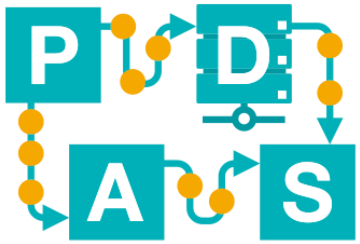
ILP-Miner, Inductive Miner

Nina Graves

BPI-Instruction 6



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Language-based regions

Language
Question 1

Create the inequation system

$c \cdot \mathbf{1} + A' \cdot x - A \cdot y \geq 0$

for the following logs:

a) L=[⟨a,c,d⟩, ⟨b,c,e⟩]

b) L=[⟨a,b,d,e⟩, ⟨a,c,d,e⟩, ⟨a,d,b,e⟩, ⟨a,d,c,e⟩]

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Language-based Regions
Question 2

Consider the following solutions to an inequation system

$c \cdot \mathbf{1} + A' \cdot x - A \cdot y \geq 0$

and give the corresponding places:

a) $c=1, x_a=0, x_b=0, x_c=1, y_a=1, y_b=0, y_c=1$

b) $c=2, x_a=0, x_b=0, x_c=0, y_a=1, y_b=0, y_c=1$

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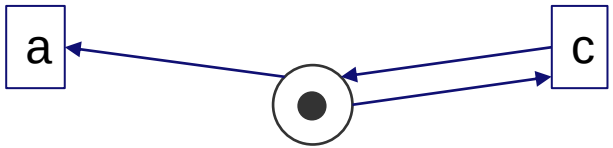
Language-based Regions
Solution Q2

Consider the following solutions to an inequation system

$c \cdot \mathbf{1} + A' \cdot x - A \cdot y \geq 0$

and give the corresponding places:

a) $c=1, x_a=0, x_b=0, x_c=1, y_a=1, y_b=0, y_c=1$



b, d are not connected to the place

Bonus question: Can this place ever be part of a sound workflow net?

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Language-based Regions
Solution Q2

Consider the following solutions to an inequation system

$c \cdot \mathbf{1} + A' \cdot x - A \cdot y \geq 0$

and give the corresponding places:

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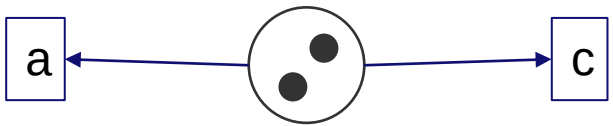
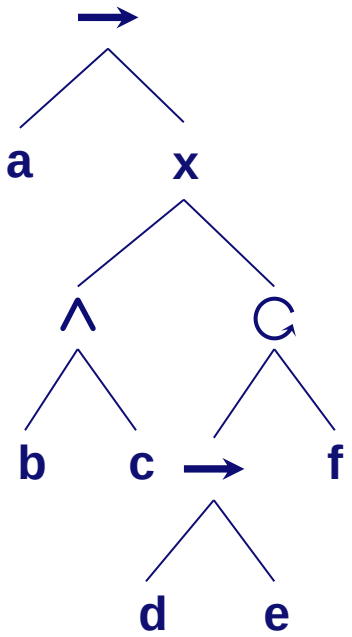


b is not connected to the place

Inductive Miner Questions

Inductive Miner

Question 1



Consider the process tree on the left.

a) *Is the following trace in accordance with the model? Explain your answer.*

$$\sigma = \langle a, c, b, e, d \rangle$$

b) *Is the following trace in accordance with the model? Explain your answer.*

$$\sigma = \langle a, d, e, f, d, e, f \rangle$$

c) *Provide two traces described by the model.*

d) *Convert the process tree into a petri net.*

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Inductive Miner

Question 2

Consider the following event log and perform the inductive miner algorithm on it.

$$L = [\langle a, b, c, d \rangle, \langle a, c, d \rangle, \langle a, b, a, b, d \rangle]$$

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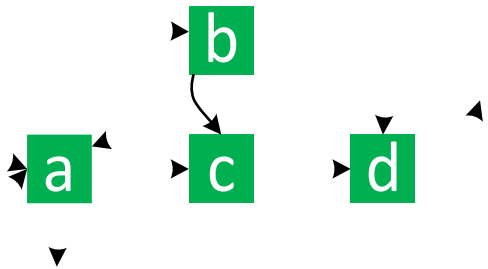
Inductive Miner

Question 3



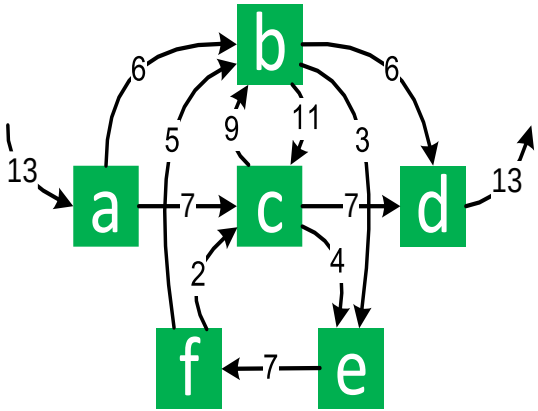
Given the following event log and the corresponding directly follows graph:

$$L = [\langle a, b, a, c, d\rangle, \langle a, b, c, d\rangle, \langle a, b, d, a\rangle]$$

Name the cut and make the projection on the event log.

Inductive Miner

Question 4



Execute the Inductive Miner on the given directly follows graph without log projections (i.e., re-use the partitions in the DFG for recursion without considering the log projections and re-drawing the DFG).

Give the resulting process tree.

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Inductive Miner

Question 5

Discover a process tree using the Inductive Miner for event logs given below, and give a trace that is possible according to the tree but has not been seen in the event log (if possible).

a) Without log projections.

b) With log projections.

i) $L = \{\langle a, b, c, d, e, f, b, d, c, e, g\rangle, \langle a, b, d, c, e, g\rangle, \langle a, b, c, d, e, f, b, c, d, e, f, b, d, c, e, g\rangle\}$

ii) $L = \{\langle a, d, e, f, h\rangle, \langle a, e, d, b, f, h\rangle, \langle g, h\rangle, \langle a, b, c, d, f, h\rangle, \langle a, c, b, d, f, h\rangle, \langle a, b, d, c, e, f, h\rangle, \langle a, e, b, e, c, f\rangle\}$

iii) $L = \{\langle a, c, d, e\rangle, \langle a, d, c, e\rangle, \langle a, d, e, c, f, d, e\rangle, \langle b, d, e, c\rangle, \langle b, c, d, e, f, d, e\rangle, \langle b, d, e, f, c, d, e\rangle\}$

iv) $L = \{\langle a, b, c, d, f\rangle, \langle a, c, b, d, f\rangle, \langle a, b, d, c, f\rangle, \langle a, c, d, b, f\rangle, \langle a, d, e, f\rangle, \langle a, e, d, f\rangle\}$

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