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# Implementing DL Systems

# Naive Implementations

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  - Careful **choice of algorithm**
  - Highly **optimised implementation**

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  - **BUT** even simple domain encoding is **disastrous** with large numbers of roles

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- ☞ Computing **subsumption** between concepts
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  - Recent DL research has addressed this problem (with considerable success)

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- Integral part of implementation
- But often generally applicable to search based algorithms

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  - Structural analysis can discover “obvious” subsumption

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$\{\text{HappyFather}, \neg\text{HappyFather}\} \longrightarrow \text{clash}$

$\{\forall\text{has-child}.\text{Doctor} \sqcup \text{Lawyer}, \exists\text{has-child}.\text{Doctor} \sqcap \neg\text{Lawyer}\} \longrightarrow \text{search}$

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    - Only add definitions **after** other local (propositional) expansion
    - Only add definitions one step at a time



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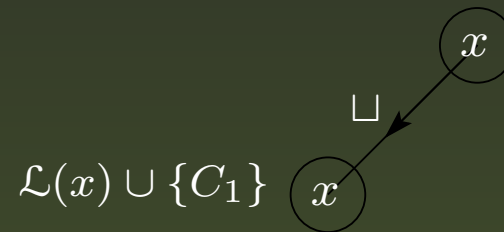
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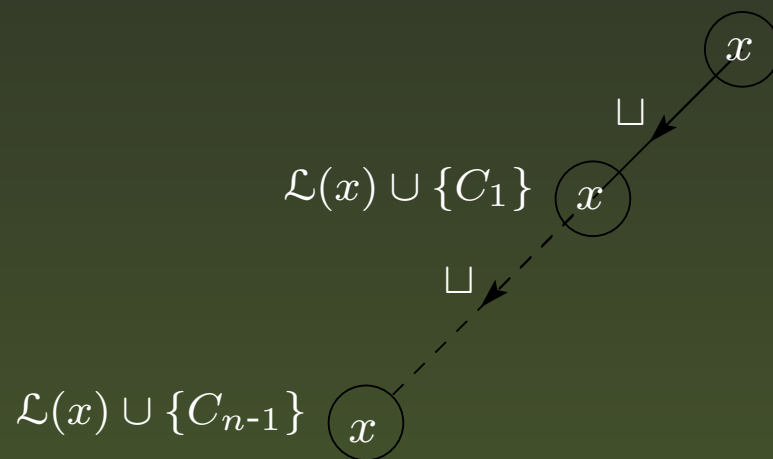
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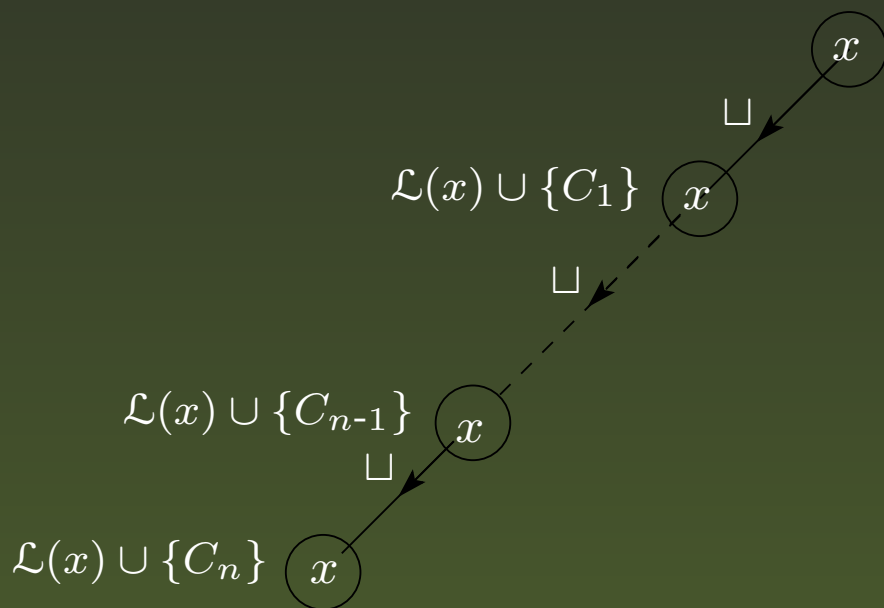
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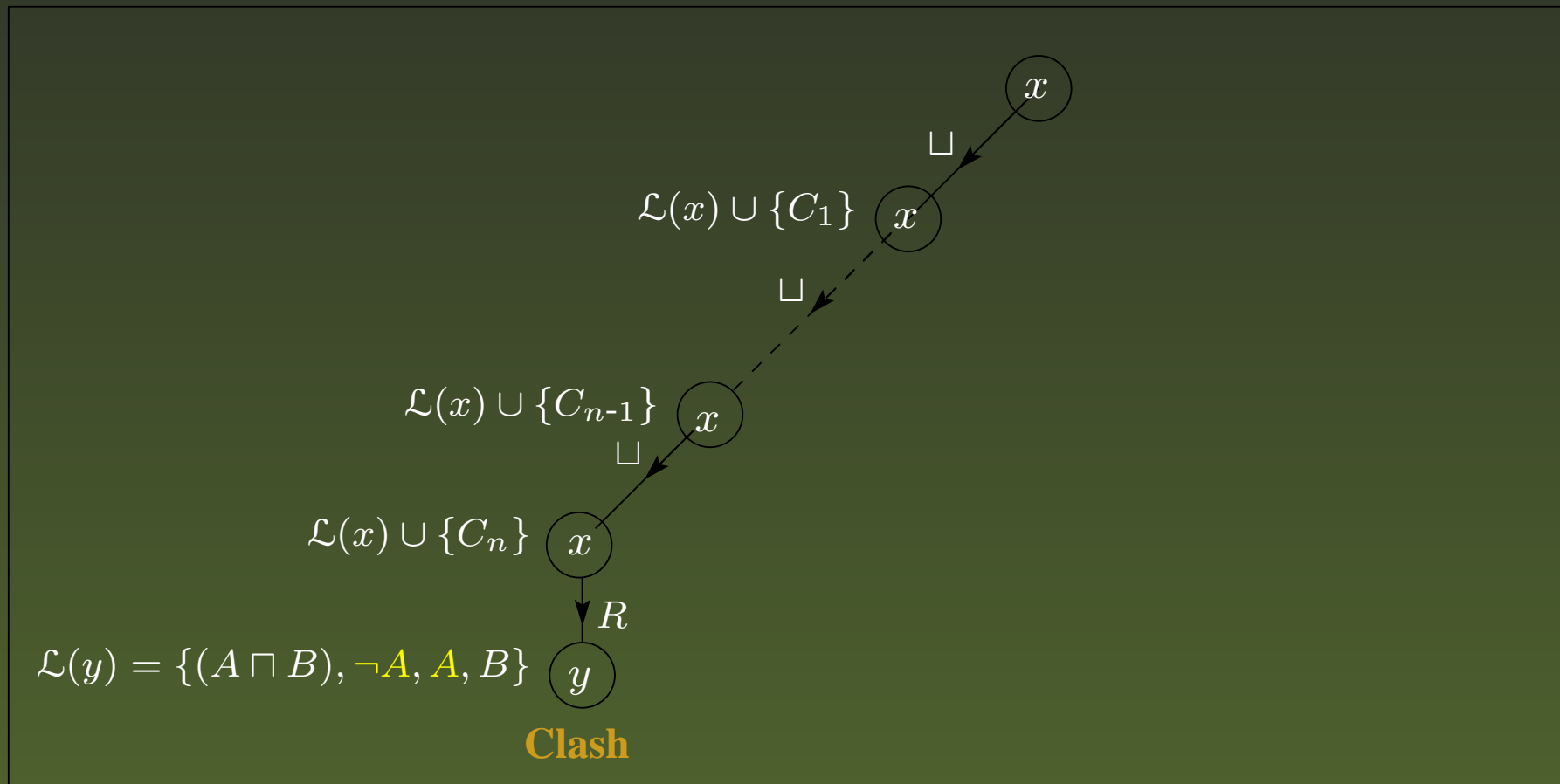
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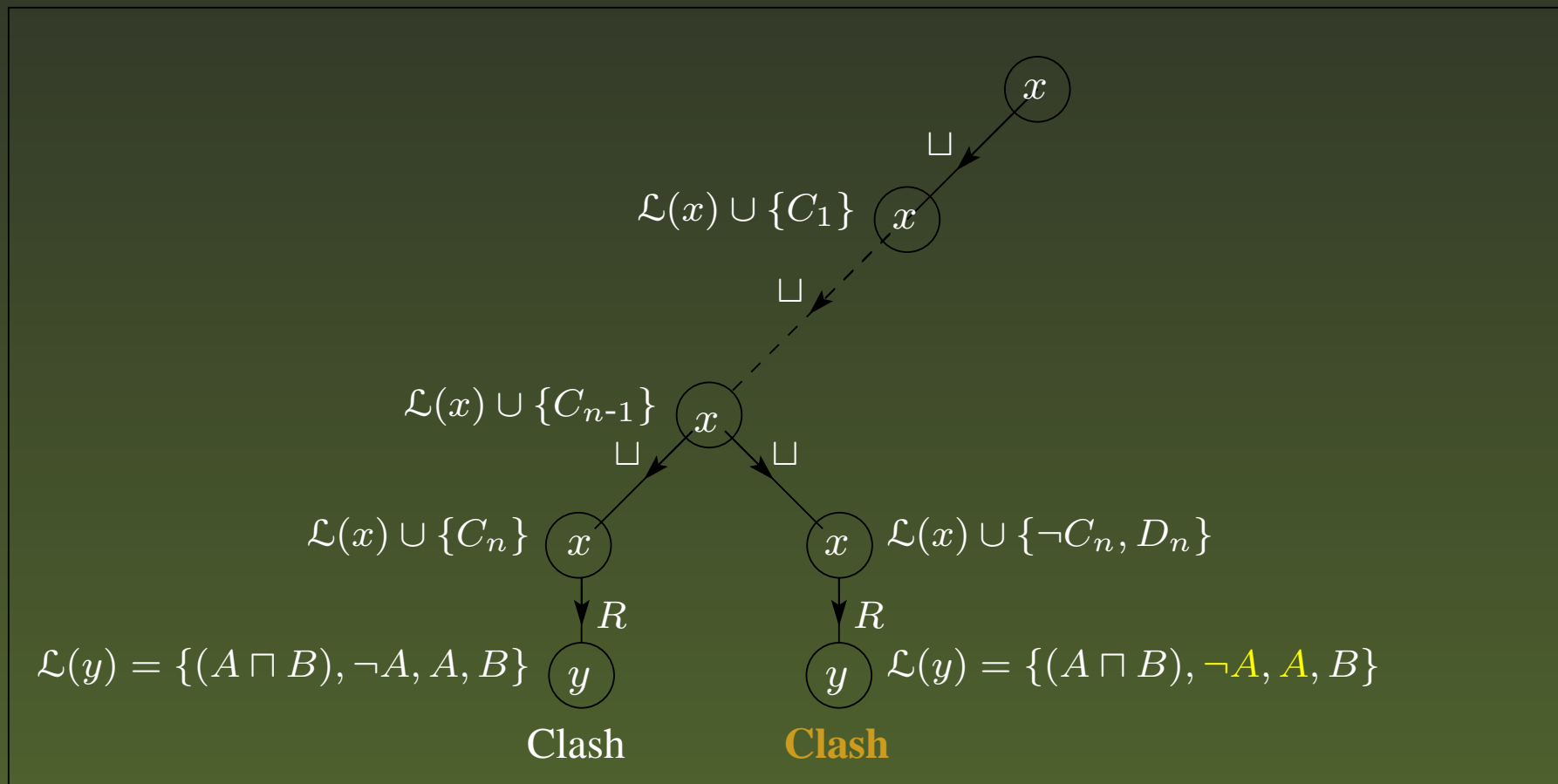
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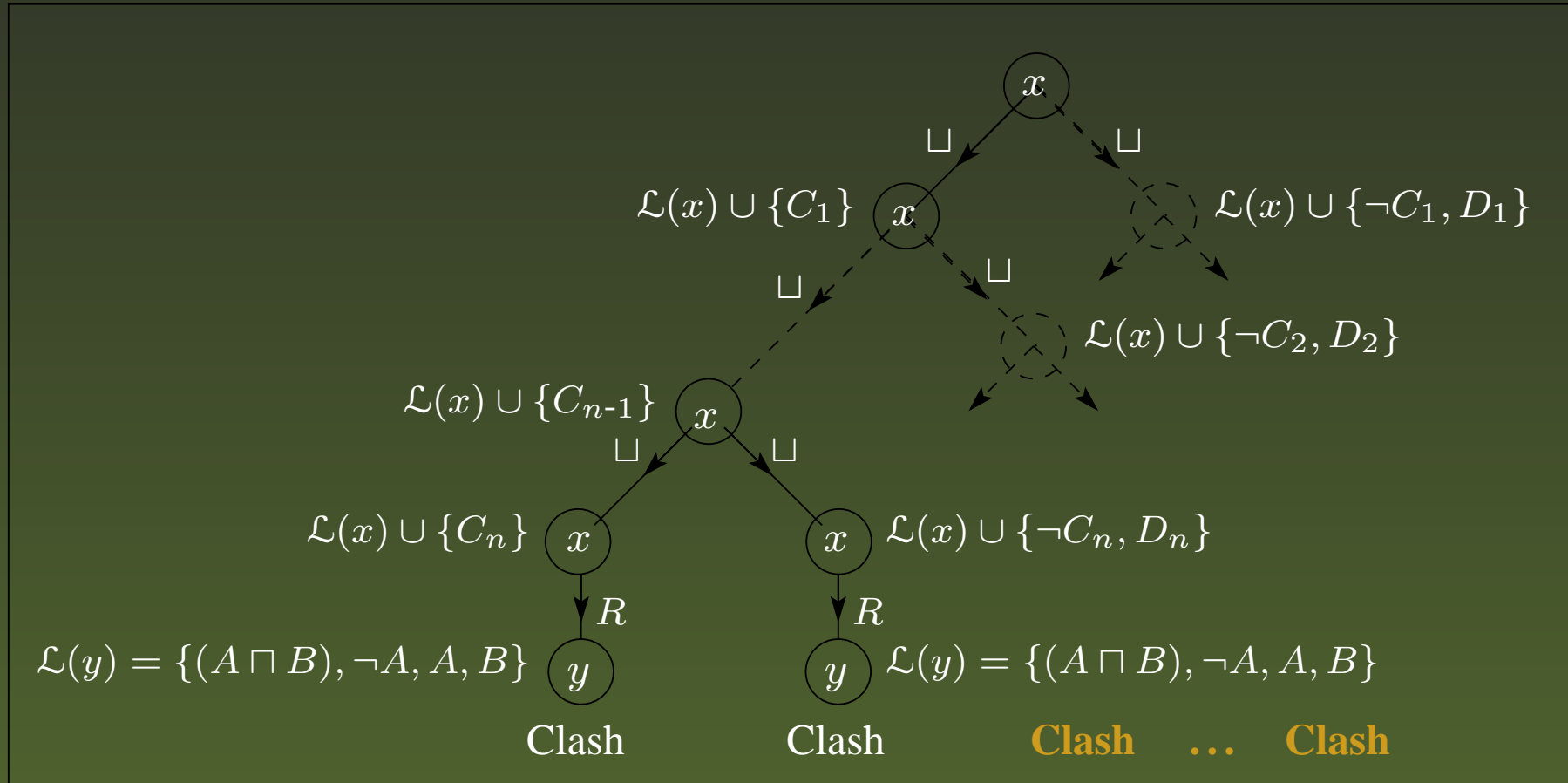
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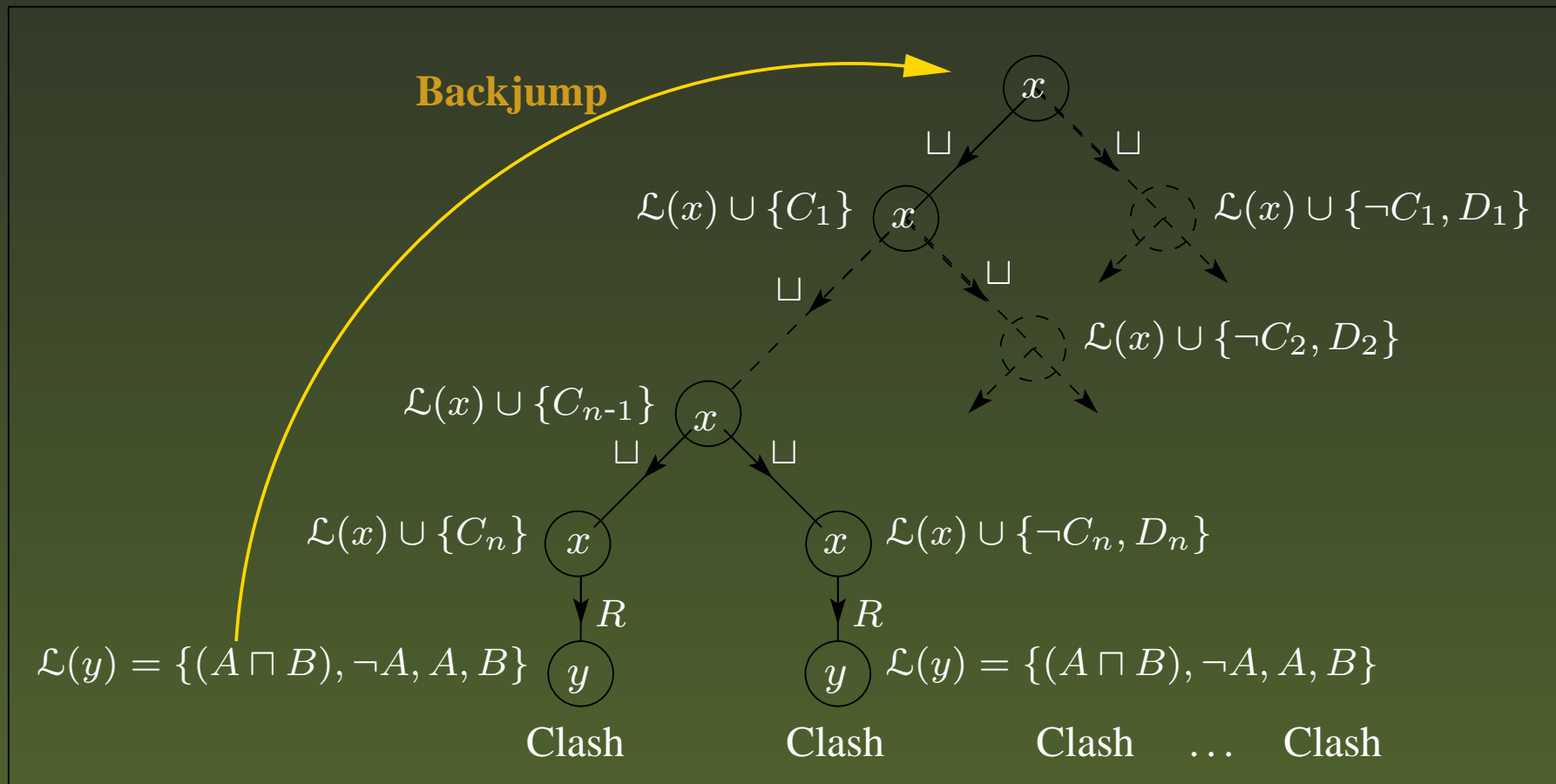
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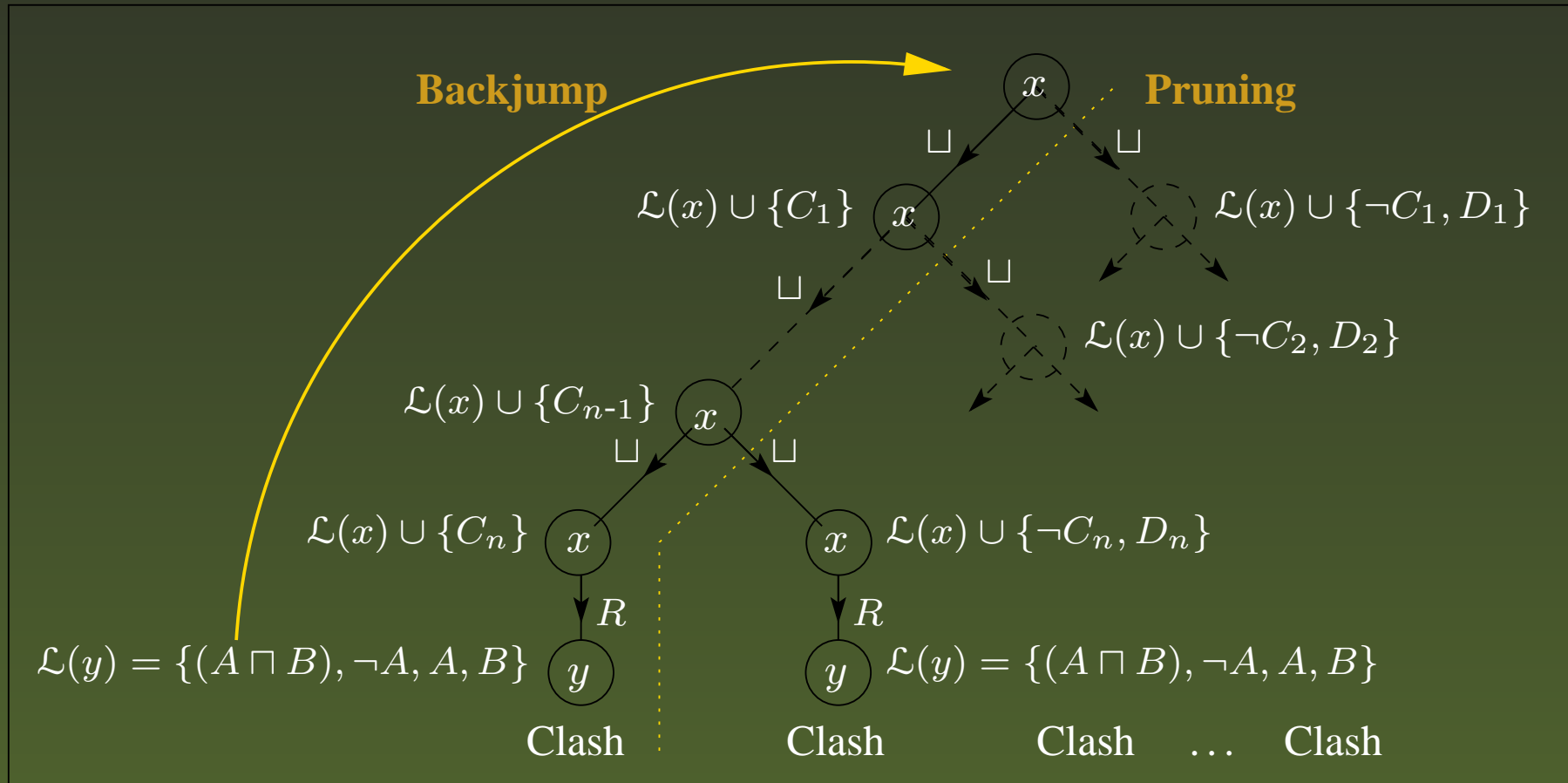
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