** Checking Happening... ...OK!
 Adding (free l_4_1)
 Adding (free l_6_1)
 Increasing (**total-cost**) (4) by 1.
- 18:** Checking Happening... ...OK!
 Deleting (free l_6_1)
 Deleting (not-update-tonnage)
 Adding (update-tonnage)
 Increasing (**total-cost**) (5) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (150.333) by 16.6667.

Decreasing (**tonnage build**) (180000) by 50000.
Increasing (**grade-tonnage build**) (60000) by 30000.
Updating (**tonnage-extracted block-node_6_5**) (0) by 50000 assignment.

19: Checking Happening... ...OK!
Deleting (**free l_4_1**)
Deleting (**not-update-tonnage**)
Adding (**update-tonnage**)
Increasing (**total-cost**) (5) by 0.
Decreasing (**digger-remaining-time l_4_1**) (150.333) by 16.6667.
Decreasing (**tonnage build**) (130000) by 50000.
Increasing (**grade-tonnage build**) (90000) by 30000.
Updating (**tonnage-extracted block-node_4_5**) (0) by 50000 assignment.

20: Checking Happening... ...OK!
Deleting (**not-reset-tonnage**)
Deleting (**update-tonnage**)
Adding (**reset-tonnage**)
Adding (**not-update-tonnage**)
Increasing (**total-cost**) (5) by 0.
Decreasing (**tonnage block-node_4_4**) (0) by 0.
Decreasing (**tonnage block-node_4_5**) (50000) by 50000.
Decreasing (**tonnage block-node_4_6**) (50000) by 0.
Decreasing (**tonnage block-node_4_7**) (50000) by 0.
Decreasing (**tonnage block-node_6_4**) (0) by 0.
Decreasing (**tonnage block-node_6_5**) (50000) by 50000.
Decreasing (**tonnage block-node_6_6**) (50000) by 0.
Decreasing (**tonnage block-node_6_7**) (50000) by 0.
Decreasing (**tonnage build**) (80000) by 0.

21: Checking Happening... ...OK!
Deleting (**reset-tonnage**)
Adding (**not-reset-tonnage**)
Increasing (**total-cost**) (5) by 0.
Updating (**tonnage-extracted block-node_4_4**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_4_5**) (50000) by 0 assignment.

- Updating (**tonnage-extracted block-node_4_6**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_4_7**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_6_4**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_6_5**) (50000) by 0 assignment.
 Updating (**tonnage-extracted block-node_6_6**) (0) by 0 assignment.
 Updating (**tonnage-extracted block-node_6_7**) (0) by 0 assignment.
 Updating (**tonnage-extracted build**) (0) by 0 assignment.
- 22:** Checking Happening... ...OK!
 Adding (**free l_4_1**)
 Adding (**free l_6_1**)
 Increasing (**total-cost**) (5) by 1.
- 23:** Checking Happening... ...OK!
 Deleting (**at l_4_1 node_4_5**)
 Deleting (**clear node_4_6**)
 Deleting (**free l_4_1**)
 Adding (**at l_4_1 node_4_6**)
 Adding (**clear node_4_5**)
 Increasing (**total-cost**) (6) by 0.
 Decreasing (**digger-remaining-time l_4_1**) (133.667) by 0.25.
- 24:** Checking Happening... ...OK!
 Deleting (**at l_6_1 node_6_5**)
 Deleting (**clear node_6_6**)
 Deleting (**free l_6_1**)
 Adding (**at l_6_1 node_6_6**)
 Adding (**clear node_6_5**)
 Increasing (**total-cost**) (6) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (133.667) by 0.25.
- 25:** Checking Happening... ...OK!
 Adding (**free l_4_1**)
 Adding (**free l_6_1**)
 Increasing (**total-cost**) (6) by 1.

- 26:** Checking Happening... ...OK!
 Deleting (free l_6_1)
 Deleting (not-update-tonnage)
 Adding (update-tonnage)
 Increasing (**total-cost**) (7) by 0.
 Decreasing (**digger-remaining-time l_6_1**) (133.417) by
 16.6667.
 Decreasing (**tonnage build**) (80000) by 50000.
 Increasing (**grade-tonnage build**) (120000) by 30000.
 Updating (**tonnage-extracted block-node_6_6**) (0) by 50000 as-
 signment.
- 27:** Checking Happening... ...OK!
 Deleting (free l_4_1)
 Deleting (not-update-tonnage)
 Adding (update-tonnage)
 Increasing (**total-cost**) (7) by 0.
 Decreasing (**digger-remaining-time l_4_1**) (133.417) by
 6.66667.
 Decreasing (**tonnage block-node_4_6**) (50000) by 20000.
 Updating (**tonnage-extracted build**) (0) by 20000 assignment.
 Increasing (**grade-tonnage build**) (150000) by 12000.
- 28:** Checking Happening... ...OK!
 Deleting (not-reset-tonnage)
 Deleting (update-tonnage)
 Adding (reset-tonnage)
 Adding (not-update-tonnage)
 Increasing (**total-cost**) (7) by 0.
 Decreasing (**tonnage block-node_4_4**) (0) by 0.
 Decreasing (**tonnage block-node_4_5**) (0) by 0.
 Decreasing (**tonnage block-node_4_6**) (30000) by 0.
 Decreasing (**tonnage block-node_4_7**) (50000) by 0.
 Decreasing (**tonnage block-node_6_4**) (0) by 0.
 Decreasing (**tonnage block-node_6_5**) (0) by 0.
 Decreasing (**tonnage block-node_6_6**) (50000) by 50000.
 Decreasing (**tonnage block-node_6_7**) (50000) by 0.
 Decreasing (**tonnage build**) (30000) by 20000.
- 29:** Checking Happening... ...OK!
 Deleting (reset-tonnage)

- Adding (not-reset-tonnage)
Increasing (**total-cost**) (7) by 0.
Updating (**tonnage-extracted block-node_4_4**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_4_5**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_4_6**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_4_7**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_6_4**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_6_5**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_6_6**) (50000) by 0 assignment.
Updating (**tonnage-extracted block-node_6_7**) (0) by 0 assignment.
Updating (**tonnage-extracted build**) (20000) by 0 assignment.
- 30:** Checking Happening... ...OK!
Updating (**tonnage build**) (10000) by 280000 assignment.
Updating (**tonnage-extracted build**) (0) by 0 assignment.
Updating (**grade-tonnage build**) (162000) by 0 assignment.
Increasing (**total-cost**) (7) by 0.
- 31:** Checking Happening... ...OK!
Adding (free l_4_1)
Adding (free l_6_1)
Increasing (**total-cost**) (7) by 1.
- 32:** Checking Happening... ...OK!
Deleting (free l_4_1)
Deleting (not-update-tonnage)
Adding (update-tonnage)
Increasing (**total-cost**) (8) by 0.
Decreasing (**digger-remaining-time l_4_1**) (126.75) by 10.
Decreasing (**tonnage build**) (280000) by 30000.
Increasing (**grade-tonnage build**) (0) by 18000.
Updating (**tonnage-extracted block-node_4_6**) (0) by 30000 assignment.
- 33:** Checking Happening... ...OK!

Deleting (not-reset-tonnage)
 Deleting (update-tonnage)
 Adding (reset-tonnage)
 Adding (not-update-tonnage)
 Increasing (total-cost) (8) by 0.
 Decreasing (tonnage block-node_4_4) (0) by 0.
 Decreasing (tonnage block-node_4_5) (0) by 0.
 Decreasing (tonnage block-node_4_6) (30000) by 30000.
 Decreasing (tonnage block-node_4_7) (50000) by 0.
 Decreasing (tonnage block-node_6_4) (0) by 0.
 Decreasing (tonnage block-node_6_5) (0) by 0.
 Decreasing (tonnage block-node_6_6) (0) by 0.
 Decreasing (tonnage block-node_6_7) (50000) by 0.
 Decreasing (tonnage build) (250000) by 0.

34: Checking Happening... ...OK!
 Deleting (reset-tonnage)
 Adding (not-reset-tonnage)
 Increasing (total-cost) (8) by 0.
 Updating (tonnage-extracted block-node_4_4) (0) by 0 assignment.
 Updating (tonnage-extracted block-node_4_5) (0) by 0 assignment.
 Updating (tonnage-extracted block-node_4_6) (30000) by 0 assignment.
 Updating (tonnage-extracted block-node_4_7) (0) by 0 assignment.
 Updating (tonnage-extracted block-node_6_4) (0) by 0 assignment.
 Updating (tonnage-extracted block-node_6_5) (0) by 0 assignment.
 Updating (tonnage-extracted block-node_6_6) (0) by 0 assignment.
 Updating (tonnage-extracted block-node_6_7) (0) by 0 assignment.
 Updating (tonnage-extracted build) (0) by 0 assignment.

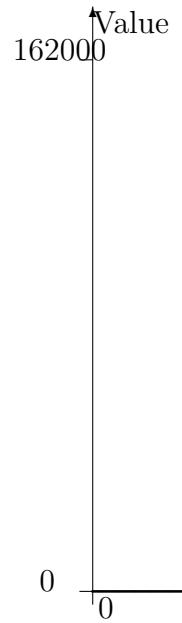
35: Checking Happening... ...OK!
 Deleting (at l_6_1 node_6_6)
 Deleting (clear node_6_7)
 Deleting (free l_6_1)
 Adding (at l_6_1 node_6_7)
 Adding (clear node_6_6)

- Increasing (**total-cost**) (8) by 0.
Decreasing (**digger-remaining-time l_6_1**) (116.75) by 0.25.
- 36:** Checking Happening... ...OK!
Adding (free l_4_1)
Adding (free l_6_1)
Increasing (**total-cost**) (8) by 1.
- 37:** Checking Happening... ...OK!
Deleting (free l_6_1)
Deleting (not-update-tonnage)
Adding (update-tonnage)
Increasing (**total-cost**) (9) by 0.
Decreasing (**digger-remaining-time l_6_1**) (116.5) by 16.6667.
Decreasing (**tonnage build**) (250000) by 50000.
Increasing (**grade-tonnage build**) (18000) by 30000.
Updating (**tonnage-extracted block-node_6_7**) (0) by 50000 assignment.
- 38:** Checking Happening... ...OK!
Deleting (not-reset-tonnage)
Deleting (update-tonnage)
Adding (reset-tonnage)
Adding (not-update-tonnage)
Increasing (**total-cost**) (9) by 0.
Decreasing (**tonnage block-node_4_4**) (0) by 0.
Decreasing (**tonnage block-node_4_5**) (0) by 0.
Decreasing (**tonnage block-node_4_6**) (0) by 0.
Decreasing (**tonnage block-node_4_7**) (50000) by 0.
Decreasing (**tonnage block-node_6_4**) (0) by 0.
Decreasing (**tonnage block-node_6_5**) (0) by 0.
Decreasing (**tonnage block-node_6_6**) (0) by 0.
Decreasing (**tonnage block-node_6_7**) (50000) by 50000.
Decreasing (**tonnage build**) (200000) by 0.
- 39:** Checking Happening... ...OK!
Deleting (at l_4_1 node_4_6)
Deleting (clear node_4_7)
Deleting (free l_4_1)
Adding (at l_4_1 node_4_7)
Adding (clear node_4_6)

- Increasing (**total-cost**) (9) by 0.
Decreasing (**digger-remaining-time l_4_1**) (116.75) by 0.25.
- 40:** Checking Happening... ...OK!
Deleting (**reset-tonnage**)
Adding (**not-reset-tonnage**)
Increasing (**total-cost**) (9) by 0.
Updating (**tonnage-extracted block-node_4_4**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_4_5**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_4_6**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_4_7**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_6_4**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_6_5**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_6_6**) (0) by 0 assignment.
Updating (**tonnage-extracted block-node_6_7**) (50000) by 0 assignment.
Updating (**tonnage-extracted build**) (0) by 0 assignment.
- 41:** Checking Happening... ...OK!
Adding (**free l_4_1**)
Adding (**free l_6_1**)
Increasing (**total-cost**) (9) by 1.
- 42:** Checking Happening... ...OK!
Deleting (**free l_4_1**)
Deleting (**not-update-tonnage**)
Adding (**update-tonnage**)
Increasing (**total-cost**) (10) by 0.
Decreasing (**digger-remaining-time l_4_1**) (116.5) by 16.6667.
Decreasing (**tonnage build**) (200000) by 50000.
Increasing (**grade-tonnage build**) (48000) by 30000.
Updating (**tonnage-extracted block-node_4_7**) (0) by 50000 assignment.
- 43:** Checking Happening... ...OK!
Deleting (**not-reset-tonnage**)

Deleting (update-tonnage)
 Adding (reset-tonnage)
 Adding (not-update-tonnage)
 Increasing (**total-cost**) (10) by 0.
 Decreasing (**tonnage block-node_4_4**) (0) by 0.
 Decreasing (**tonnage block-node_4_5**) (0) by 0.
 Decreasing (**tonnage block-node_4_6**) (0) by 0.
 Decreasing (**tonnage block-node_4_7**) (50000) by 50000.
 Decreasing (**tonnage block-node_6_4**) (0) by 0.
 Decreasing (**tonnage block-node_6_5**) (0) by 0.
 Decreasing (**tonnage block-node_6_6**) (0) by 0.
 Decreasing (**tonnage block-node_6_7**) (0) by 0.
 Decreasing (**tonnage build**) (150000) by 0.

Plan executed successfully - checking goal



Fig

2.4 Primitive Numerical Expression Graphs

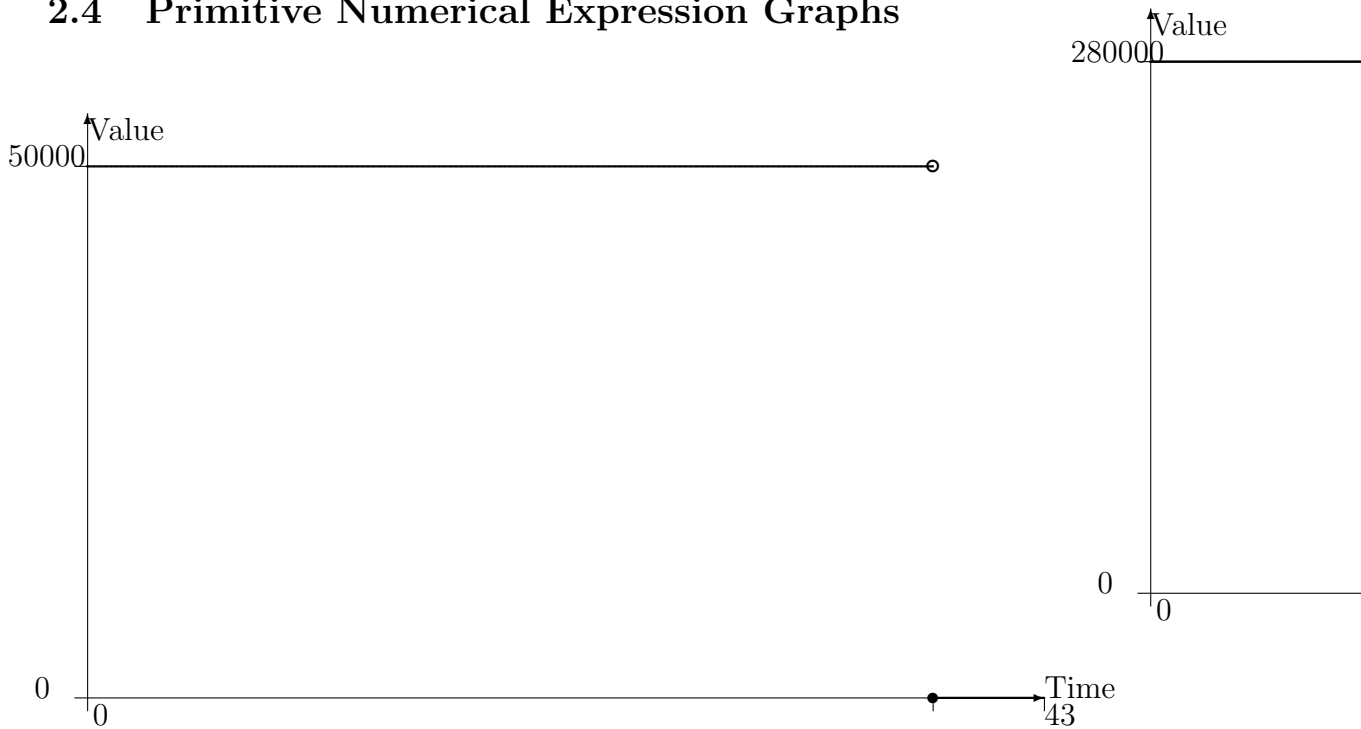


Figure 2.1: Graph of (tonnage block-node_6_7).



Figure 2.2: Graph of (tonnage-extracted block-node_6_7).

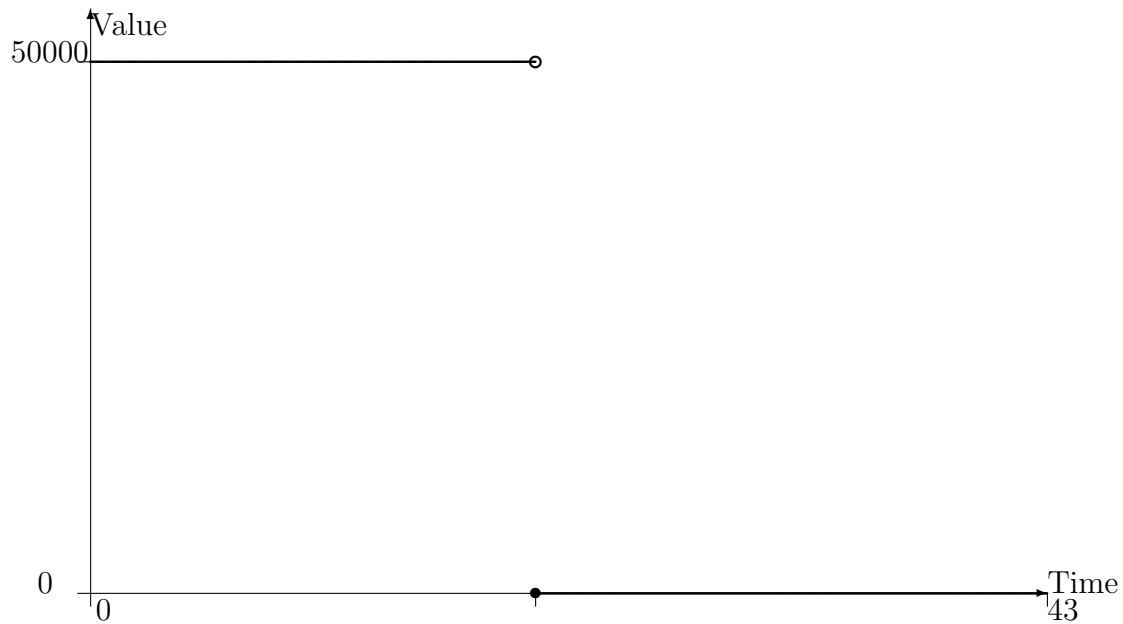
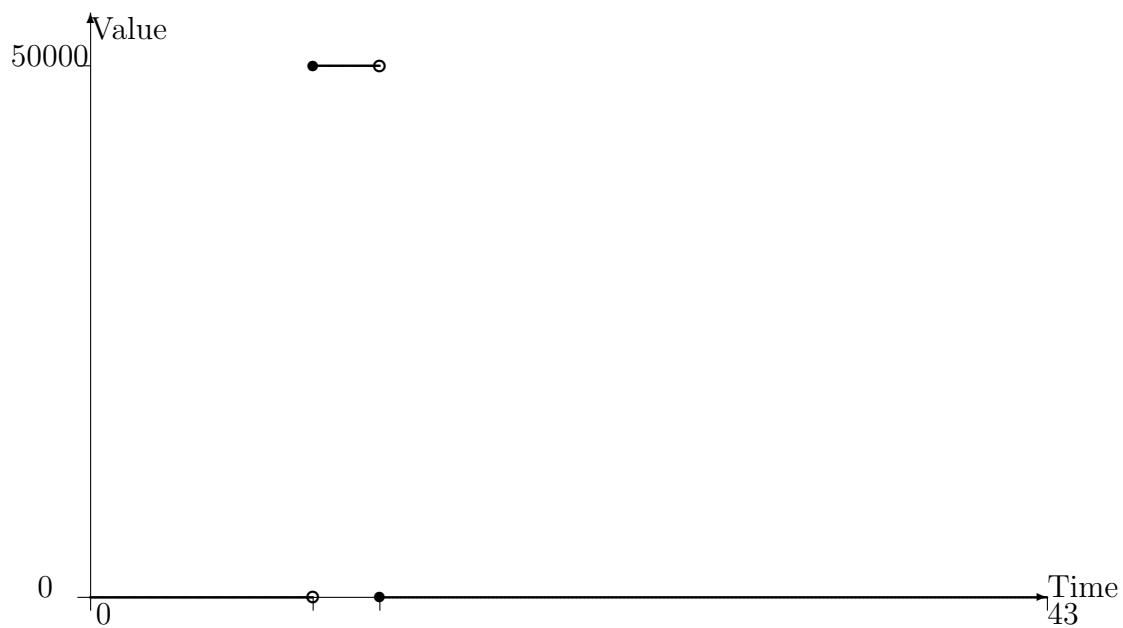
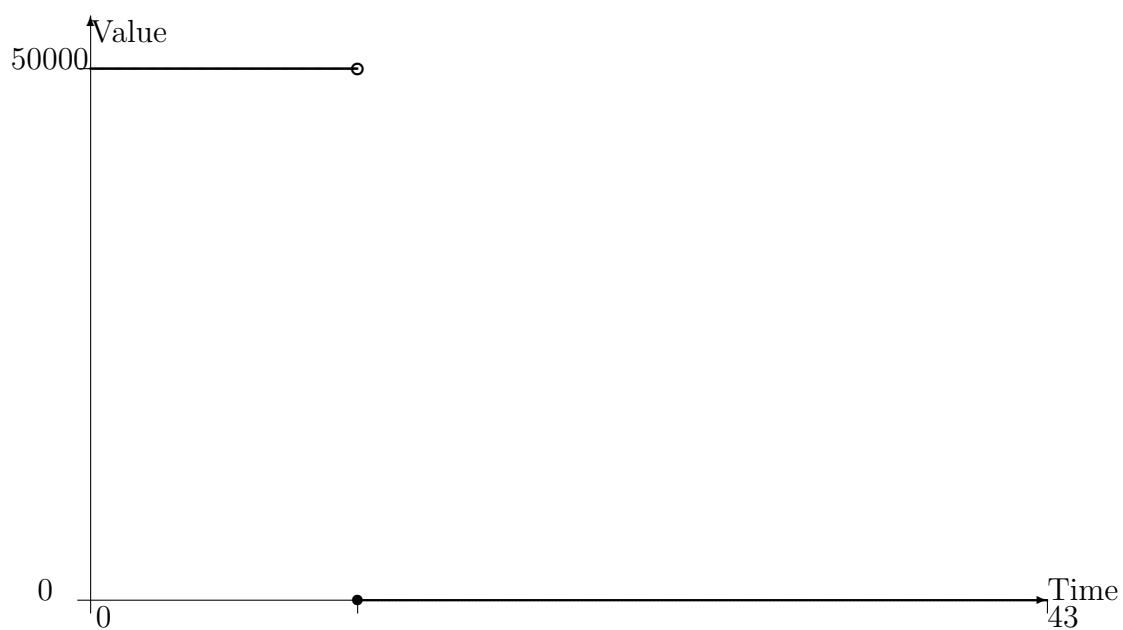


Figure 2.3: Graph of (tonnage block-node_4_5).



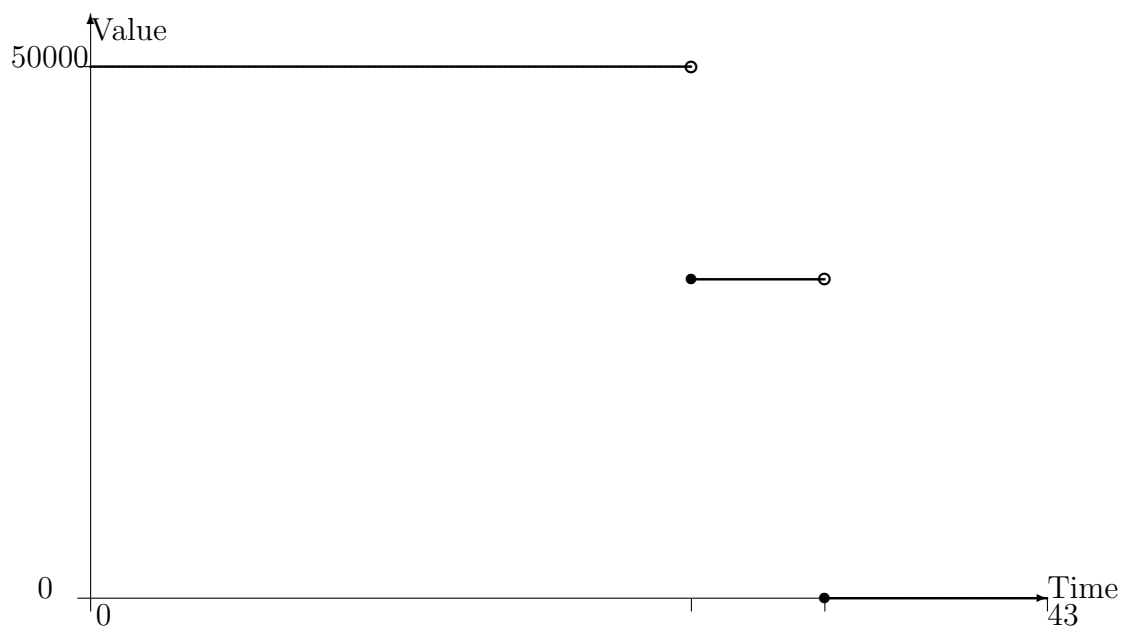


Figure 2.8: Graph of (tonnage block-node_4_6).

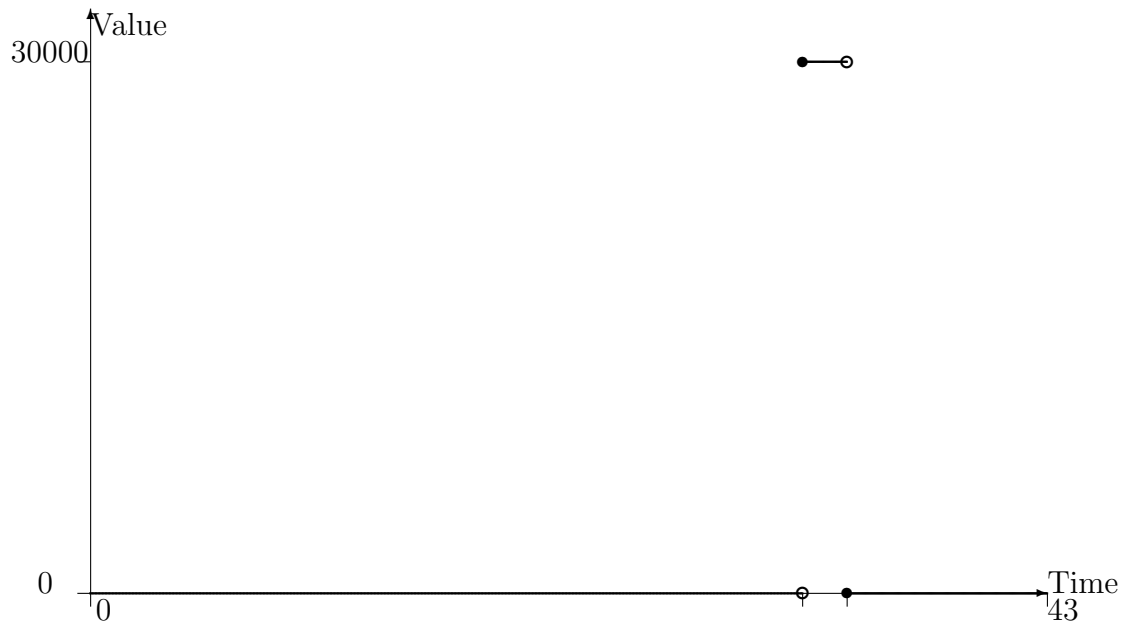


Figure 2.9: Graph of (tonnage-extracted block-node_4_6).

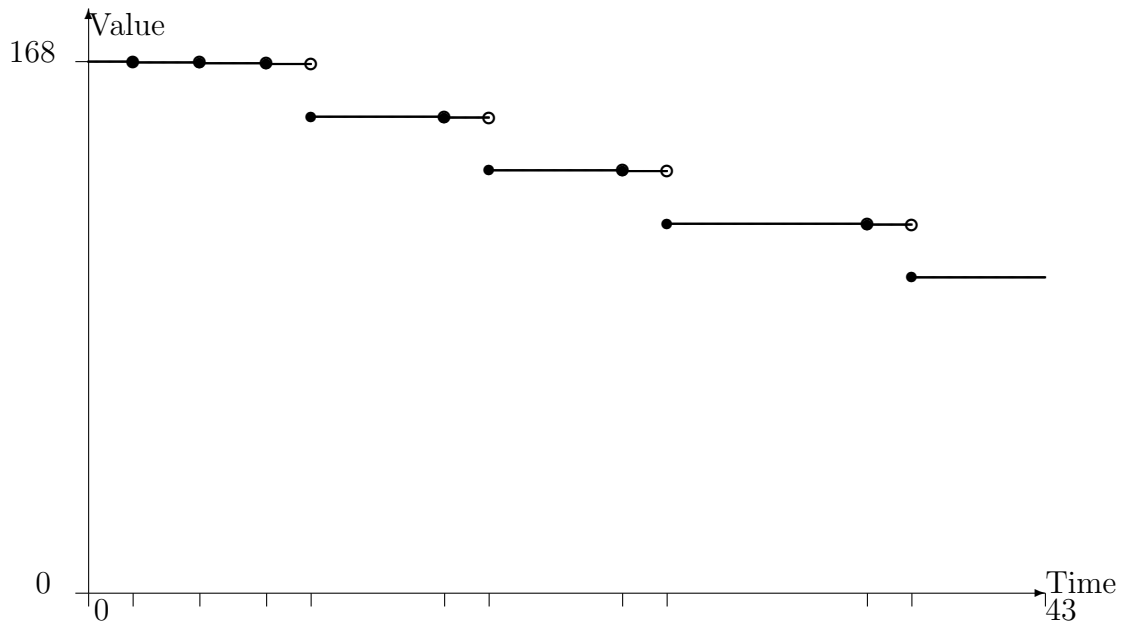


Figure 2.10: Graph of (digger-remaining-time l.6_1).

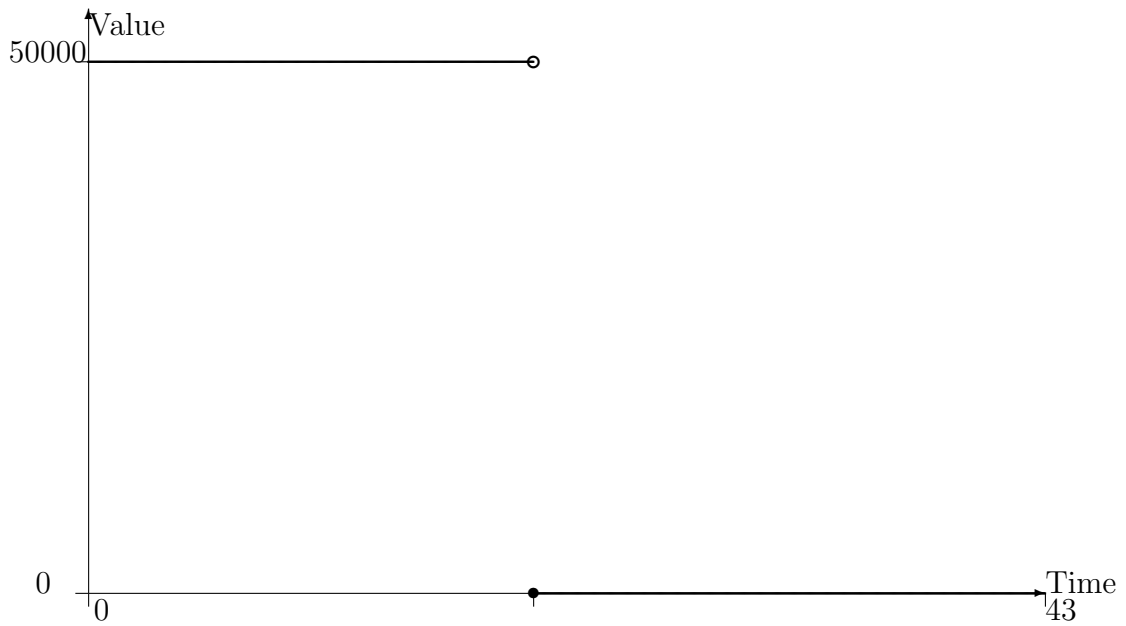


Figure 2.11: Graph of (tonnage block-node_6_5).

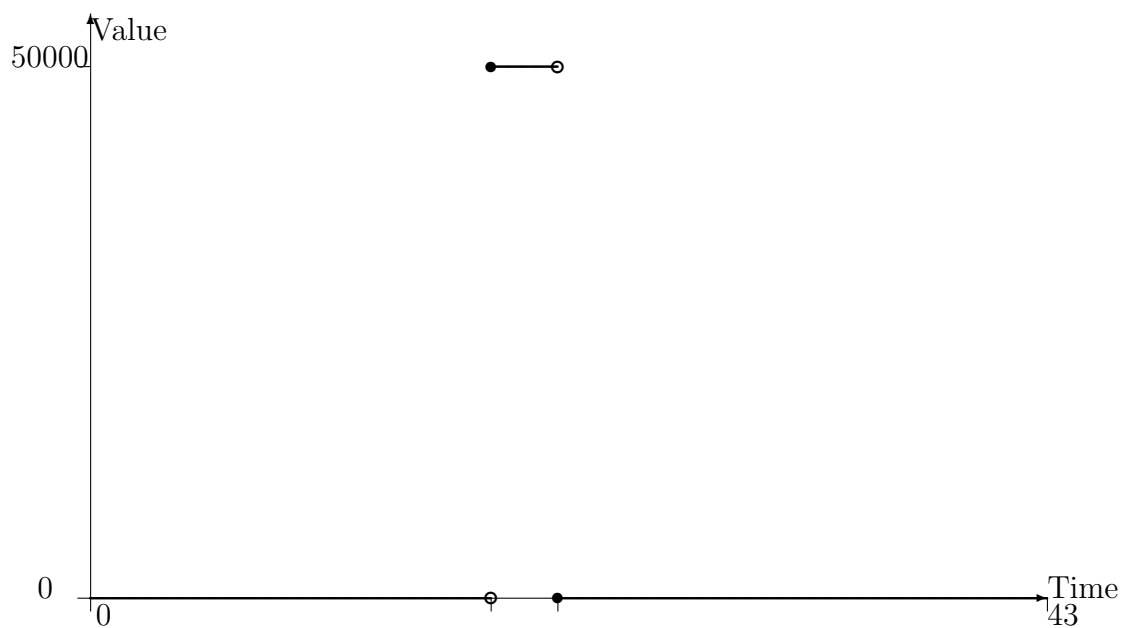


Figure 2.12: Graph of (tonnage-extracted block-node_6_5).



Figure 2.13: Graph of (tonnage block-node_4_7).



Figure 2.14: Graph of (tonnage-extracted block-node_4_7).

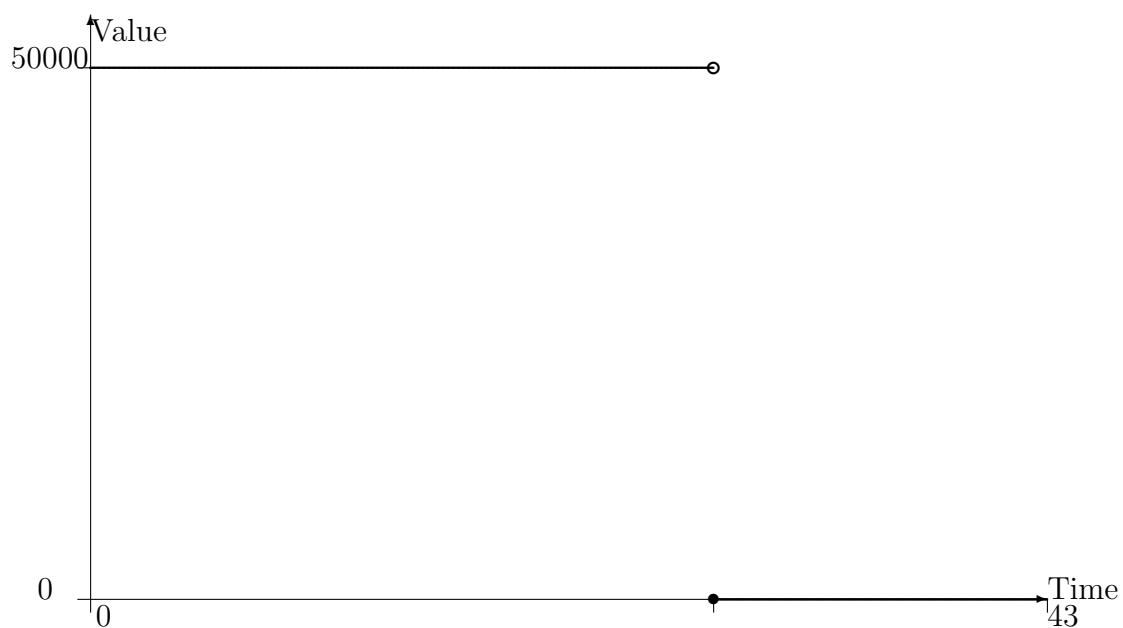


Figure 2.15: Graph of (tonnage block-node_6_6).

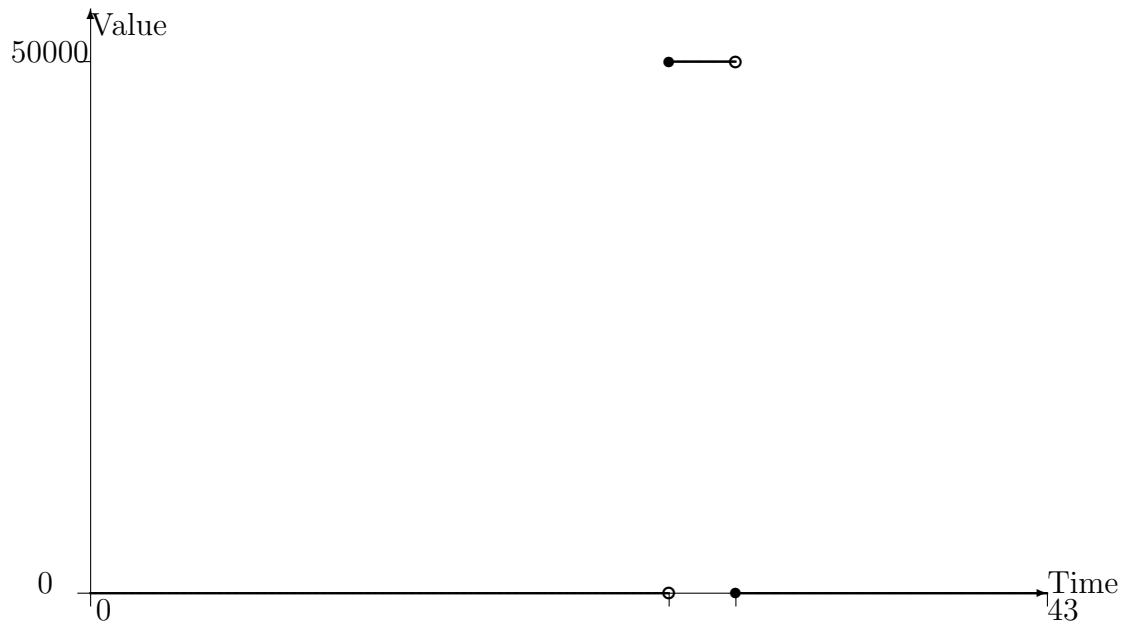


Figure 2.16: Graph of (tonnage-extracted block-node_6_6).

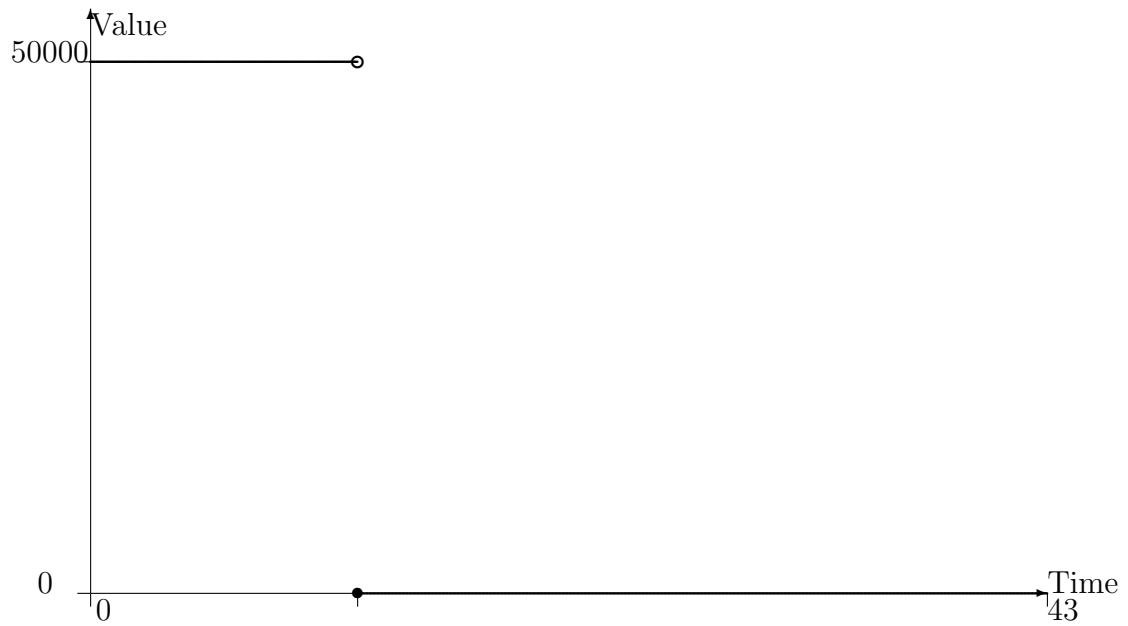


Figure 2.17: Graph of (tonnage block-node_4_4).

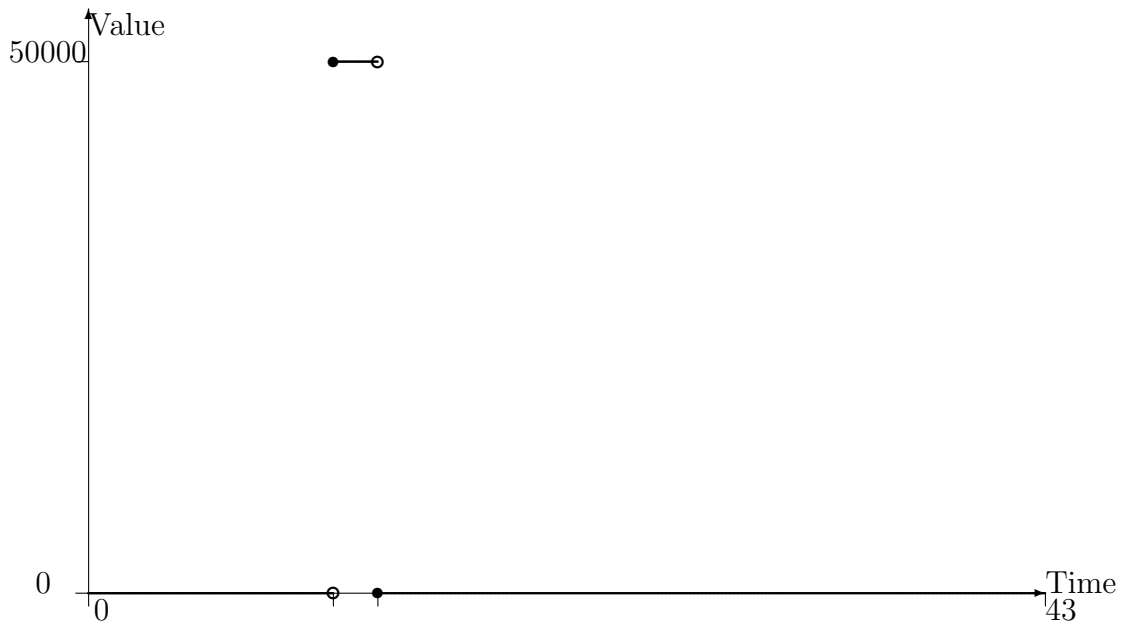


Figure 2.18: Graph of (tonnage-extracted block-node_4_4).

2.5 Gantt Chart

Gantt Chart Key

Row 1

No	Time	Action
1	1	(move l_4_1 node_4_1 node_4_2)
2	2	(move l_6_1 node_6_1 node_6_2)
3	3	(send-instructions)
4	4	(move l_4_1 node_4_2 node_4_3)
5	5	(move l_6_1 node_6_2 node_6_3)
6	6	(send-instructions)
7	7	(move l_4_1 node_4_3 node_4_4)
8	8	(move l_6_1 node_6_3 node_6_4)
9	9	(send-instructions)
10	10	(dig-block l_6_1 block-node_6_4 node_6_4)
11	11	(dig-block l_4_1 block-node_4_4 node_4_4)
12	12	(update-tonnes)
13	13	(reset-extracted)
14	14	(send-instructions)
15	15	(move l_4_1 node_4_4 node_4_5)
16	16	(move l_6_1 node_6_4 node_6_5)

17	17	(send-instructions)
18	18	(dig-block l_6_1 block-node_6_5 node_6_5)
19	19	(dig-block l_4_1 block-node_4_5 node_4_5)
20	20	(update-tonnes)
21	21	(reset-extracted)
22	22	(send-instructions)
23	23	(move l_4_1 node_4_5 node_4_6)
24	24	(move l_6_1 node_6_5 node_6_6)
25	25	(send-instructions)
26	26	(dig-block l_6_1 block-node_6_6 node_6_6)
27	27	(dig-finish-build l_4_1 block-node_4_6 node_4_6)
28	28	(update-tonnes)
29	29	(reset-extracted)
30	30	(check-grade-and-load-trains)
31	31	(send-instructions)
32	32	(dig-block l_4_1 block-node_4_6 node_4_6)
33	33	(update-tonnes)
34	34	(reset-extracted)
35	35	(move l_6_1 node_6_6 node_6_7)
36	36	(send-instructions)
37	37	(dig-block l_6_1 block-node_6_7 node_6_7)
38	38	(update-tonnes)
39	39	(move l_4_1 node_4_6 node_4_7)
40	40	(reset-extracted)
41	41	(send-instructions)
42	42	(dig-block l_4_1 block-node_4_7 node_4_7)
43	43	(update-tonnes)

3 Successful Plans

Value	Plan
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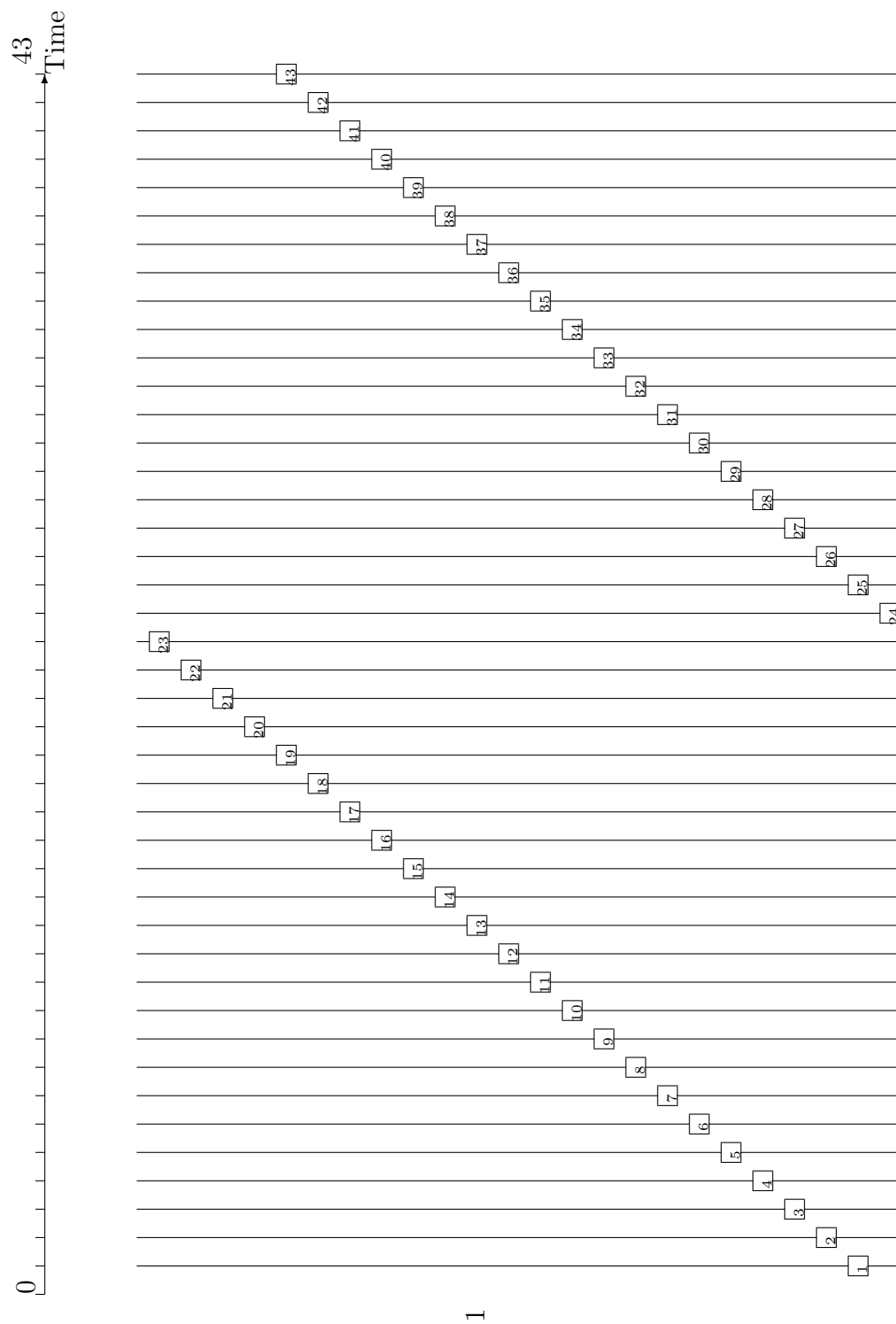


Figure 2.23: Gantt Chart