TU/e technische universiteit eindhoven

Conformance Testing

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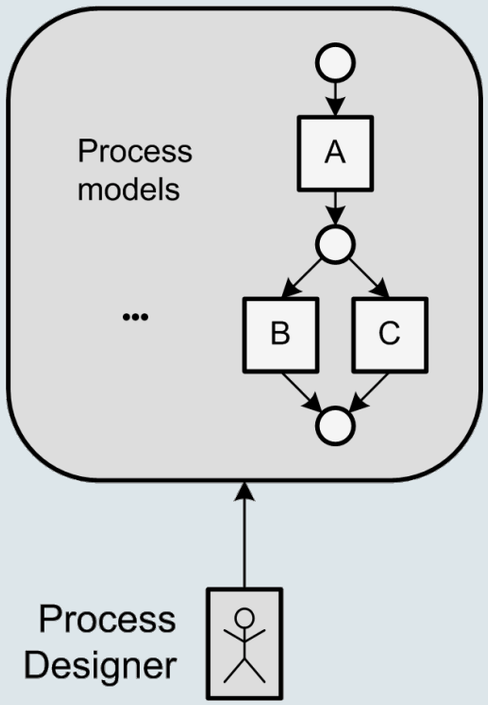
/faculteit technologie management

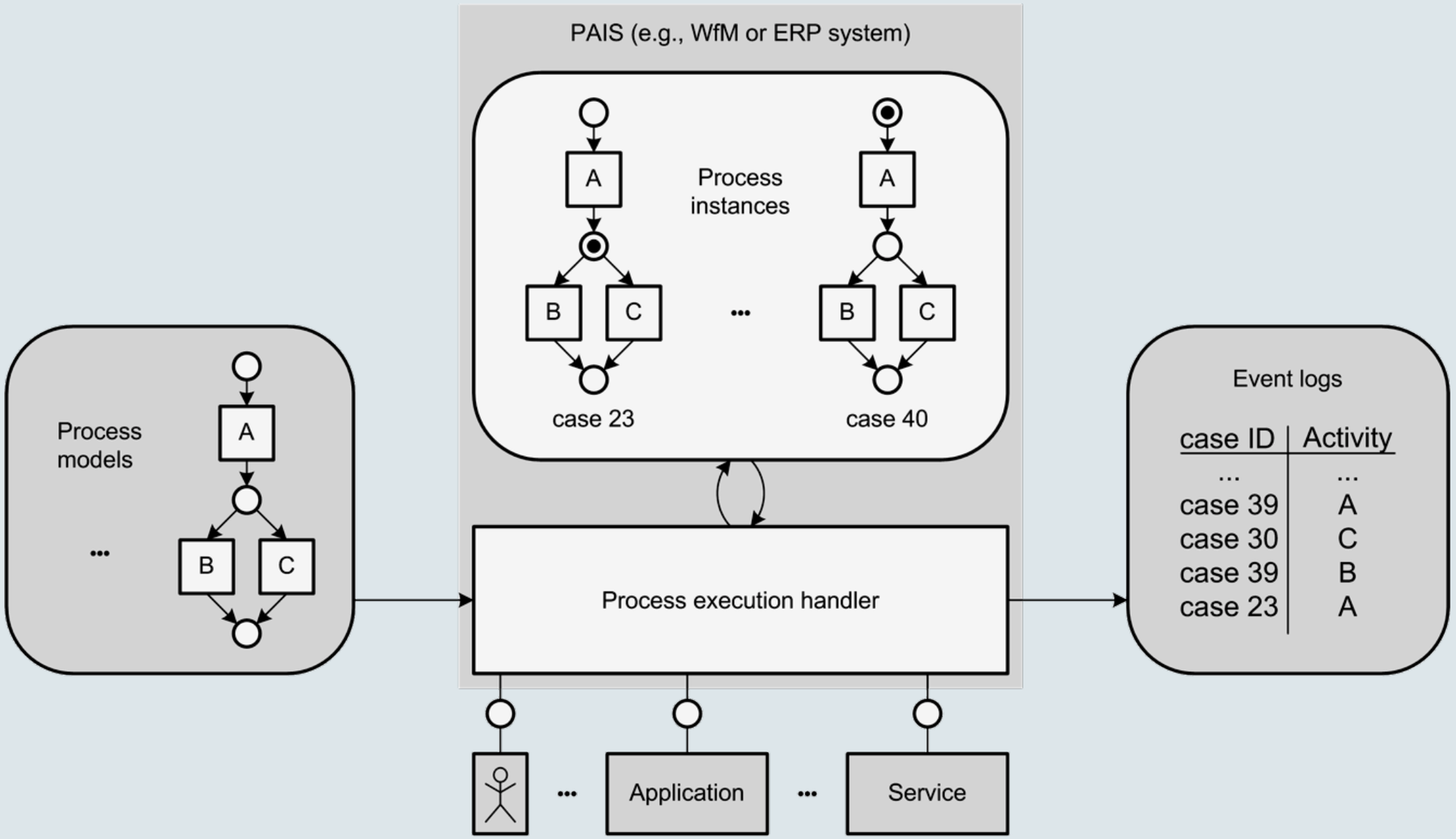
outline

1. Positioning Conformance Testing in BPM
2. Fitness
    1. Measuring fitness: Log replay analysis
    2. Potential alignment
3. Appropriateness
    1. Behavioral appropriateness
    2. Structural appropriateness
4. Tool demonstration
5. Conclusion

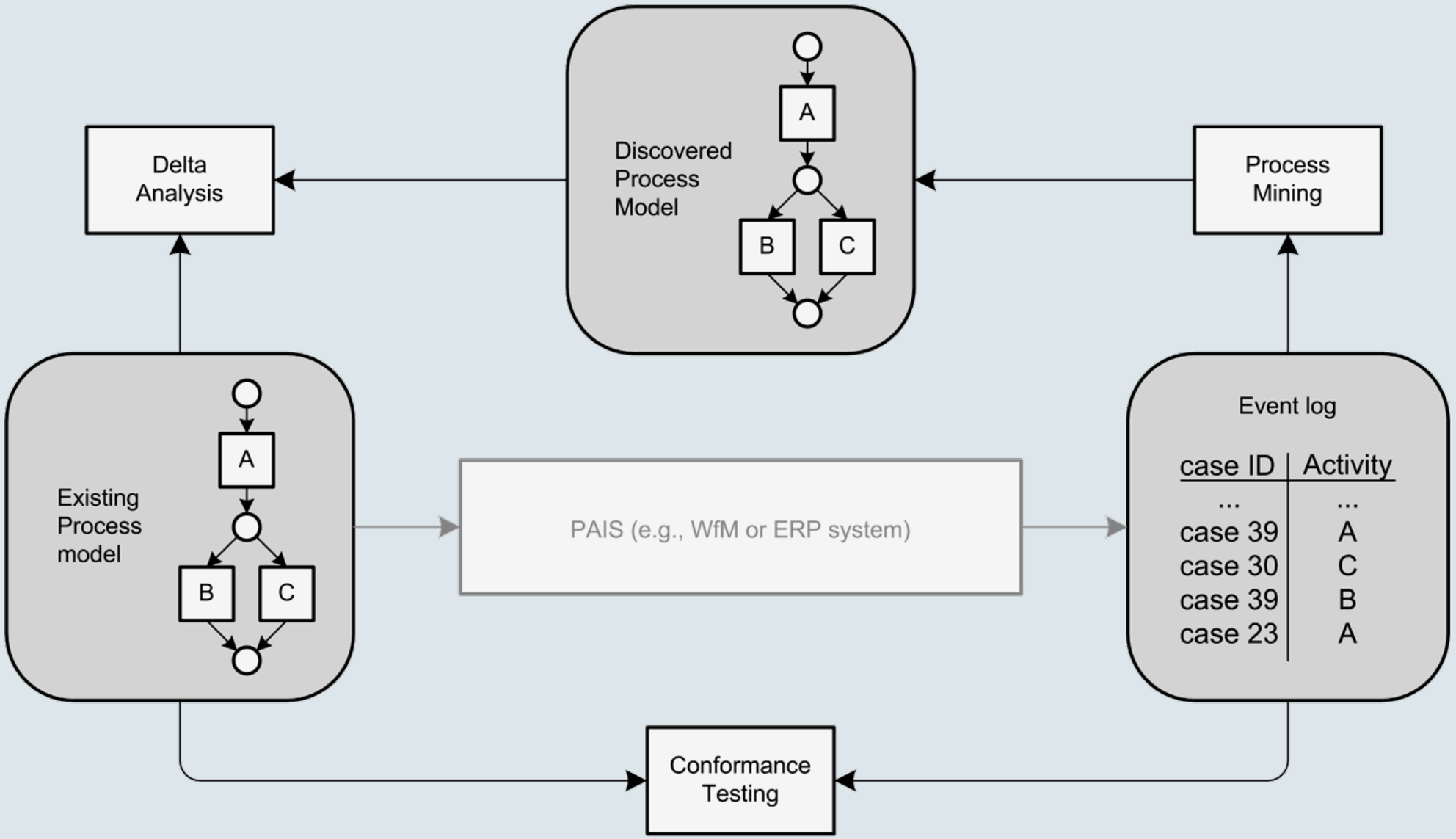
1. BPM life cycle - Design phase



1. BPM life cycle - Enactment phase



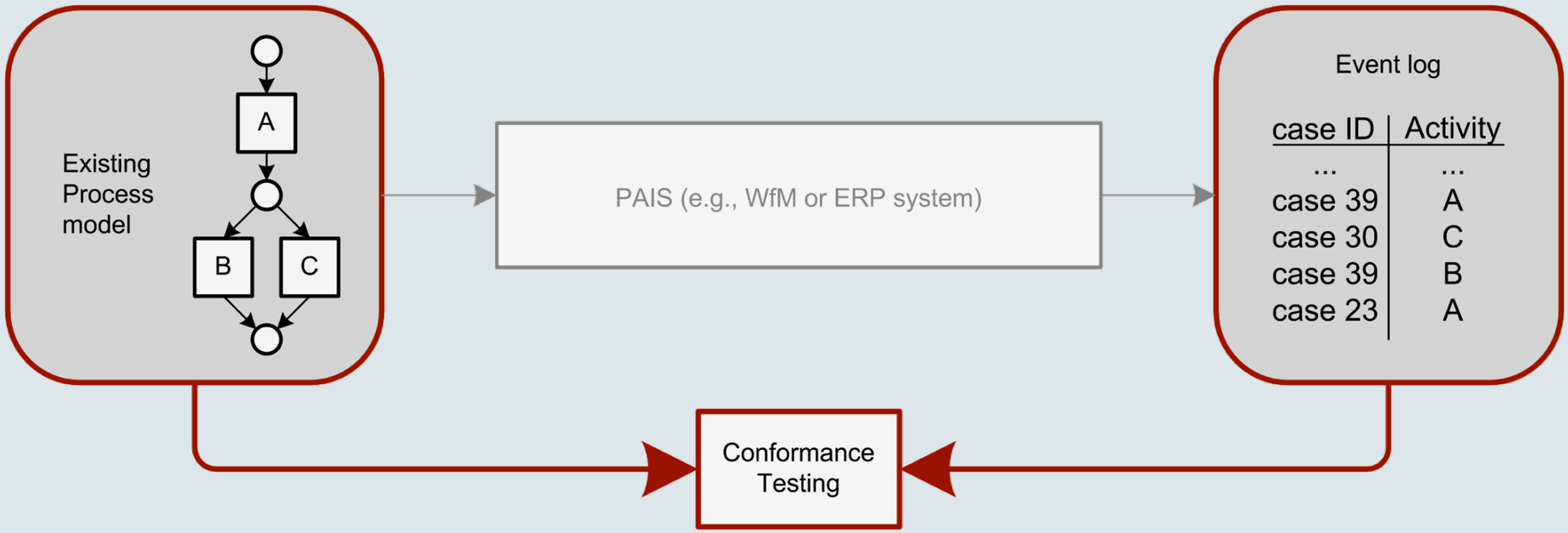
1. BPM life cycle - Analysis phase



1. Positioning Conformance Analysis

Objectives:

- quantitatively measure conformance (i.e., metrics)
- locate deviations

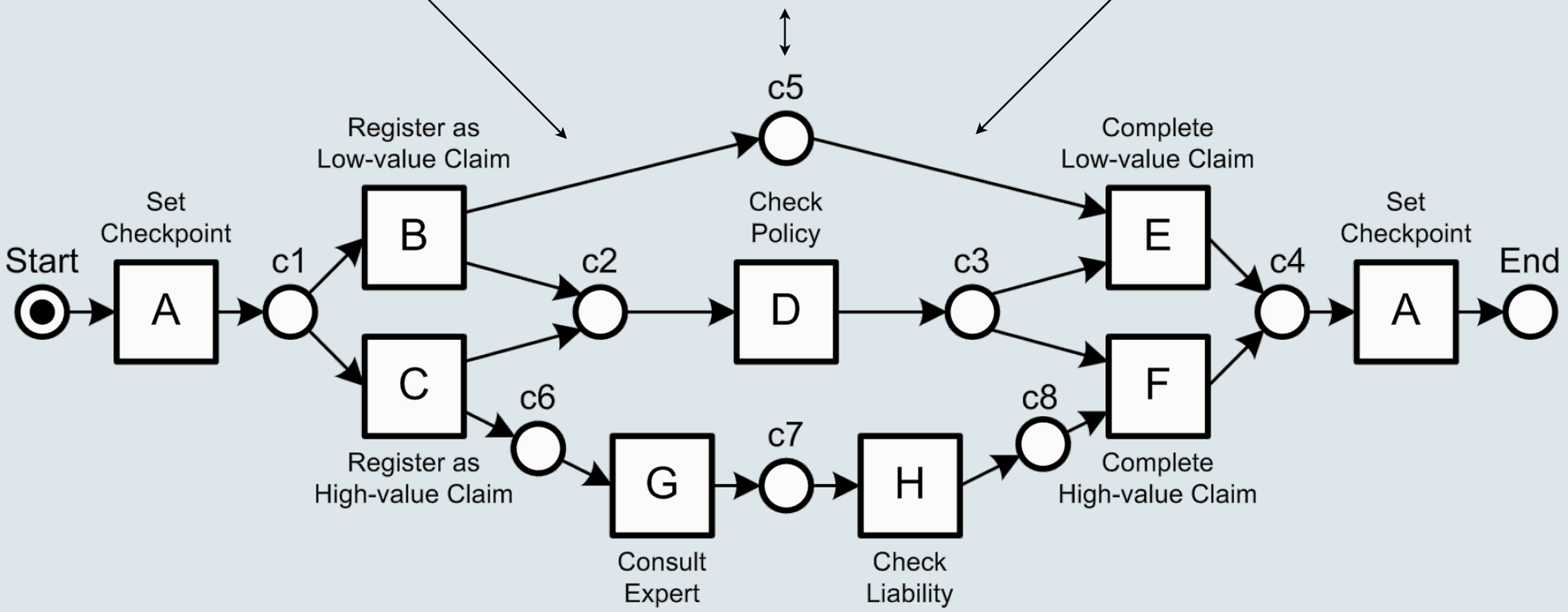


2. Fitness

No. of Instances	Log Traces
4070	ABDEA
245	ACDGHFA
56	ACGDHFA

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

No. of Instances	Log Traces
24	BDE
7	AABHF
15	CHF
6	ADBE
1	ACBGDFAA
8	ABEDA

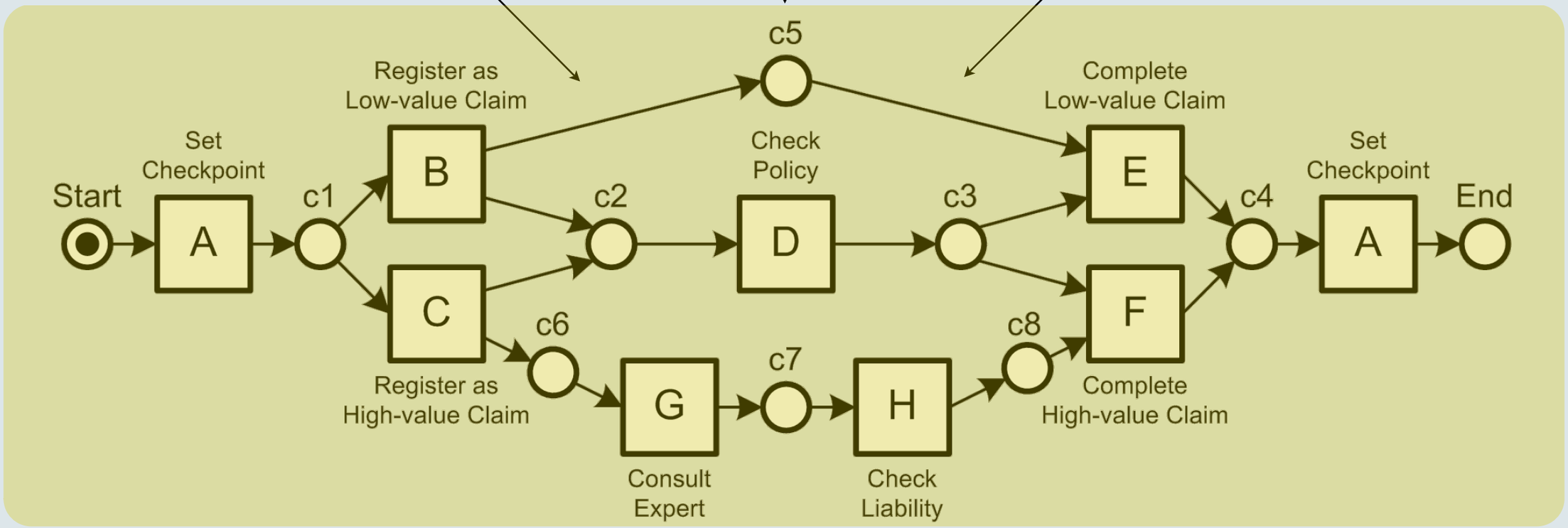


2. Fitness

No. of Instances	Log Traces
4070 245 56	ABDEA ACDGHFA ACGDHFA

No. of Instances	Log Traces
1207 145 56 23 28	ABDEA ACDGHFA ACGDHFA ACHDFA ACDHFA

No. of Instances	Log Traces
24 7 15 6 1 8	BDE AABHF CHF ADBE ACBGDFAA ABEDA

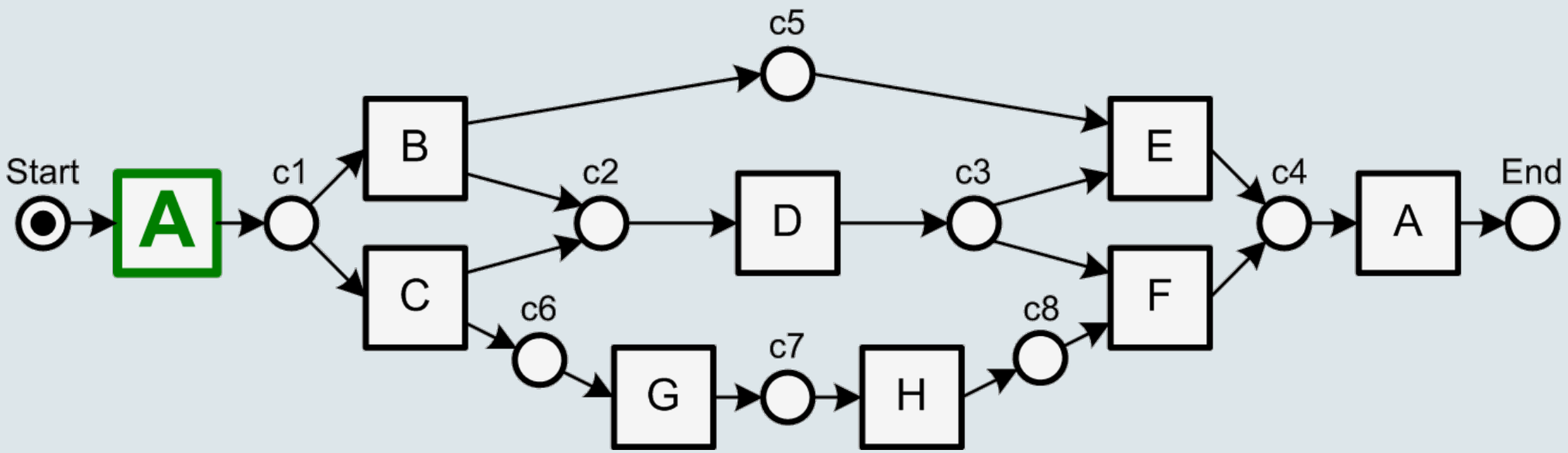


2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	→ ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

missing tokens = 0 consumed tokens = 0
remaining tokens = 0 produced tokens = 1



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28	ACDHFA

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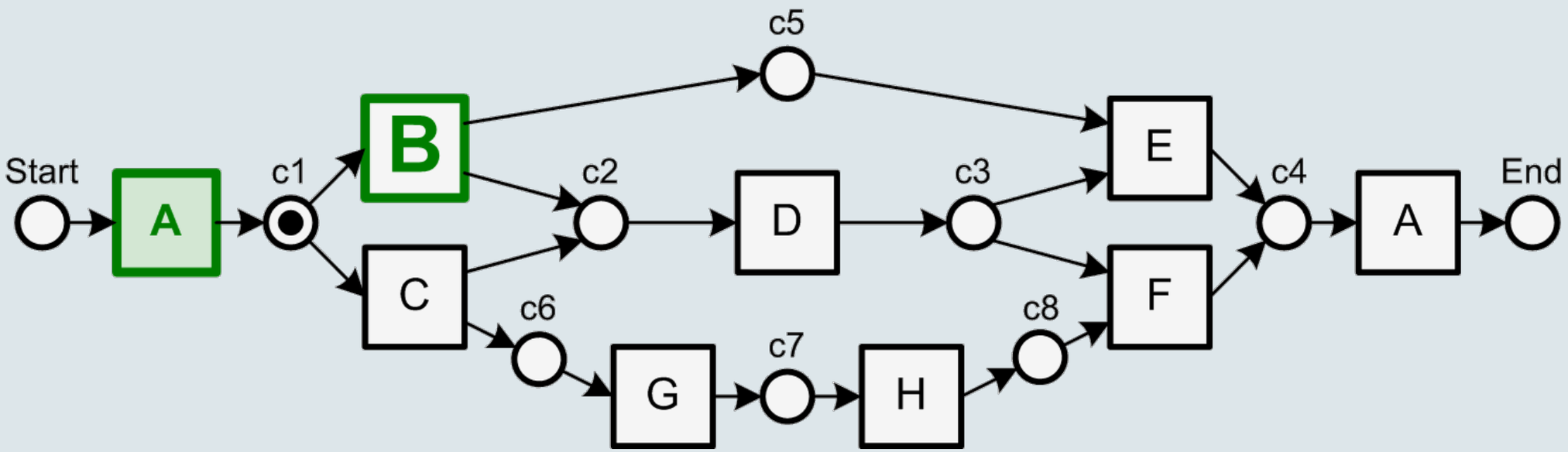
missing tokens = 0 consumed tokens = 1
remaining tokens = 0 produced tokens = 2



2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
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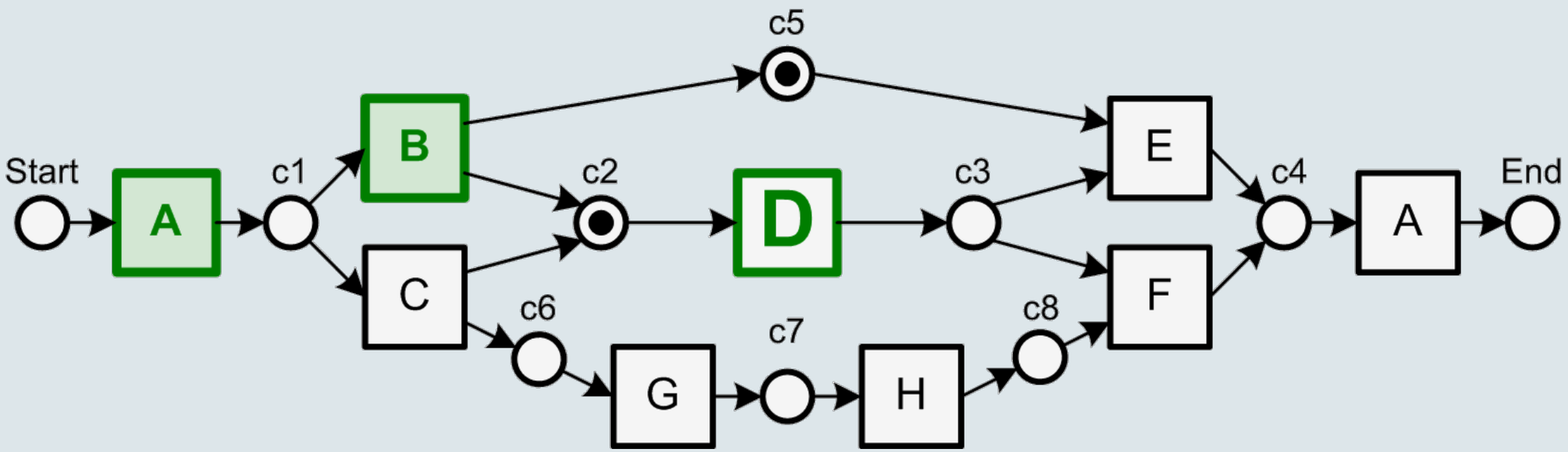
missing tokens = 0 consumed tokens = 2
remaining tokens = 0 produced tokens = 4



2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	→ ABDEA
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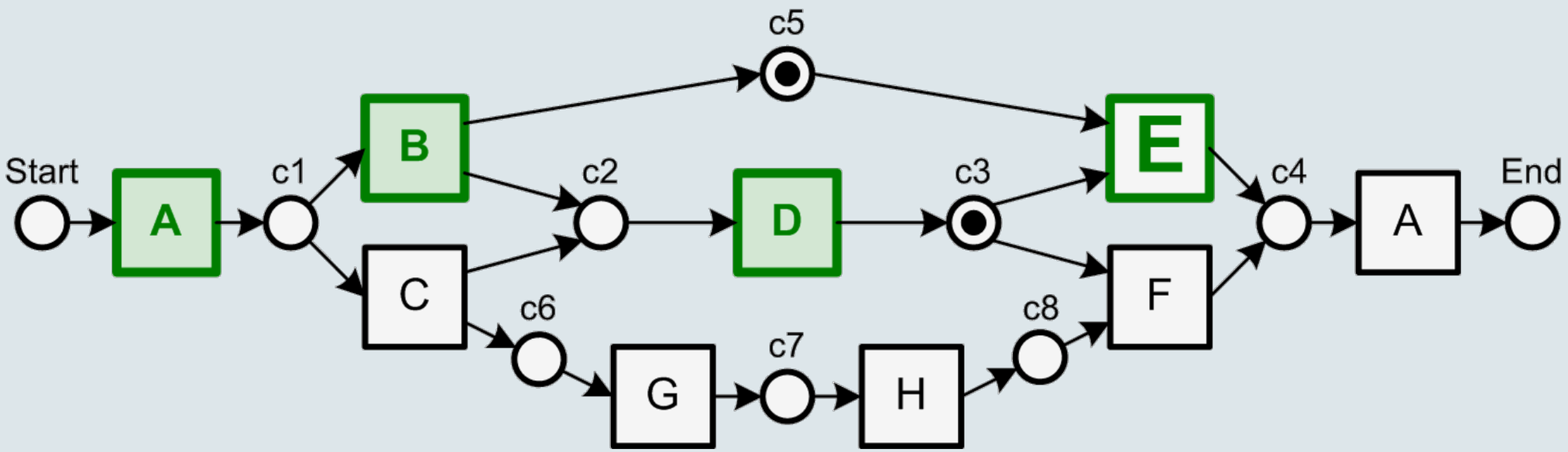
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

missing tokens = 0 consumed tokens = 3
remaining tokens = 0 produced tokens = 5

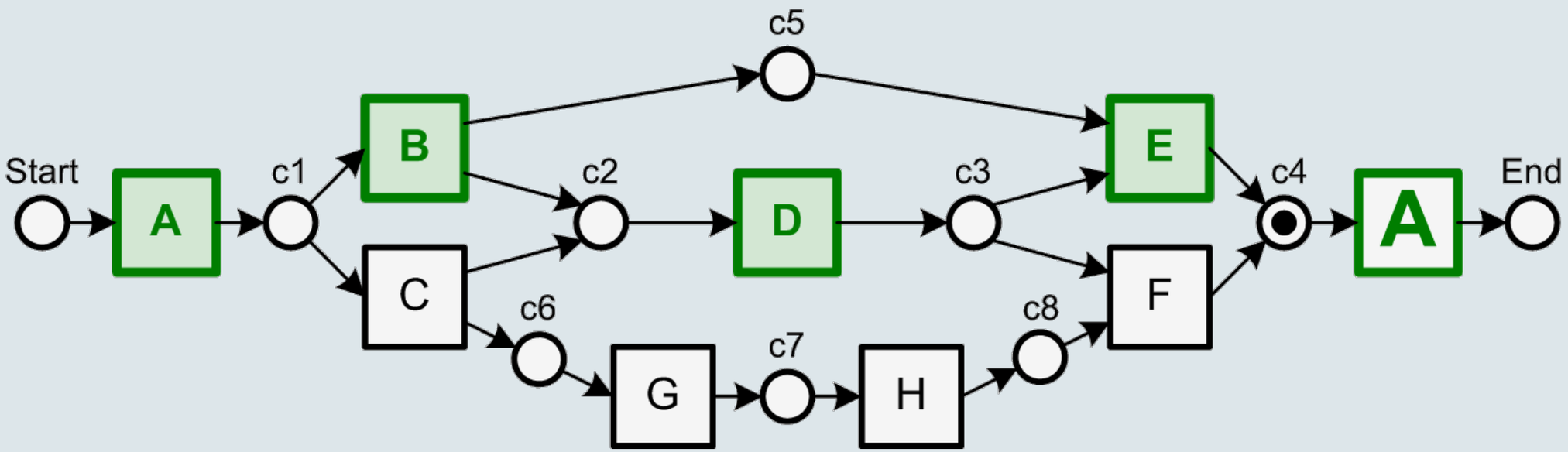


2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	→ ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

missing tokens = 0 consumed tokens = 5
remaining tokens = 0 produced tokens = 6

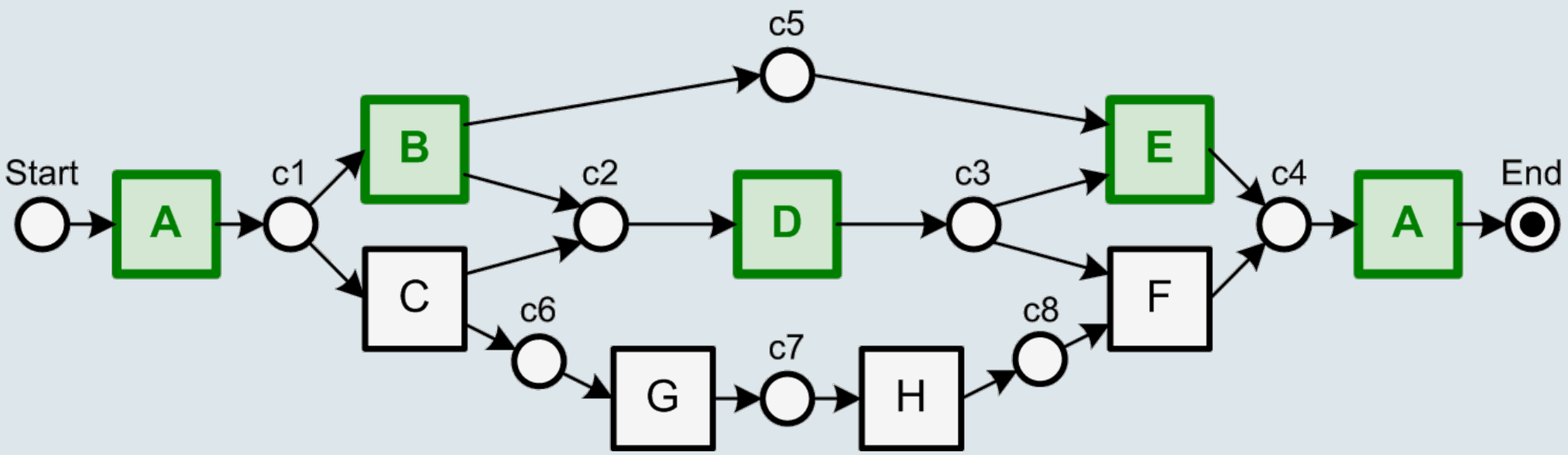


2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	→ **ABDEA**
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

missing tokens = 0 consumed tokens = 6
remaining tokens = 0 produced tokens = 7



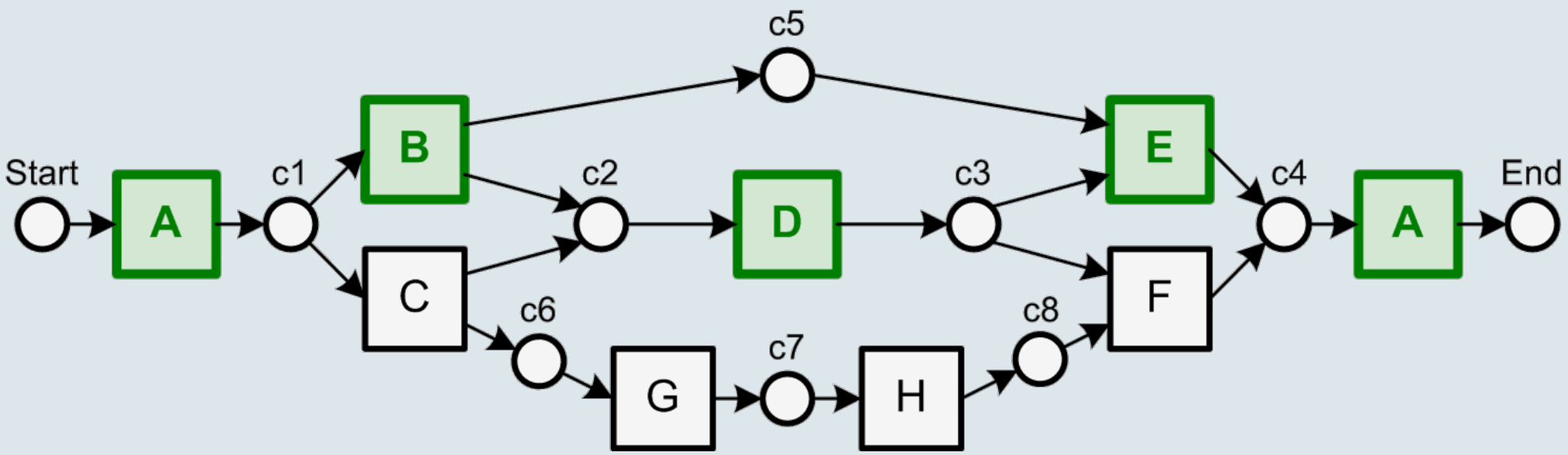
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	→ **ABDEA**
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+}{(1207 \cdot 7)+}) + \frac{1}{2}(1 - \frac{0+}{(1207 \cdot 7)+})$$

missing tokens = 0 consumed tokens = 7
remaining tokens = 0 produced tokens = 7



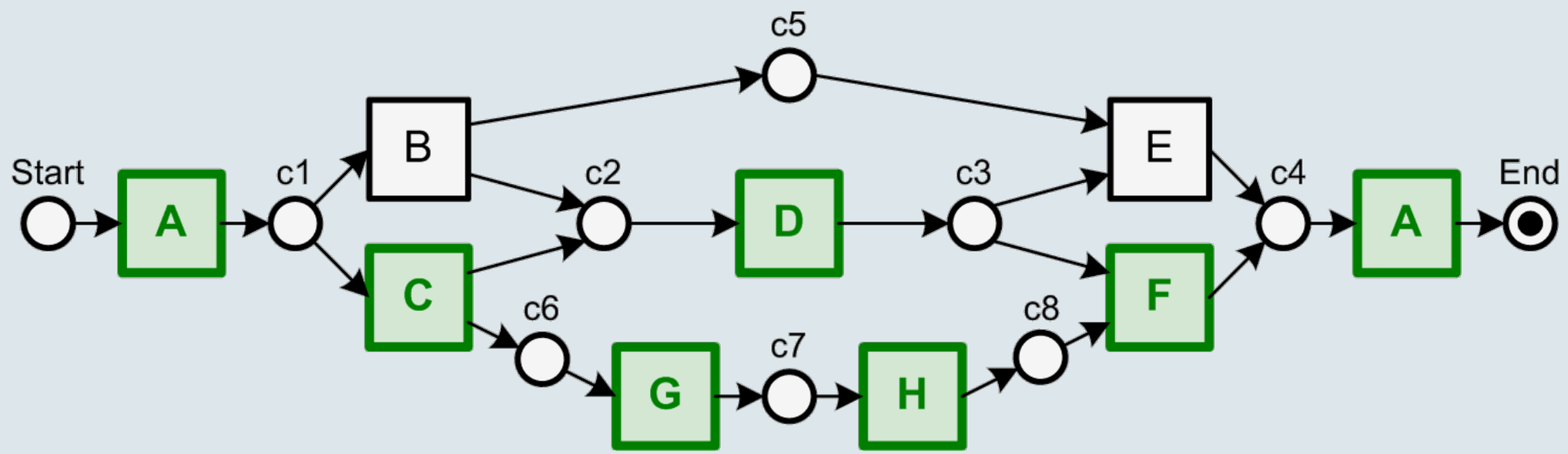
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	➔ **ACDGHFA**
56	ACGDHFA
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+}{(1207 \cdot 7)+}) + \frac{1}{2}(1 - \frac{0+}{(1207 \cdot 7)+})$$

missing tokens = 0 consumed tokens = 8
remaining tokens = 0 produced tokens = 9



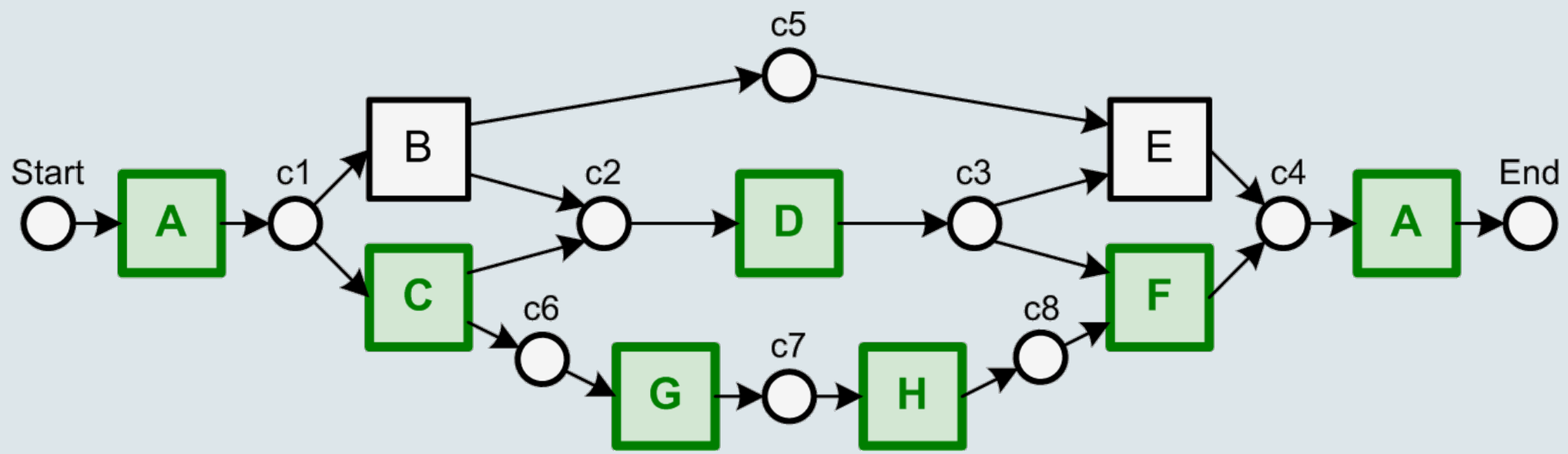
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	➔ **ACDGHFA**
56	ACGDHFA
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+}{(1207 \cdot 7) + (145 \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+}{(1207 \cdot 7) + (145 \cdot 9)+})$$

missing tokens = 0 consumed tokens = 9
remaining tokens = 0 produced tokens = 9



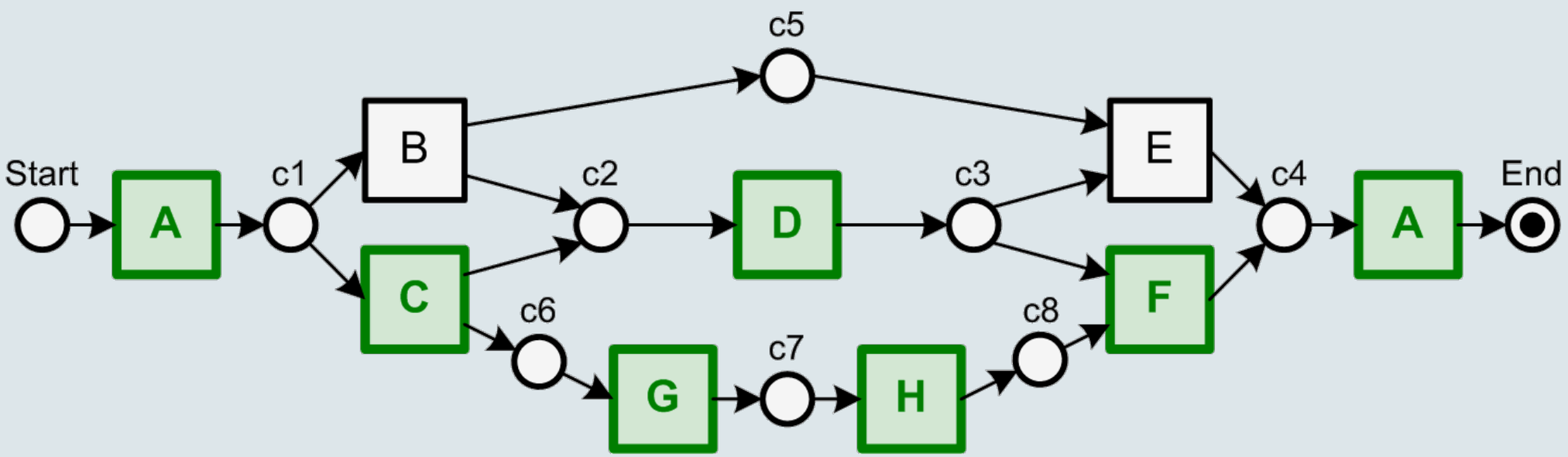
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	➔ **ACGDHFA**
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0 + 0 +}{(1207 \cdot 7) + (145 \cdot 9) +}) + \frac{1}{2}(1 - \frac{0 + 0 +}{(1207 \cdot 7) + (145 \cdot 9) +})$$

missing tokens = 0 consumed tokens = 8
remaining tokens = 0 produced tokens = 9



$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

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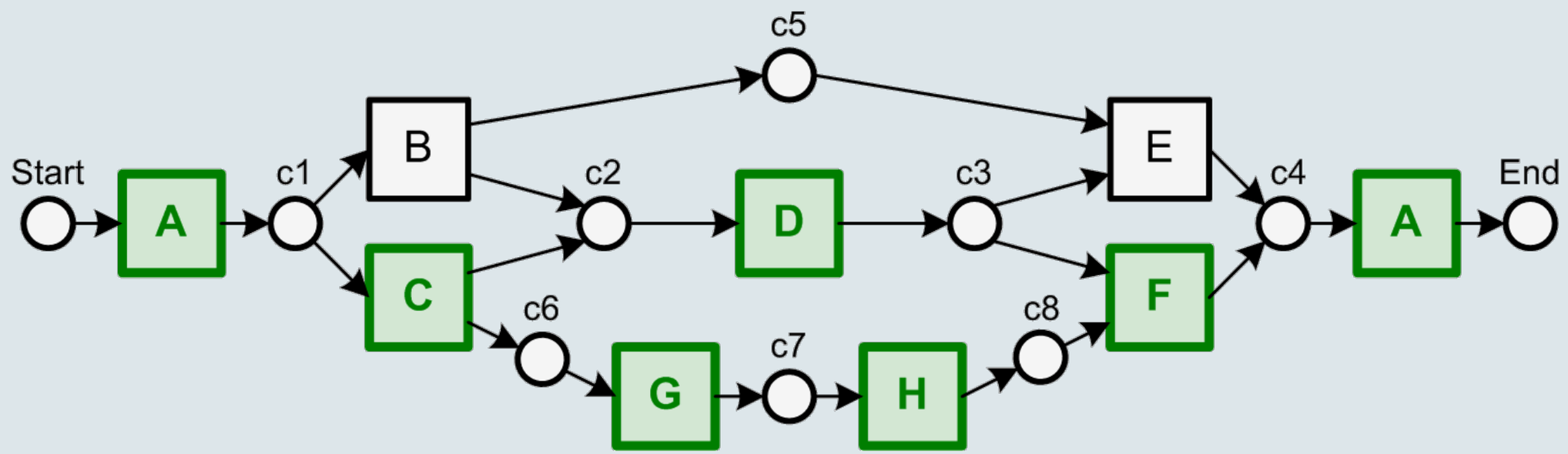
No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	➔ **ACGDHFA**
23	ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+})$$

missing tokens = 0 consumed tokens = 9
remaining tokens = 0 produced tokens = 9



$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

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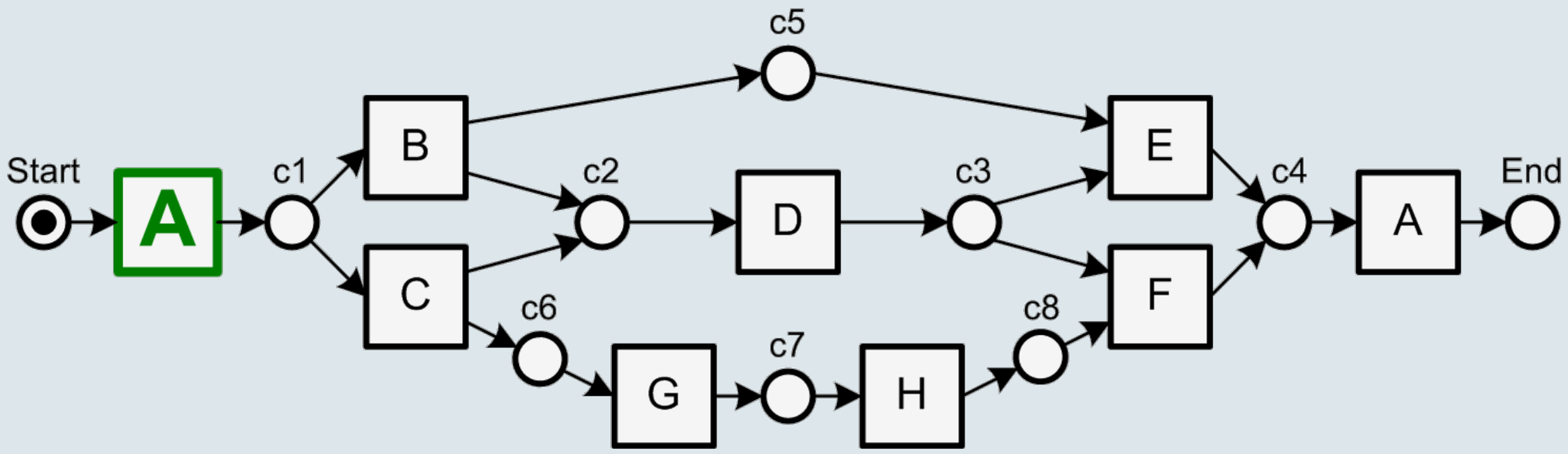
$$f = \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+})$$

missing tokens = 0 consumed tokens = 0
remaining tokens = 0 produced tokens = 1



$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

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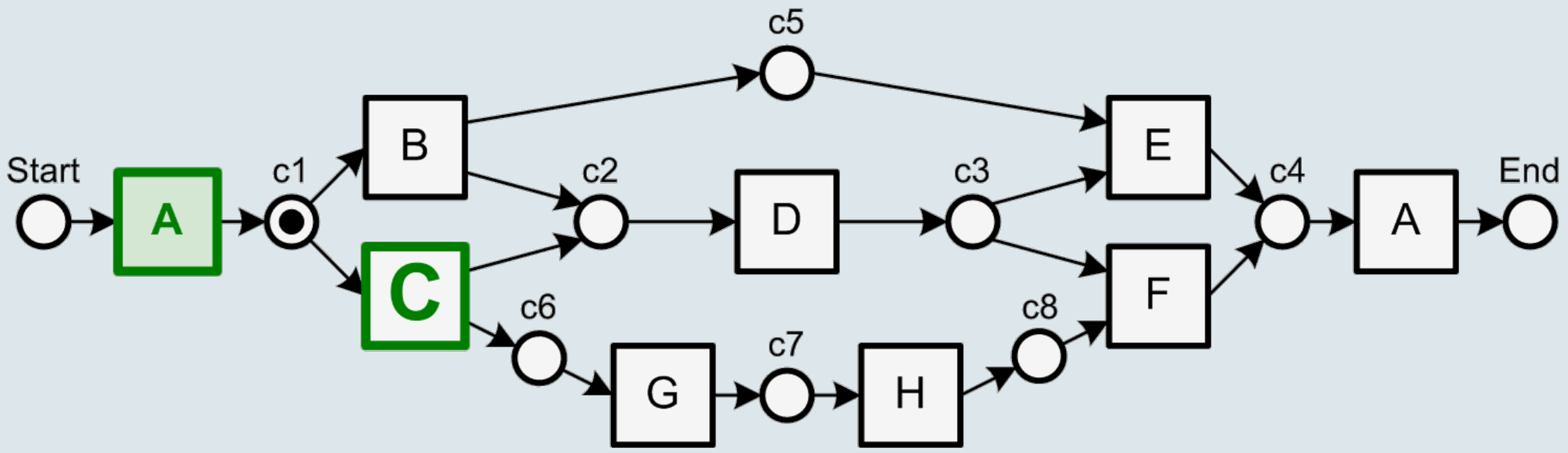
$$f = \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+})$$

missing tokens = 0 consumed tokens = 1
remaining tokens = 0 produced tokens = 2



$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

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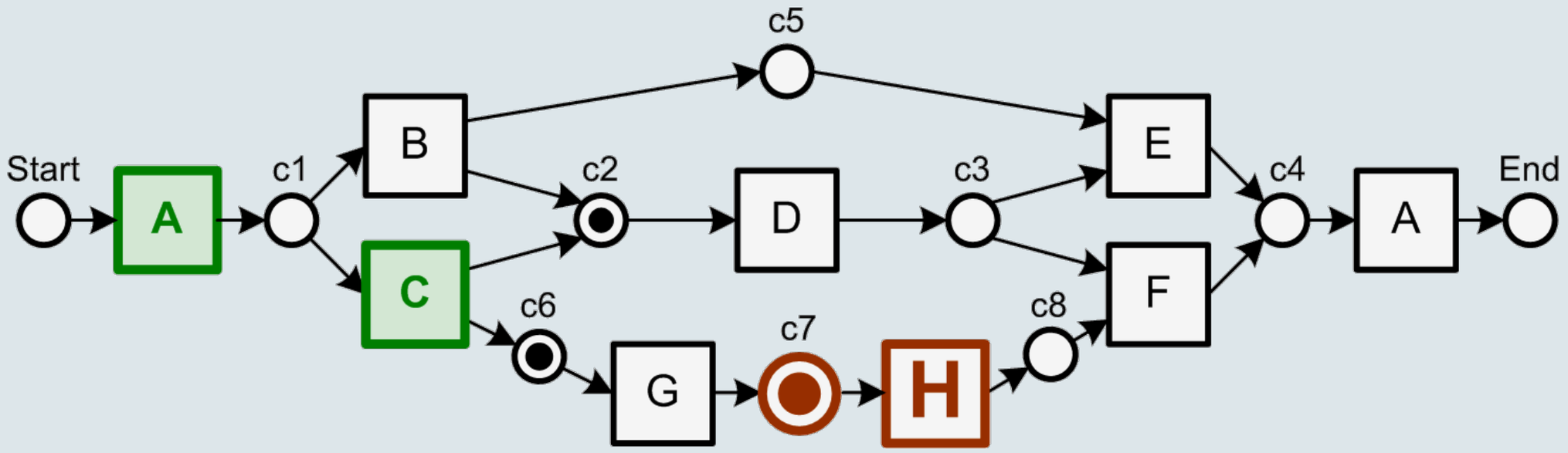
$$f = \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+})$$

missing tokens = 1 consumed tokens = 2
remaining tokens = 0 produced tokens = 4



$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

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No. of Instances	Log Traces
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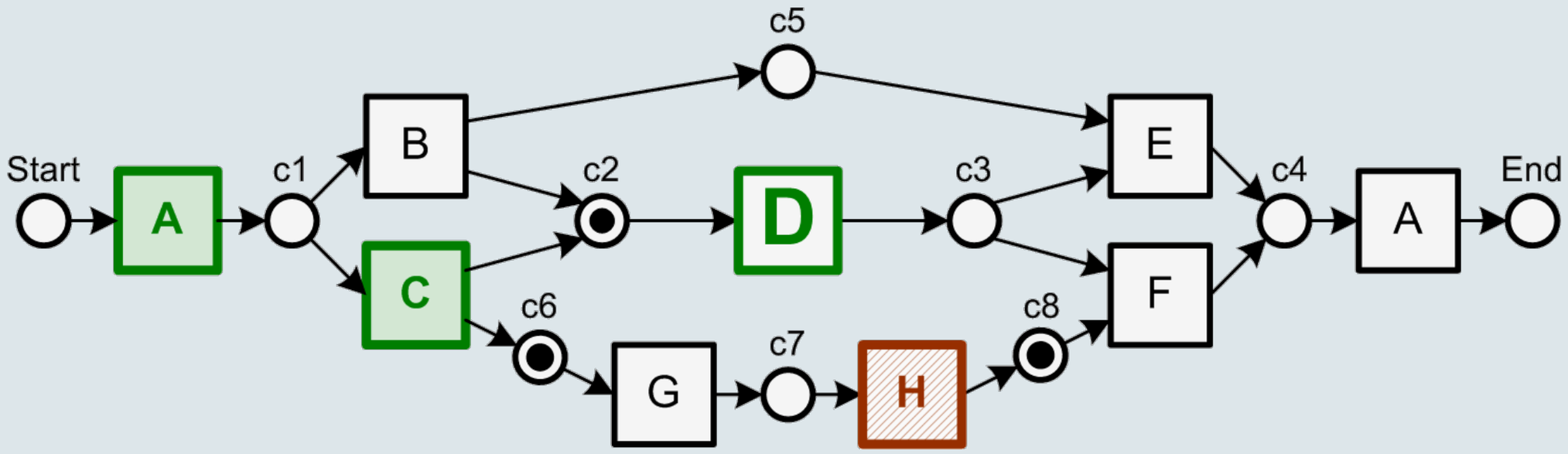
$$f = \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+})$$

missing tokens = 1 consumed tokens = 3
remaining tokens = 0 produced tokens = 5



$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

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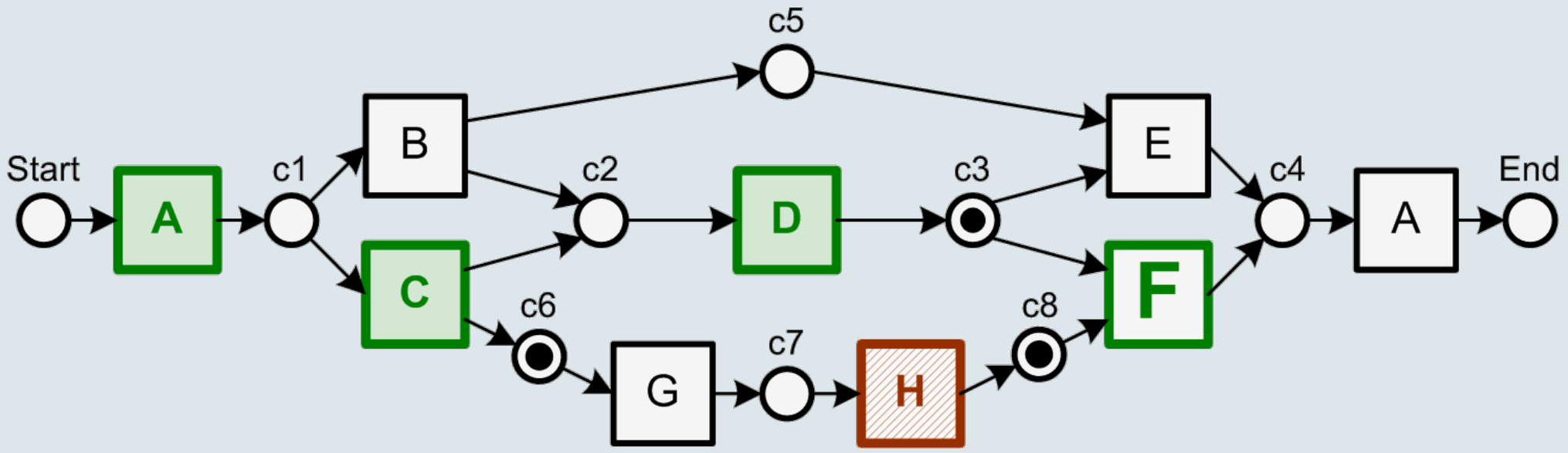
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+})$$

missing tokens = 1 consumed tokens = 4
remaining tokens = 0 produced tokens = 6



$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

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28	ACDHFA

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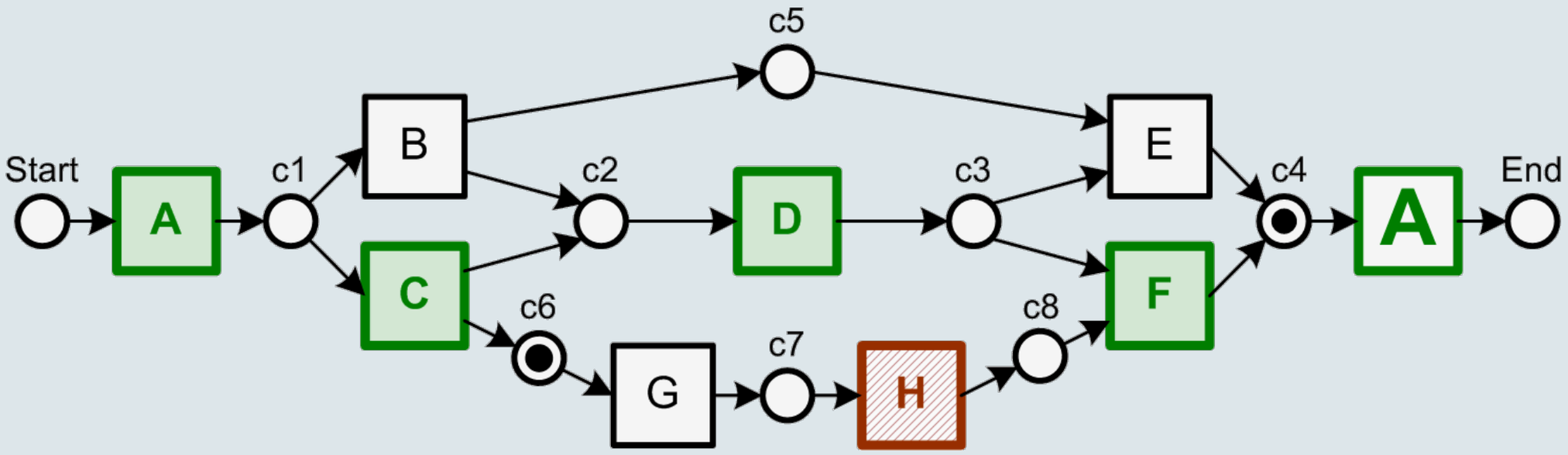
missing tokens = 1 consumed tokens = 6
remaining tokens = 0 produced tokens = 7



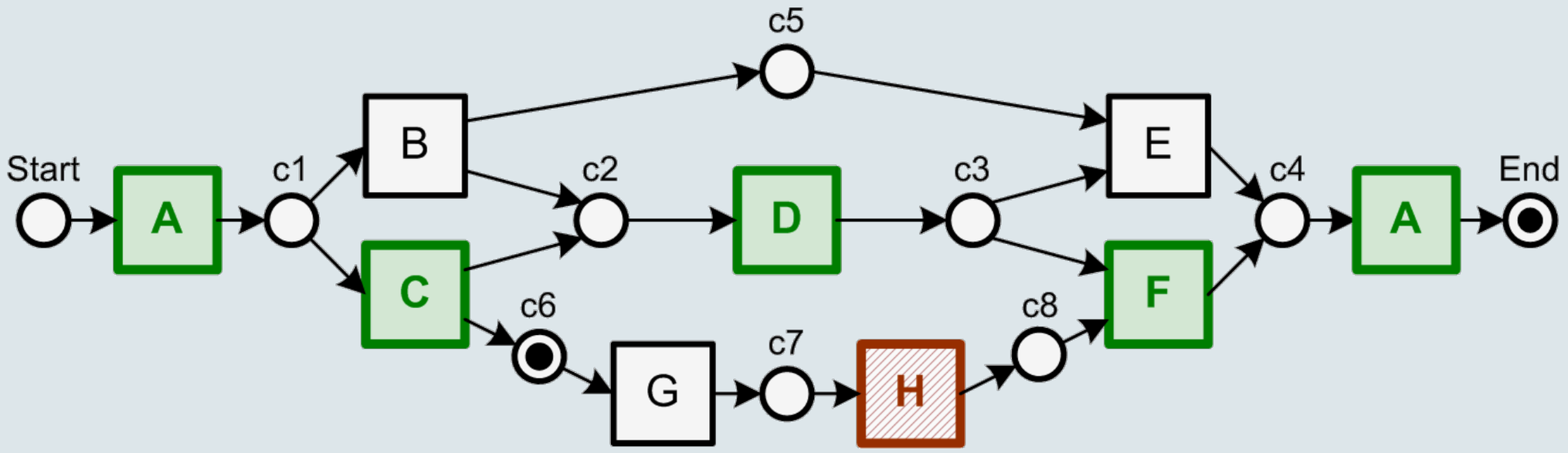
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	→ ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+}) + \frac{1}{2}(1 - \frac{0+0+0+}{(1207 \cdot 7) + ((145+56) \cdot 9)+})$$

missing tokens = 1 consumed tokens = 7
remaining tokens = 0 produced tokens = 8



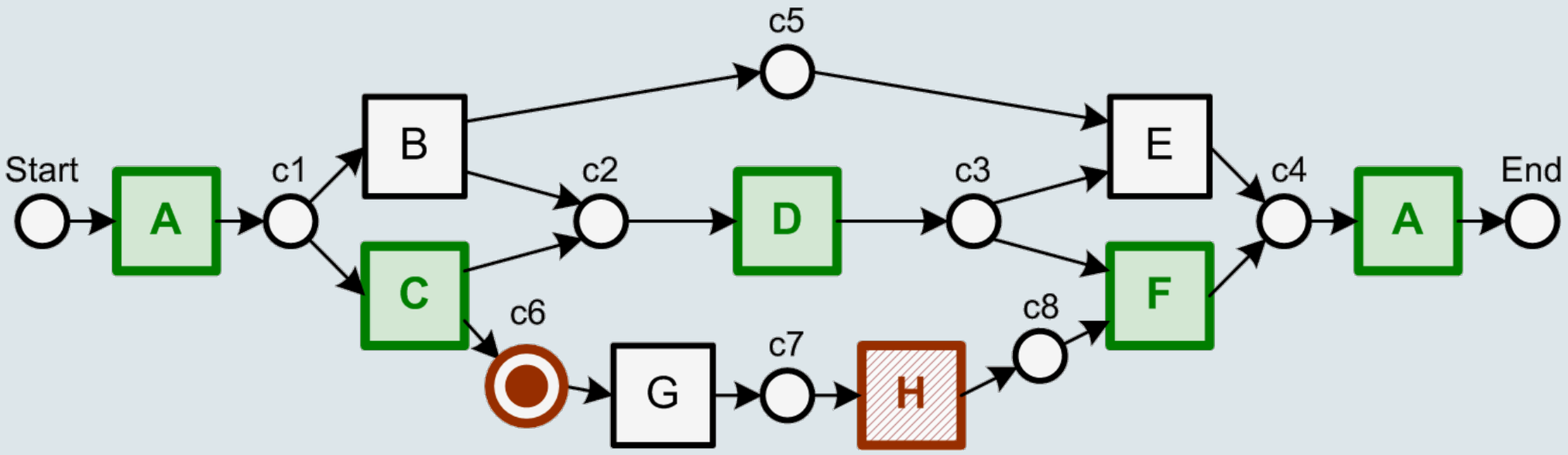
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	→ ACHDFA
28	ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 1 consumed tokens = 8
remaining tokens = 1 produced tokens = 8



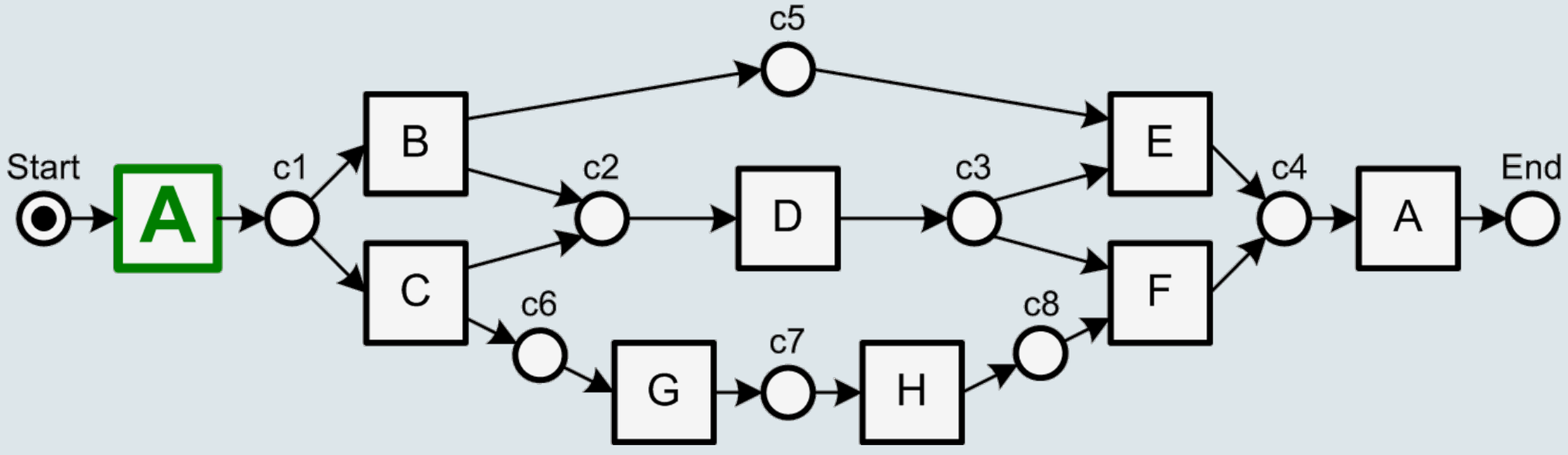
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 0 consumed tokens = 0
remaining tokens = 0 produced tokens = 1



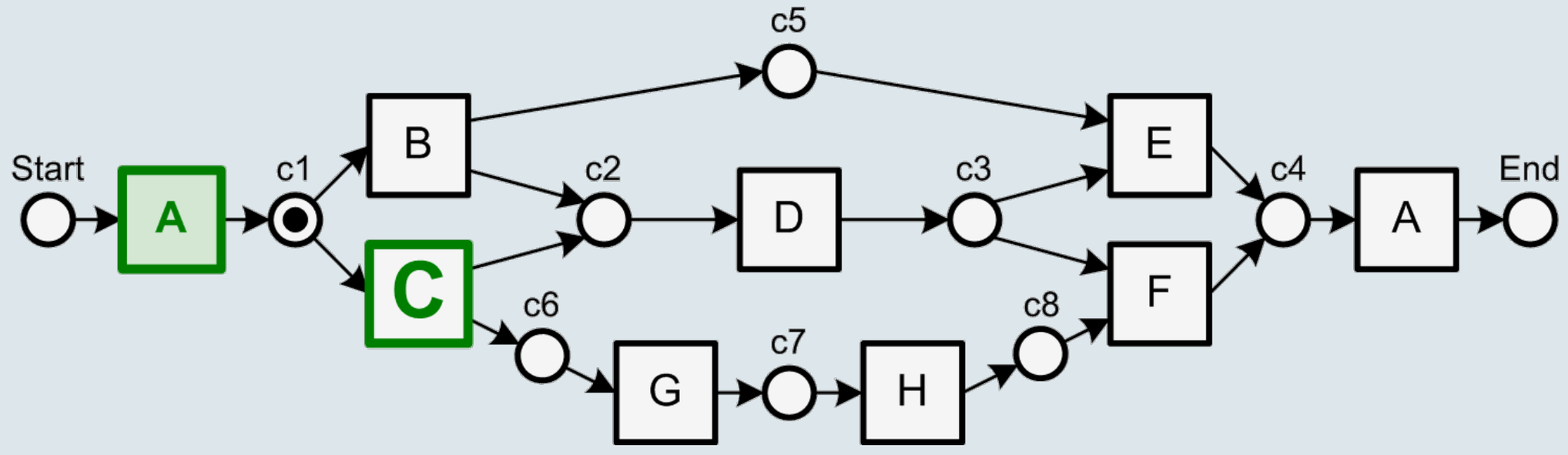
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ **AC**DHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 0 consumed tokens = 1
remaining tokens = 0 produced tokens = 2



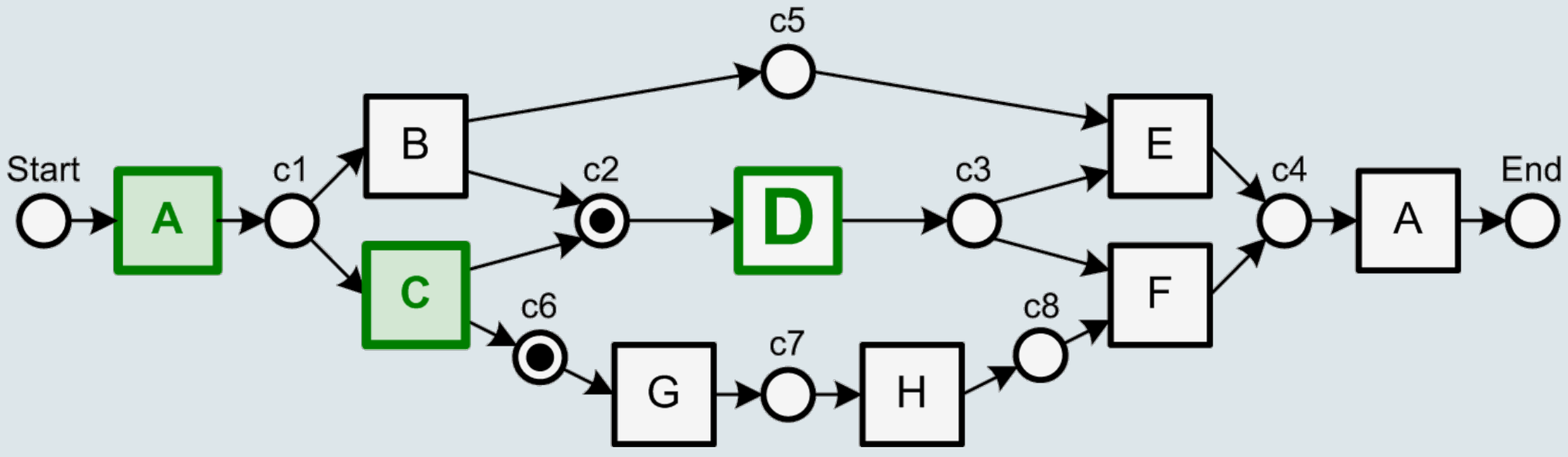
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 0 consumed tokens = 2
remaining tokens = 0 produced tokens = 4



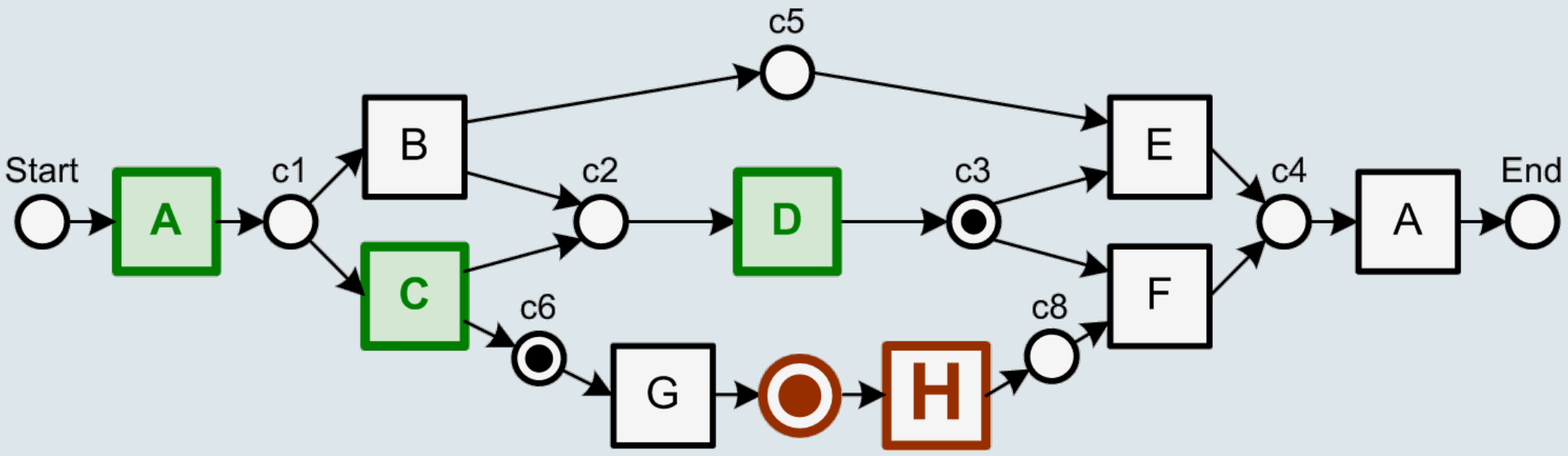
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 1 consumed tokens = 3
remaining tokens = 0 produced tokens = 5



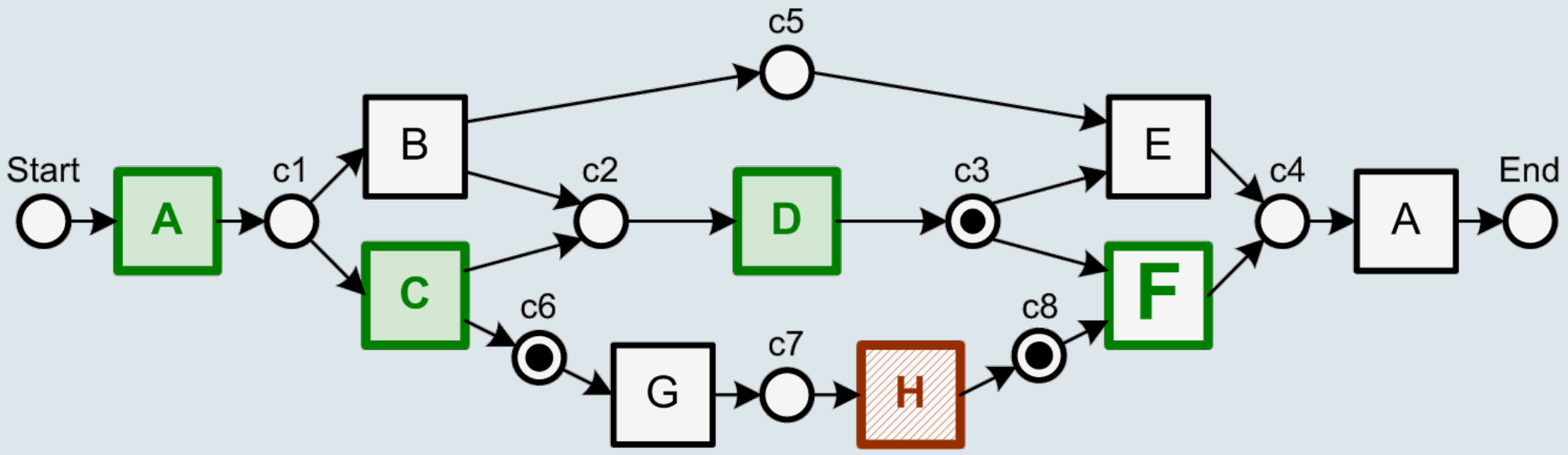
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 1 consumed tokens = 4
remaining tokens = 0 produced tokens = 6



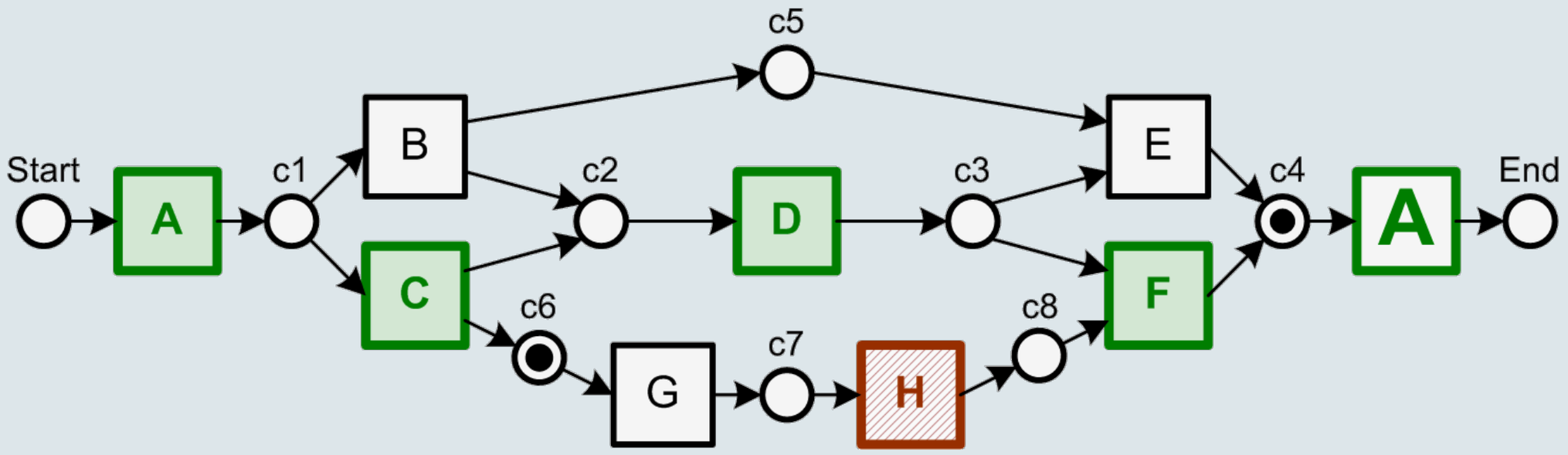
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ ACDHFA

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 1 consumed tokens = 6
remaining tokens = 0 produced tokens = 7



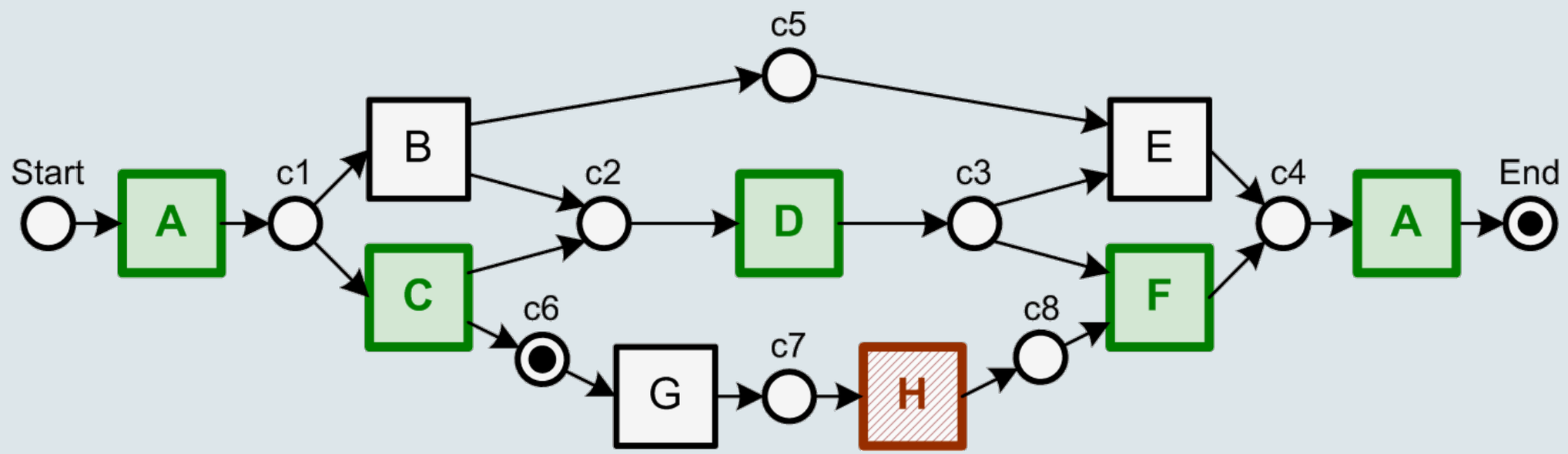
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ **ACDHFA**

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+}{(1207\cdot 7)+((145+56)\cdot 9)+(23\cdot 8)+})$$

missing tokens = 1 consumed tokens = 7
remaining tokens = 0 produced tokens = 8



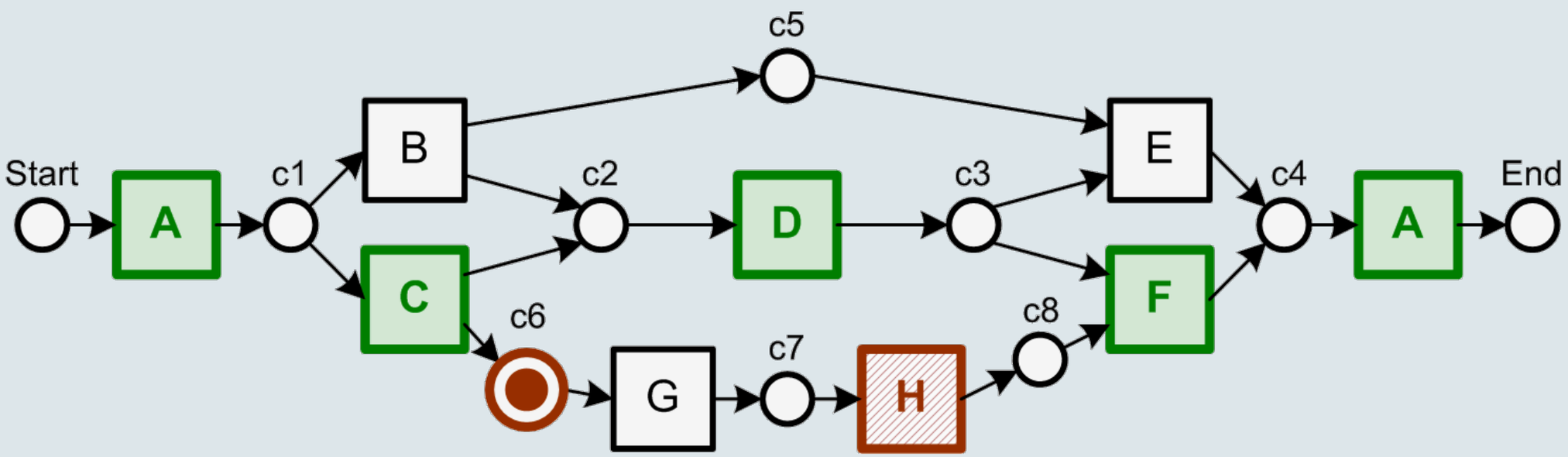
$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$

2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	→ **ACDHFA**

$$f = \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+(28\cdot 1)}{(1207\cdot 7)+((145+56)\cdot 9)+((23+28)\cdot 8)}) + \frac{1}{2}(1 - \frac{0+0+0+(23\cdot 1)+(28\cdot 1)}{(1207\cdot 7)+((145+56)\cdot 9)+((23+28)\cdot 8)})$$

missing tokens = 1 consumed tokens = 8
remaining tokens = 1 produced tokens = 8

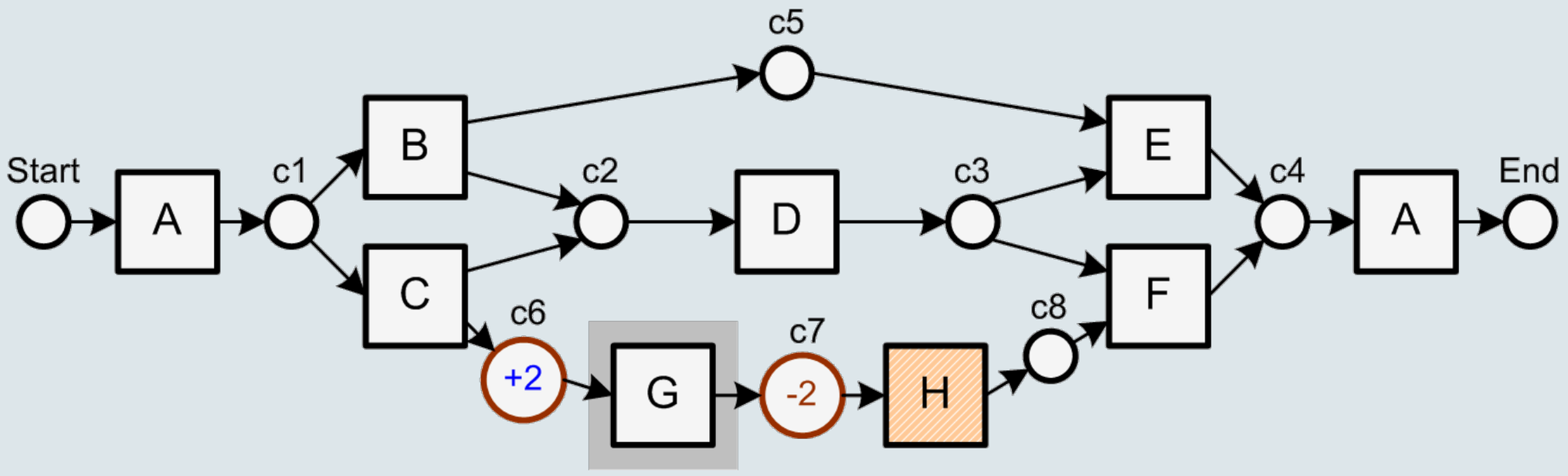


2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

$$f = 1 - \frac{23 + 28}{(1207 \cdot 7) + ((145 + 56) \cdot 9) + ((23 + 28) \cdot 8)} \approx 0.995$$

$$f = \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i m_i}{\sum_{i=1}^{k} n_i c_i}) + \frac{1}{2}(1 - \frac{\sum_{i=1}^{k} n_i r_i}{\sum_{i=1}^{k} n_i p_i})$$



2.1 Measuring fitness: Log replay analysis

No. of Instances	Log Traces
4070	ABDEA
245	ACDGHFA
56	ACGDHFA

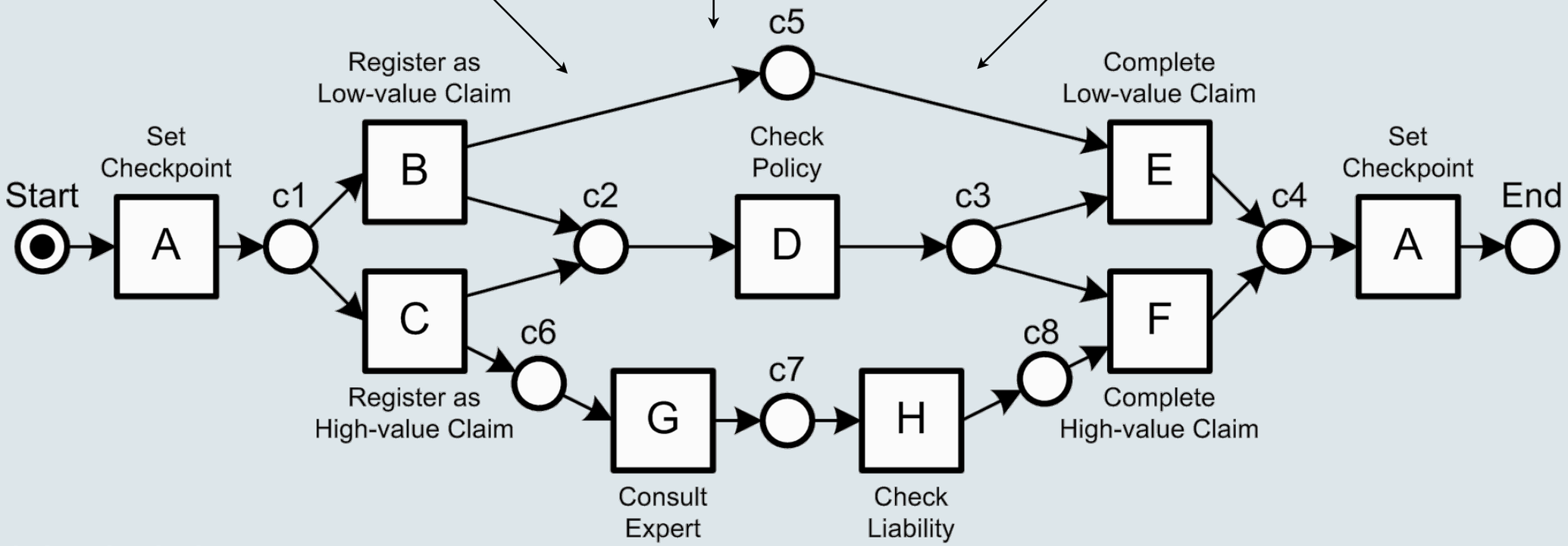
No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

No. of Instances	Log Traces
24	BDE
7	AABHF
15	CHF
6	ADBE
1	ACBGDFAA
8	ABEDA

f = 1.0

f ≈ 0.955

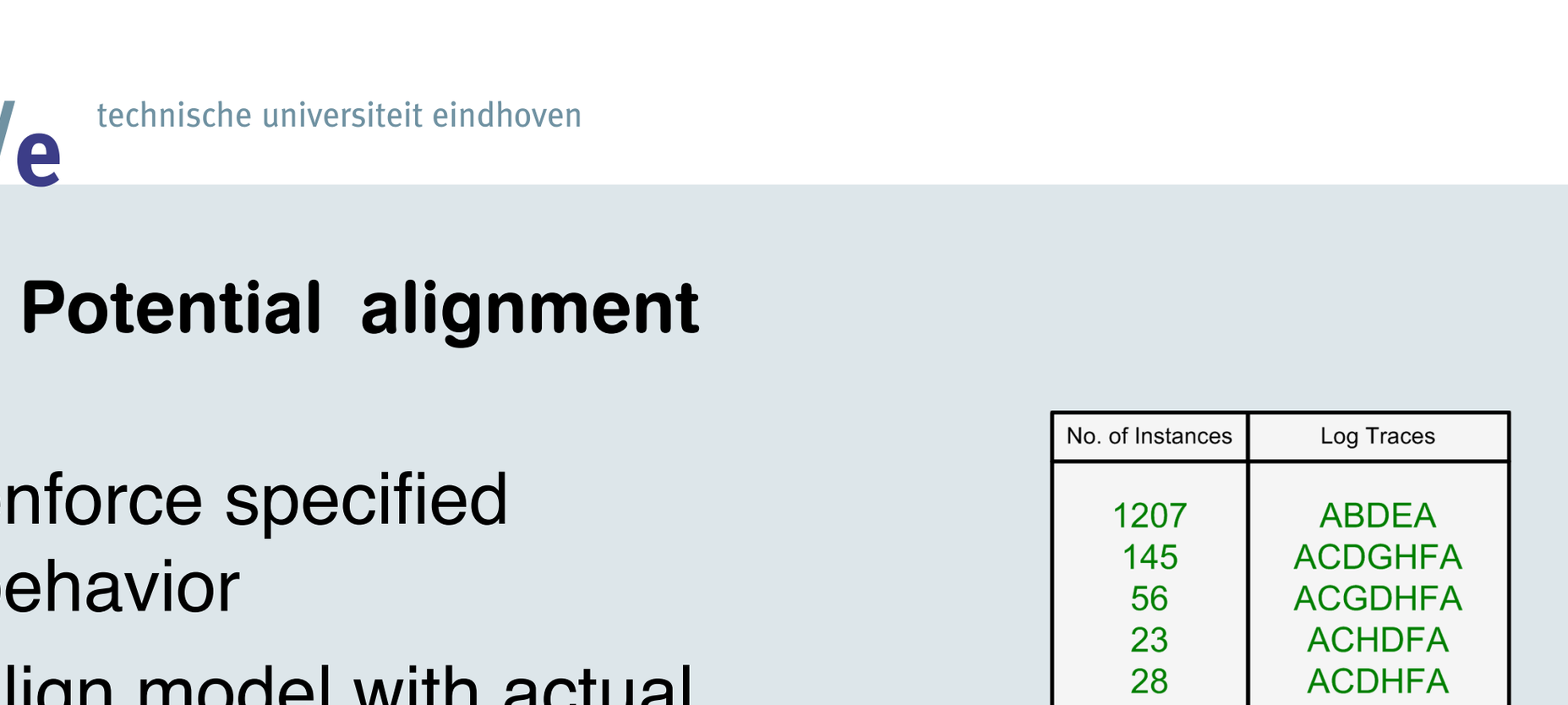
f ≈ 0.540



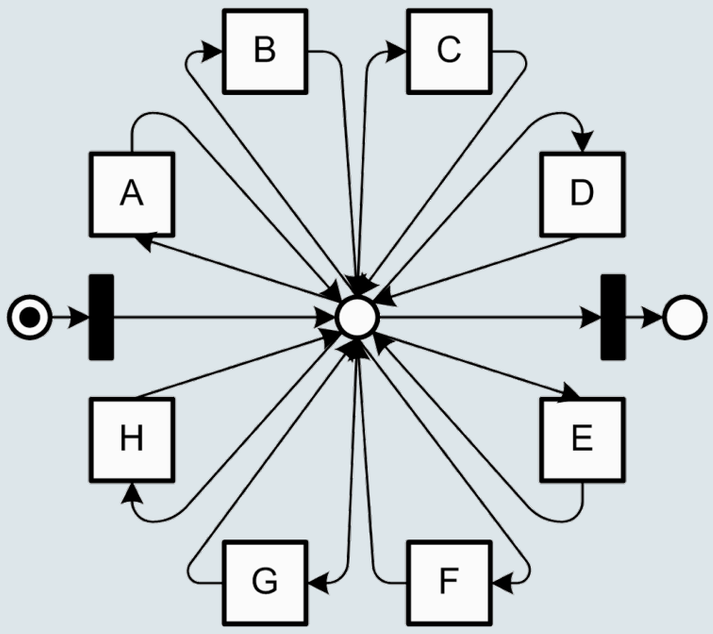
2.2 Potential alignment

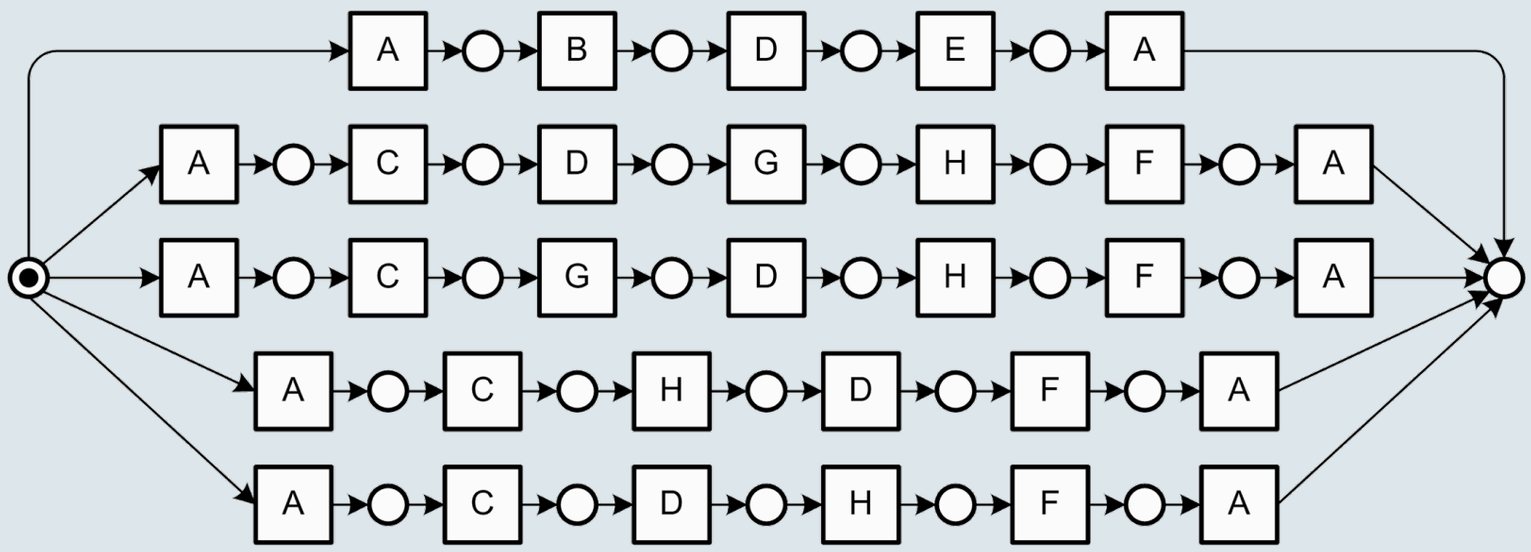
- enforce specified behavior
- align model with actual behavior

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA



3. Appropriateness



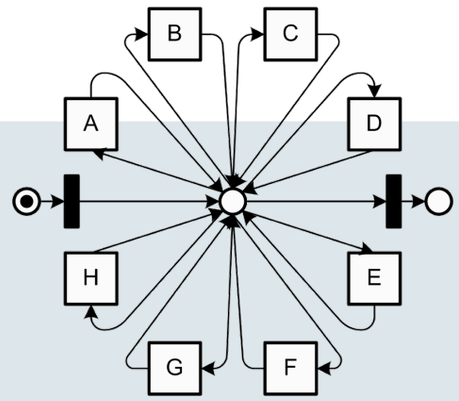


Fitting model
but not sufficiently
specific from
behavioral point of view.

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

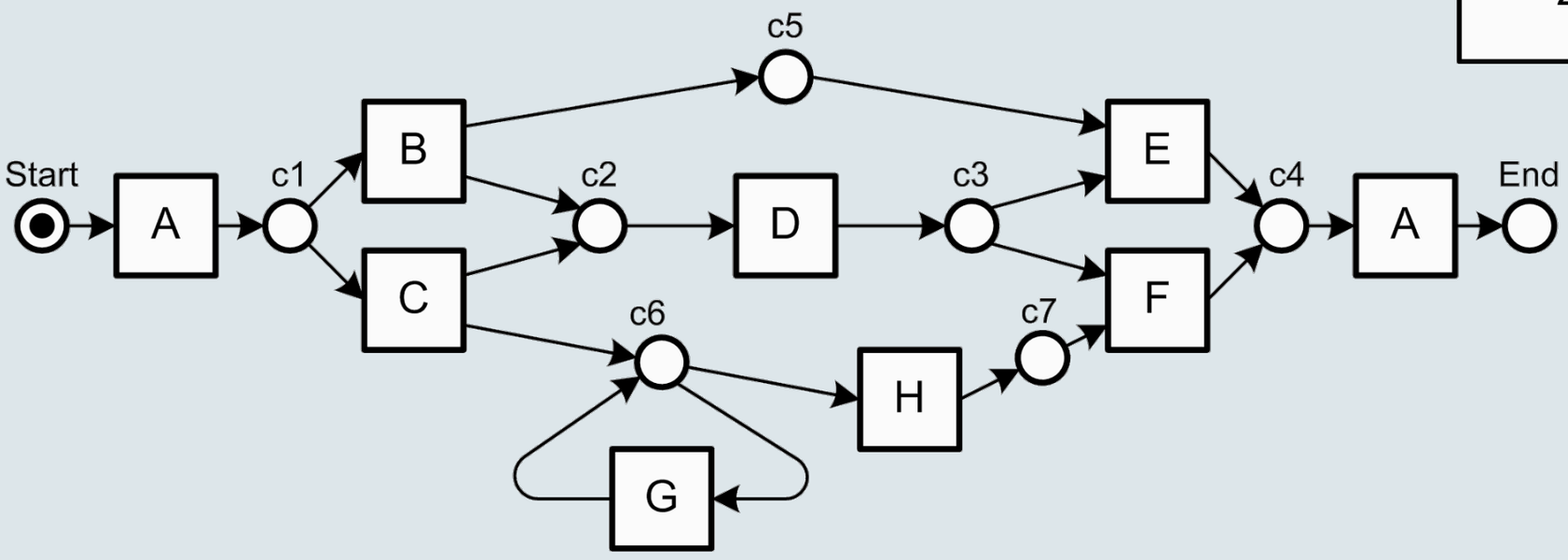
Fitting model
but not represented in
structurally suitable way.

3.1 Behavioral Appropriateness

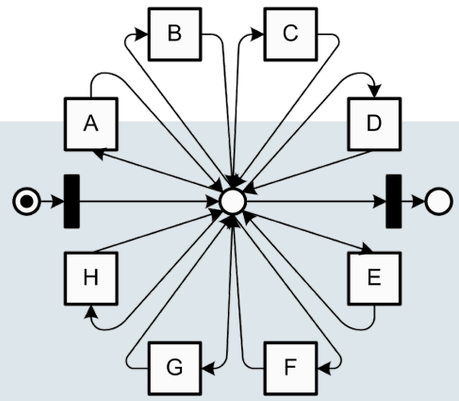


- unnecessary behavior can decrease the appropriateness of a process model

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

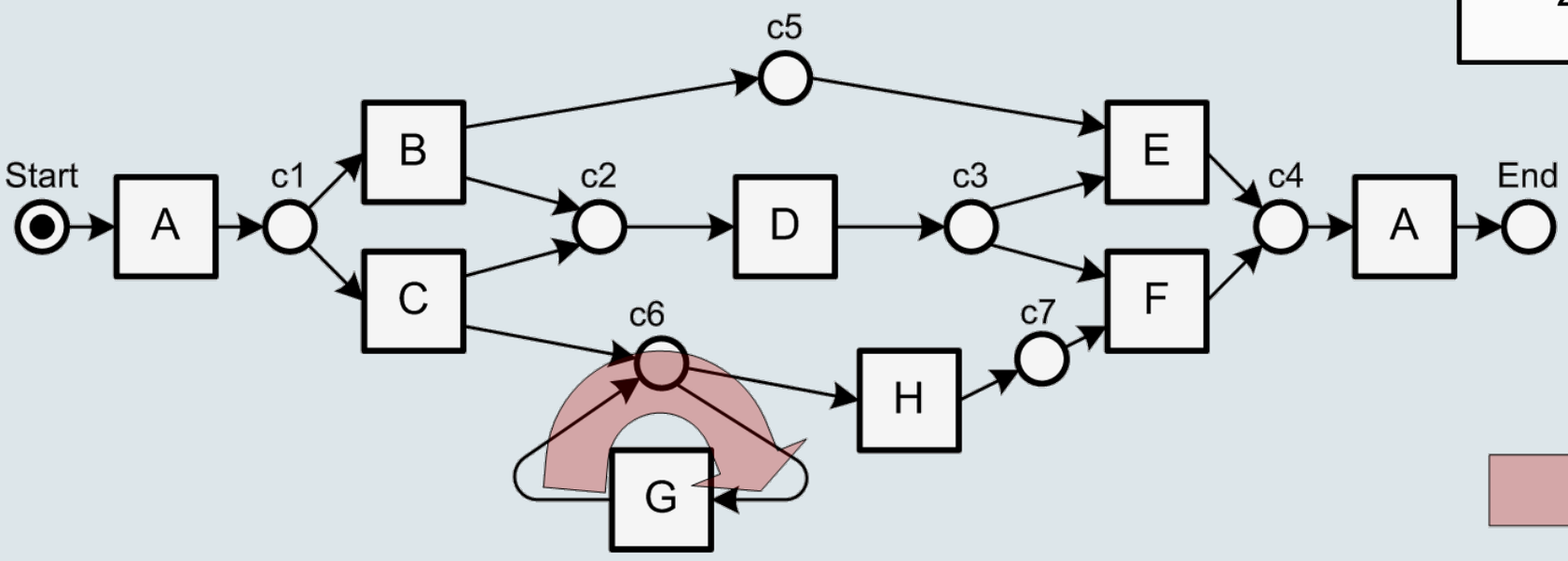


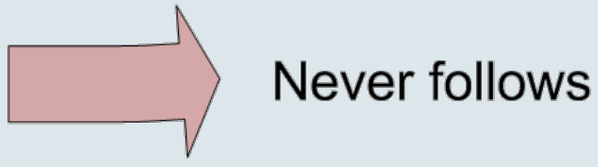
3.1 Behavioral Appropriateness

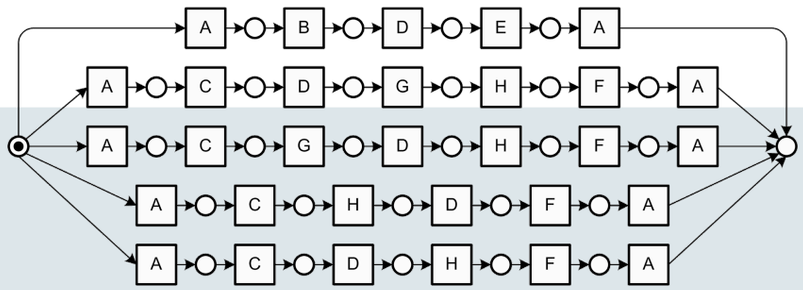


- unnecessary behavior can decrease the appropriateness of a process model

No. of Instances	Log Traces
1207	ABDEA
145	ACDGHFA
56	ACGDHFA
23	ACHDFA
28	ACDHFA

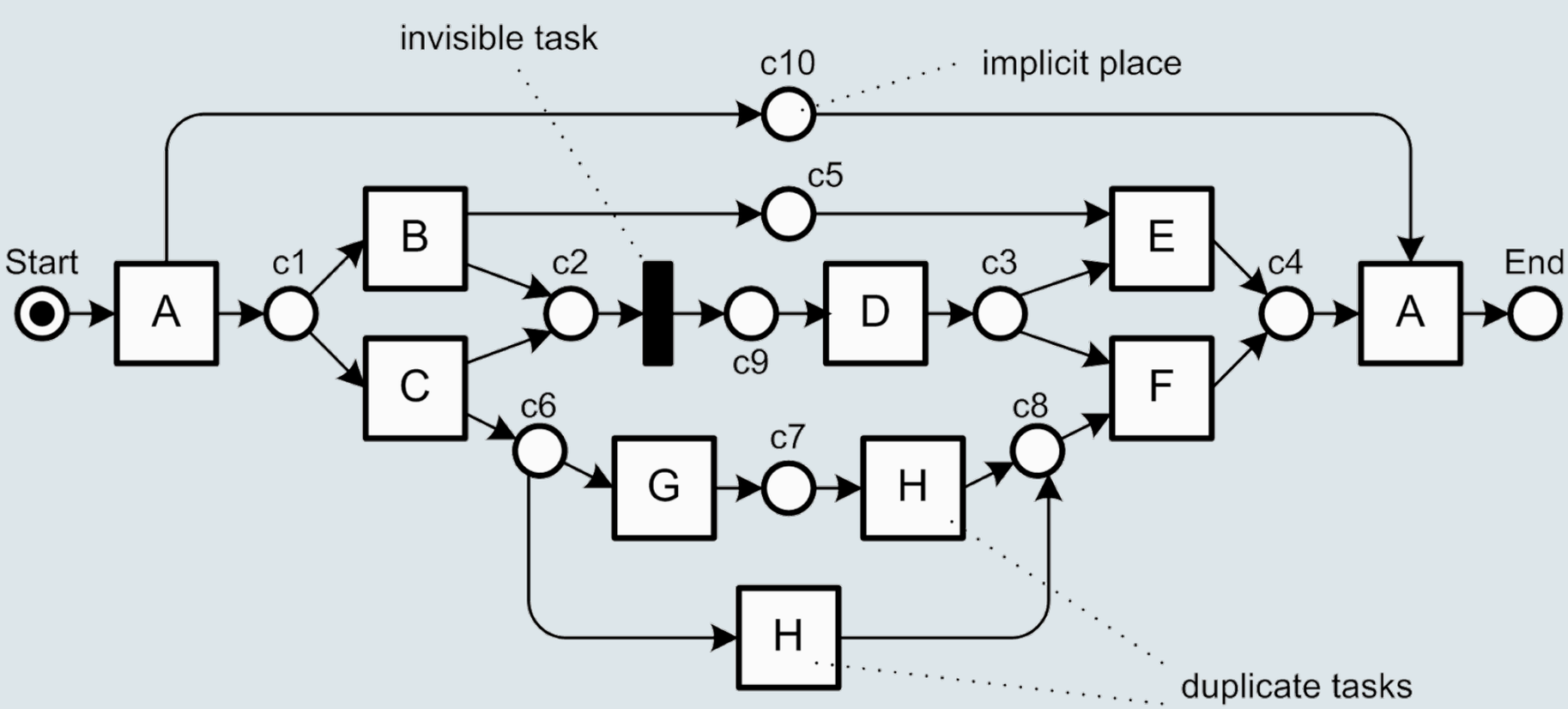


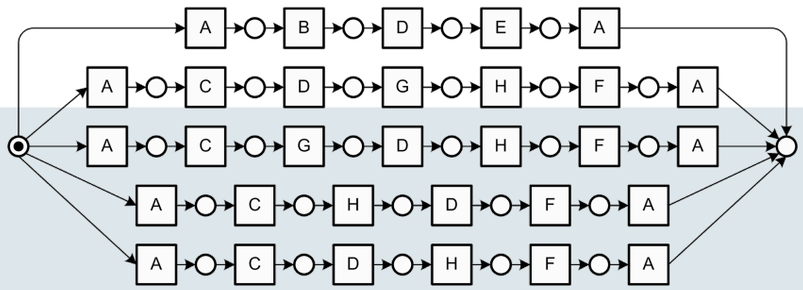




3.2 Structural Appropriateness

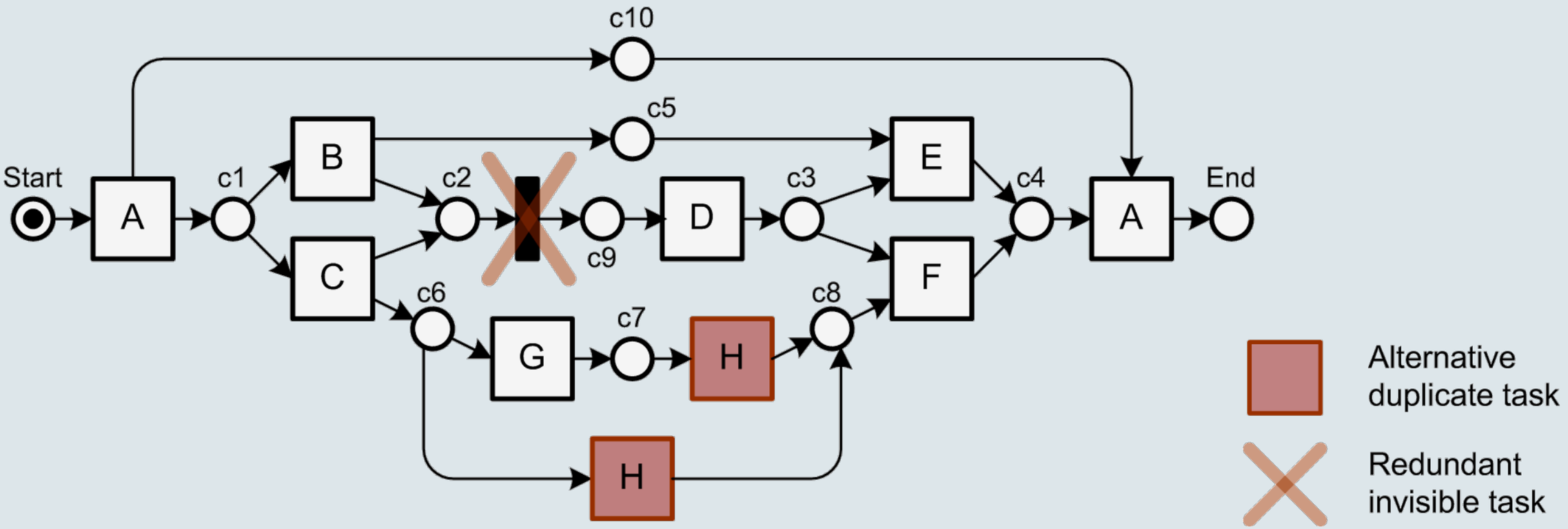
- structural properties may decrease the appropriateness of a process model





3.2 Structural Appropriateness

- structural properties may decrease the appropriateness of a process model



outline

1. Positioning Conformance Testing in BPM
2. Fitness
    1. Measuring fitness: Log replay analysis
    2. Potential alignment
3. Appropriateness
    1. Behavioral appropriateness
    2. Structural appropriateness
4. **Tool demonstration**
5. Conclusion

5. Conclusion

- Incremental approach to check conformance of a process model and an event log:
  1. Fitness
  2. Appropriateness (structural + behavioral)

- Metrics allow for quantification of conformance
- Potential points of improvement can be localized
- Ideas implemented in Conformance Checker (as a plug-in for ProM framework)

? Questions ?