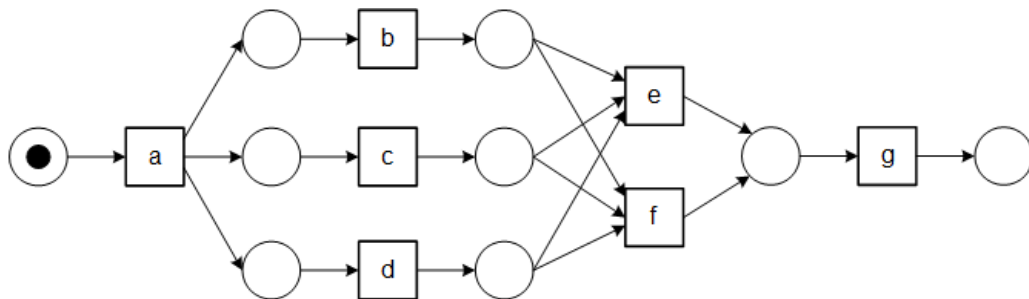# Quiz 3

Nota de envio mais recente 80%

1. Given the event log below, which of the following process models scores perfect on both **replay fitness** (ability to explain the observed behavior) and **precision** (not describing unobserved behavior).
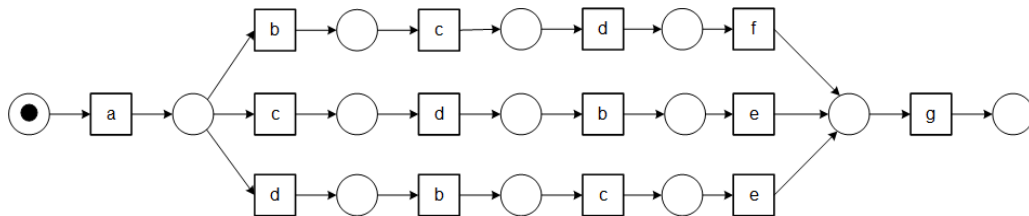
1 / 1 ponto

$< a,b,c,d,f,g >^{1000}$

$< a,c,d,b,e,g >^{1000}$

$< a,d,b,c,e,g >^{1000}$

○

link

◉

link

○
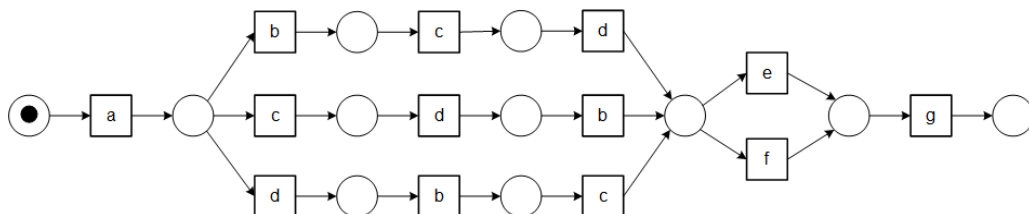
link

✓ **Correto**

This is indeed the only process model that is able to perfectly replay all three traces of the event log (i.e. perfect fitness) and at the same time does not allow for additional behavior that is not seen in the event log.

**2.** The representational bias in process mining is...

1 / 1 ponto

⦿ ...the notation used (internally) by the process discovery algorithm and the expressive limitations of the internal notation.

○ ...whether we are able to discover concurrency or OR-constructs easily.

○ ...the way we visualize the discovered process model.

○ ...the activities of which the process consists.

✓ **Correto**
This is indeed the representational bias in process mining. If the notation used by the process discovery technique has certain limitations then the technique is also restricted by these limitations.

3. How many unique traces are possible in the following BPMN model?
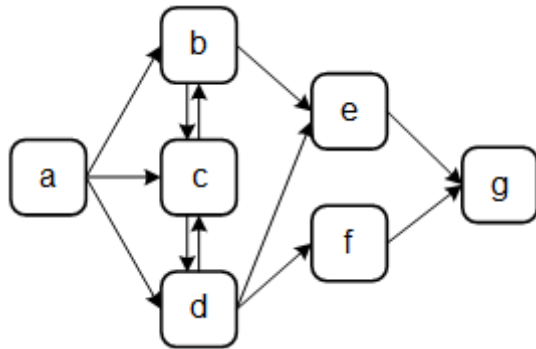
0 / 1 ponto

link

○ 12

○ 48

○ 16

○ 6

⦿ 24
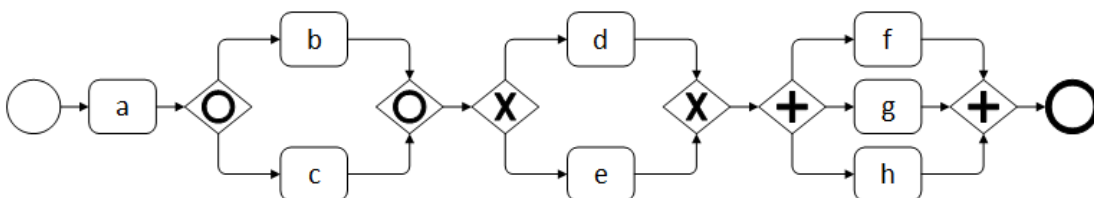
(X) **Incorreto**

4. Which one of the dependency graphs shown below correctly describes the relations in   **0 / 1 ponto**
the following event log: [< a,b,c,d,e,g > , < a,c,b,d,f,g > , < a,b,d,c,e,g >]?

○

link

◉
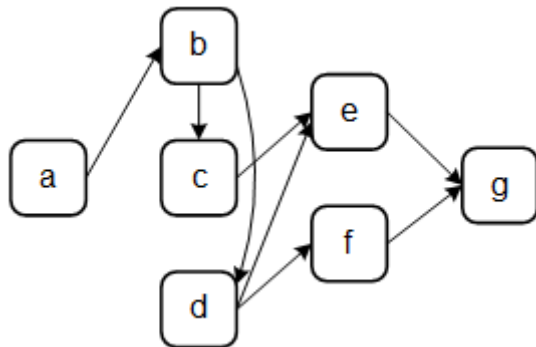
link

○

link

○

link

⊗ **Incorreto**

This is not the correct dependency graph since there is no causal relationship between b and c according to the event log, but they are in parallel.

5. How many **valid binding sequences** does the following C-Net have?   **1 / 1 ponto**

link

○ 3

○ 6

○ 7

◉ 9

○ 11

○ 13

○ 15

○ **Correto**

The Causal net always starts with a and ends with e. In between it allows for the execution of b, b and c in parallel, or b, c, and d in parallel. It therefore allows for 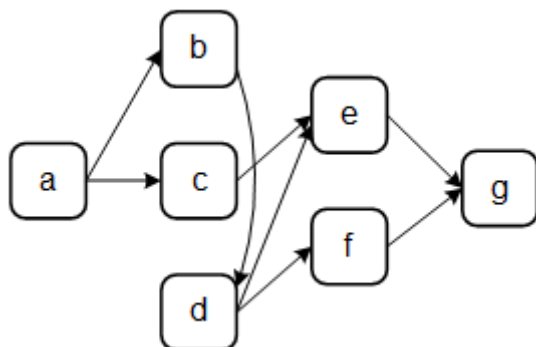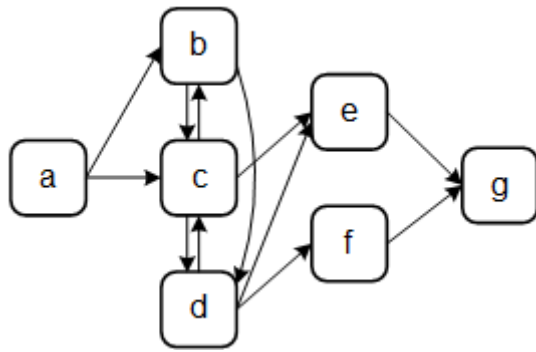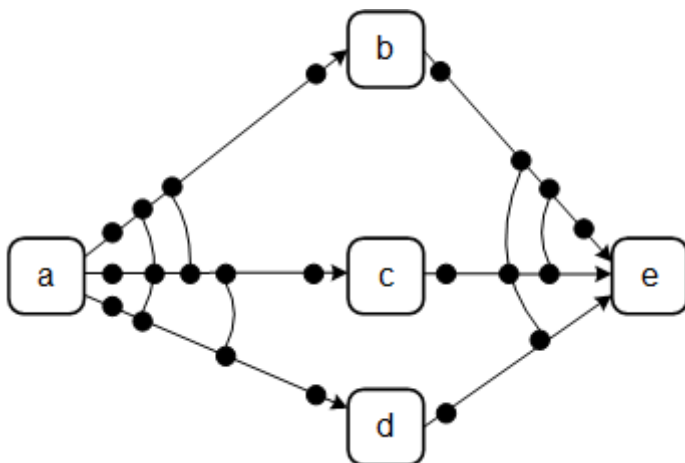1 + 2 + 6 = 9 traces or valid bindings: [< a,b,e >, < a,b,c,e >, < a,c,b,e >, < a,b,c,d,e >, < a,b,d,c,e >, < a,c,b,d,e >, < a,c,d,b,e >, < a,d,c,b,e >, < a,d,b,c,e >].

6. Given the following event log: [< a, e > ^{9}, < a, b, d, e >^{11}, < a, c, e >^{21}, < a, d, b, e >^{4}], which is the correct direct succession matrix?

1 / 1 ponto

○

$\mid >_L \mid$	a	b	c	d	e
a	0	0	0	0	0
b	15	0	0	4	0
c	21	0	0	0	0
d	15	15	0	0	0
e	45	15	21	15	0

○

$\mid >_L \mid$	a	b	c	d	e
a	0	15	21	15	45
b	0	0	0	15	15
c	0	0	0	0	21
d	0	4	0	0	15
e	0	0	0	0	0

○

$| >_L |$	a	b	c	d	e
a	0	21	11	4	9
b	0	0	0	21	4
c	0	0	0	0	11
d	0	4	0	0	21
e	0	0	0	0	0

○

$| >_L |$	a	b	c	d	e
a	0	0	0	0	0
b	11	0	0	4	0
c	21	0	0	0	0
d	4	11	0	0	0
e	9	4	21	11	0

○

$| >_L |$	a	b	c	d	e
a	0	9	11	4	9
b	0	0	0	11	4
c	0	0	0	0	21
d	0	11	0	0	4
e	0	0	0	0	0

◉

$|>_L|$	a	b	c	d	e
a	0	11	21	4	9
b	0	0	0	11	4
c	0	0	0	0	21
d	0	4	0	0	11
e	0	0	0	0	0

✓ **Correto**

This is indeed the correct direct succession matrix, since each cell contains the number of times activity of the row, was directly followed by the activity of the column.

7. Please consider the following direct succession matrix: **1 / 1 ponto**

$|>_L|$	a	b	c	d	e
a	0	21	11	4	9
b	0	0	0	21	4
c	0	0	0	0	11
d	0	4	0	0	21
e	0	0	0	0	0

Note that this is one of the possible answers of the previous question, not necessarily the right one. In this question we ignore the event log of the previous question and only consider the direct succession matrix as shown above!!!

Which if the following dependency measure matrices is correct, based on the direct succession matrix shown above?

○

$\Rightarrow_L$	a	b	c	d	e
a	0	-0.9545	-0.9167	-0.8000	-0.9000
b	0.9545	0	0	-0.6538	-0.8000
c	0.9167	0	0	0	-0.9167
d	0.8000	0.6538	0	0	-0.9545
e	0.9000	0.8000	0.9167	0.9545	0

○

$|\Rightarrow_L|$	a	b	c	d	e
a	0	-0.9167	-0.9545	-0.8000	-0.9000
b	0.9167	0	0	-0.4375	-0.8000
c	0.9545	0	0	0	-0.9545
d	0.8000	0.4375	0	0	-0.9167
e	0.9000	0.8000	0.9545	0.9167	0

◉

$|\Rightarrow_L|$	a	b	c	d	e
a	0	0.9545	0.9167	0.8000	0.9000
b	-0.9545	0	0	0.6538	0.8000
c	-0.9167	0	0	0	0.9167
d	-0.8000	-0.6538	0	0	0.9545
e	-0.9000	-0.8000	-0.9167	-0.9545	0

$\mid \Rightarrow_L \mid$	a	b	c	d	e
a	0	0.9167	0.9545	0.8000	0.9000
b	-0.9167	0	0	0.4375	0.8000
c	-0.9545	0	0	0	0.9545
d	-0.8000	-0.4375	0	0	0.9167
e	-0.9000	-0.8000	-0.9545	-0.9167	0

✓ **Correto**

This is indeed the correct application of the dependency measure, given the direct succession matrix.

8. Given the (partial) traces and the causal net without bindings shown below, which causal net has the correct input and output bindings for activity a if we assume a window size of 5 and no thresholds on when to include a binding?
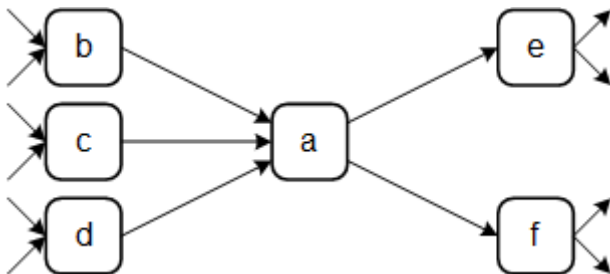
1 / 1 ponto

...clbkclm**a**efllknm...
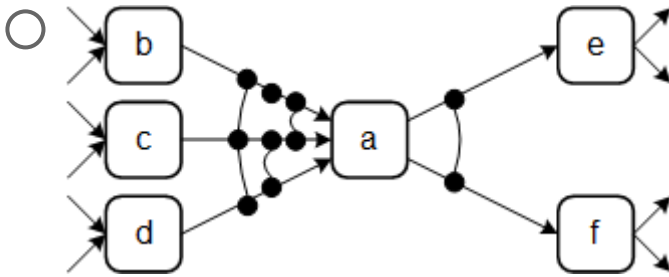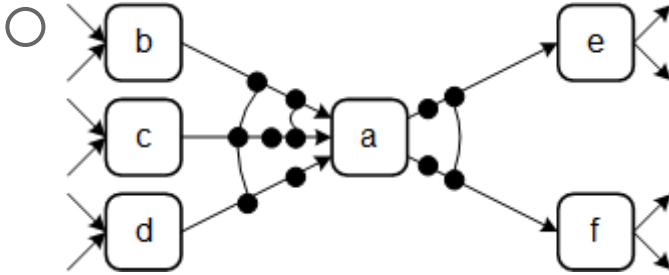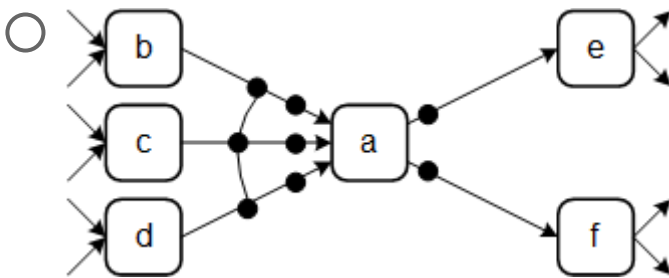
...dmlmdkk**a**felllkm...

...ablcmdl**a**fklmnml...

...dkbclkm**a**filmklk...

...klbcdlk**a**eklmnmf...

link

link

link

link
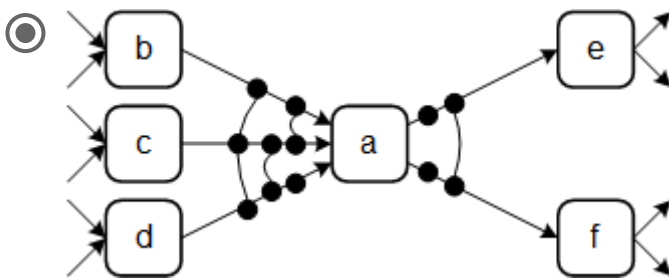
link

✓ **Correto**
This is indeed correct since the input bindings discovered from the traces are:
{b,c}, {d}, {c,d} and {b,c,d}

9.   **1 / 1 ponto**

Given the trace below, where ↓ indicates the current position in the trace, which of the following gives the correct abstraction if we apply abstraction with the following settings: **future, multiset, window=6**?

abcdcdcde↓faghhhi

○ $< a, c, d, e, f, g >$

○ $\{a, c, d, e, f, g\}$

○ $\{d, c, e\}$

○ $[d^3, c^2, e]$

○ $[a, c, d, e, f, g]$

◉ $[a, f, g, h^3]$

○ $\{a, f, g, h\}$

○ $< d, c, d, c, d, e >$

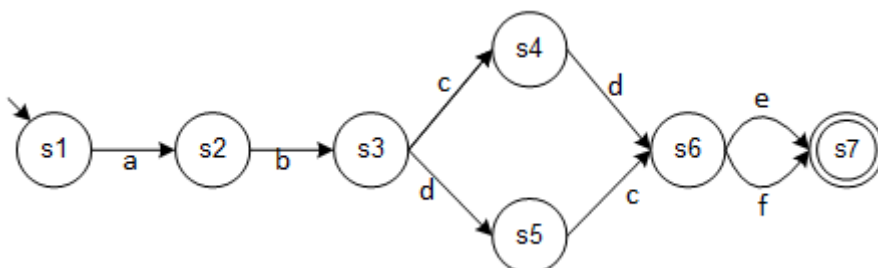○ $< a, f, g, h, h, >$

✓ **Correto**
    This is indeed the correct abstraction since it looks at the future, with a window of 6, and creates a multiset abstraction.

10. Given the transition system below, which of the shown regions is one of the regions of the transition system that is both **non-trivial** and **minimal**?   **1 / 1 ponto**

link

○ {s3,s4,s5,s6}

◉ {s3,s4}

○ {s1,s2}

○ {s1,s2,s3,s4,s5,s6,s7}

✓ **Correto**
This is indeed a non-trivial and minimal region, one of 7 possible non-trivial minimal regions.