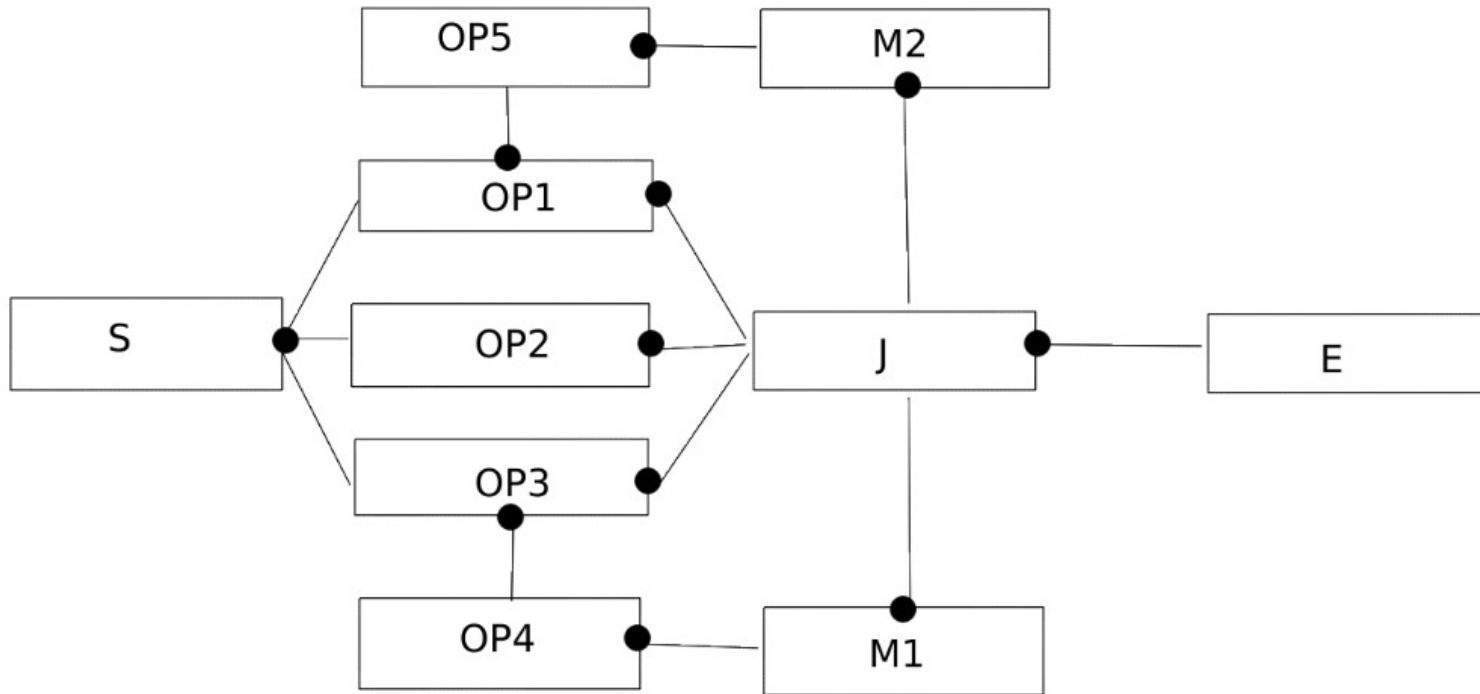



Declarative Process Mining






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Dummy model








- 
- Imperative vs Declarative
 - All possible sequences?
 - Closed vs Open
 - forbidden or not specified?
 - Forget scenarios vs forget constraint





Constraints

responded existence(A,B)	if A occurs then B occurs before or after A	$\diamond A \rightarrow \diamond B$	
co-existence(A,B)	if A occurs then B occurs before or after A and vice versa	$\diamond A \leftrightarrow \diamond B$	
response(A,B)	if A occurs then eventually B occurs after A	$\square(A \rightarrow \diamond B)$	
precedence(A,B)	if B occurs then A occurs before B	$(\neg B \sqcup A) \vee \square(\neg B)$	
succession(A,B)	for A and B both precedence and response hold	$\square(A \rightarrow \diamond B) \wedge (\neg B \sqcup A) \vee \square(\neg B)$	

Constraints

alternate response(A,B)	if A occurs then eventually B occurs after A without other occurrences of A in between	$\Box(A \rightarrow \bigcirc(\neg A \sqcup B))$	
alternate precedence(A,B)	if B occurs then A occurs before B without other occurrences of B in between	$((\neg B \sqcup A) \vee \Box(\neg B))$ \wedge $\Box(B \rightarrow \bigcirc((\neg B \sqcup A) \vee \Box(\neg B)))$	
alternate succession(A,B)	for A and B both alternate precedence and alternate response hold	$\Box(A \Rightarrow \bigcirc(\neg A \cup B)) \wedge$ $((\neg B \sqcup A) \vee \Box(\neg B)) \wedge$ $\Box(B \rightarrow \bigcirc((\neg B \sqcup A) \vee \Box(\neg B)))$	
chain response(A,B)	if A occurs then B occurs in the next position after A	$\Box(A \rightarrow \bigcirc B)$	
chain precedence(A,B)	if B occurs then A occurs in the next position before B	$\Box(\bigcirc B \rightarrow A)$	

Constraints

chain succession(A,B)	for A and B both chain precedence and chain response hold	$\Box(A \rightarrow \bigcirc B)$ \wedge $\Box(\bigcirc B \rightarrow A)$	
not co-existence(A,B)	A and B cannot occur together	$\neg(\Diamond A \wedge \Diamond B)$	
not succession(A,B)	if A occurs then B cannot eventually occur after A	$\Box(A \rightarrow \neg(\Diamond B))$	
not chain succession(A,B)	if A occurs then B cannot occur in the next position after A	$\Box(A \rightarrow \bigcirc(\neg B))$	

App?

- Let's have a look!