Tabled Resolution

CSE 505 – Computing with Logic

Stony Brook University

http://www.cs.stonybrook.edu/~cse505

What is Tabled Resolution?

- Memoize results to avoid repeated subcomputations.
  - Termination: Avoid performing sub-computations that repeat infinitely often.
    - Complete for datalog programs
  - Efficiency: Dynamically share common subexpressions.

Tabled Resolution

```
reach(X,Y) :- edge(X,Y).
reach(X,Y) :- reach(X,Z), edge(Z,Y).
edge(a,a).
edge(a,b).
edge(b,c).
:- table(reach/2).
%:- auto_table.
```

- **Calls**

```
reach(a,V)
```

Tabled Resolution

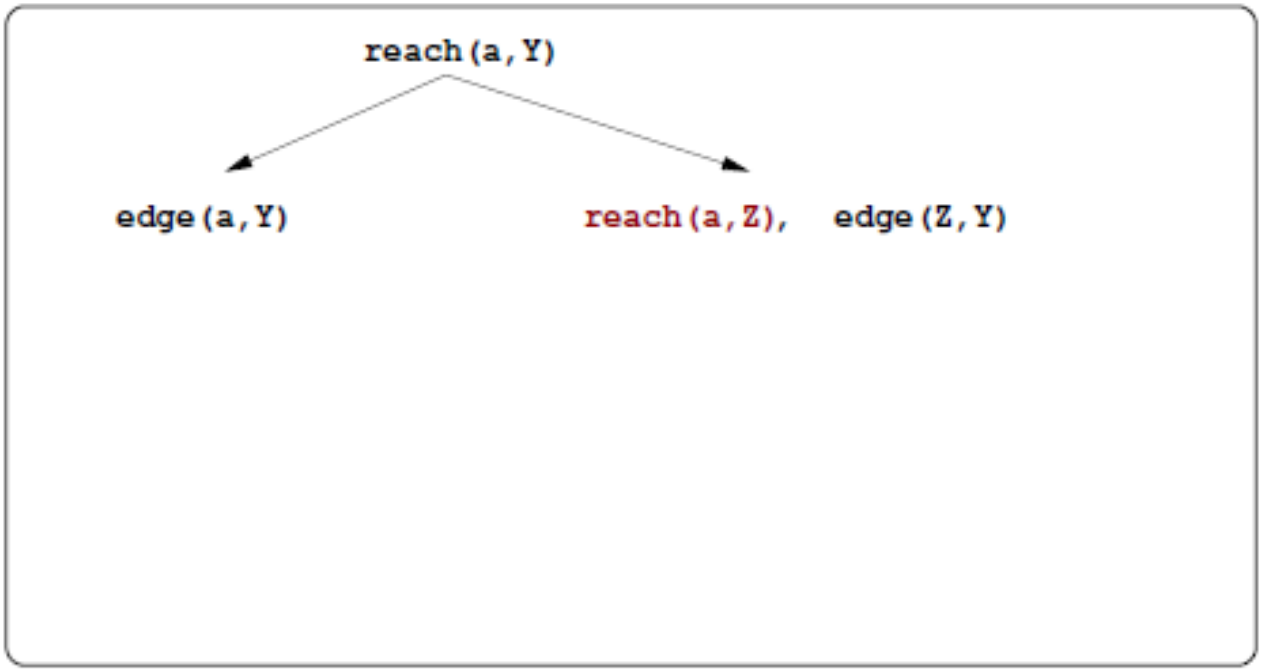
reach(X,Y) :– edge(X,Y).

reach(X,Y) :– reach(X,Z), edge(Z,Y).

edge(a,a).

edge(a,b).

edge(b,c).



- **Calls**

reach(a,V) **Answers**

Tabled Resolution

reach(X,Y) :– edge(X,Y).

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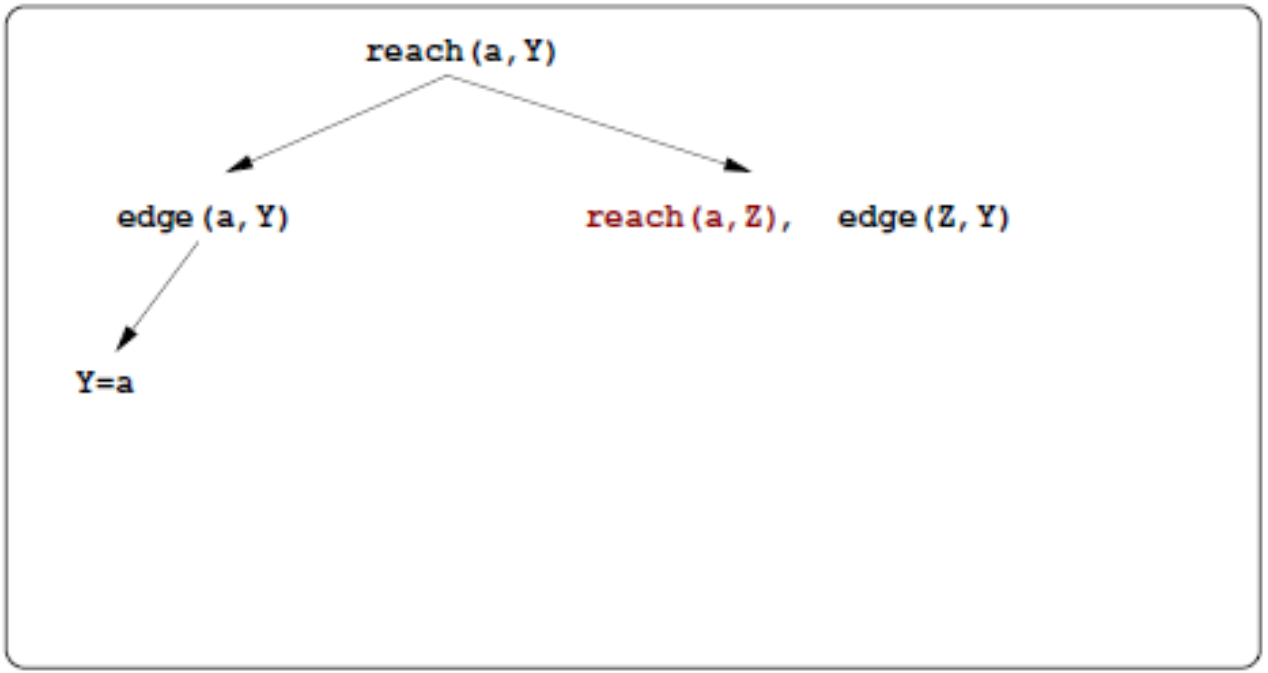

- **Calls**

reach(a,V) **Answers**

V = a

Tabled Resolution

reach(X,Y) :– edge(X,Y).

reach(X,Y) :– reach(X,Z), edge(Z,Y).

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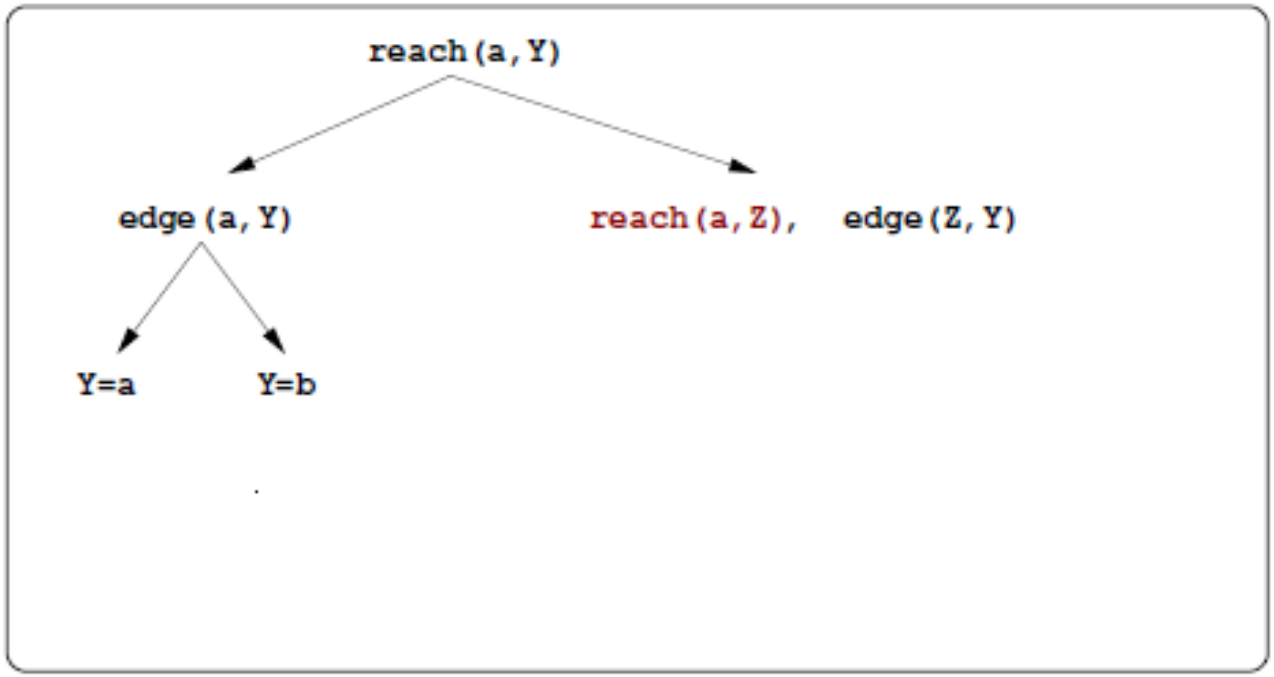
edge(b,c).



- **Calls**

reach(a,V) **Answers**

V = a

V = b

Tabled Resolution

reach(X,Y) :– edge(X,Y).

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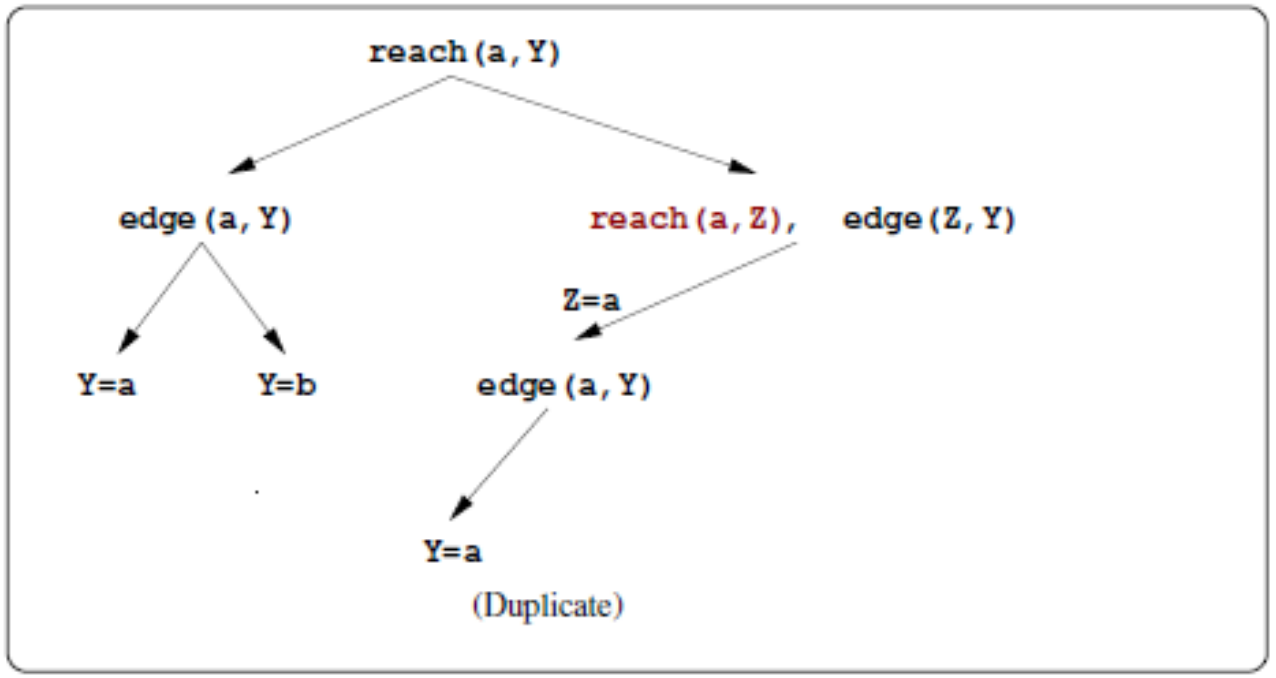

- **Calls**

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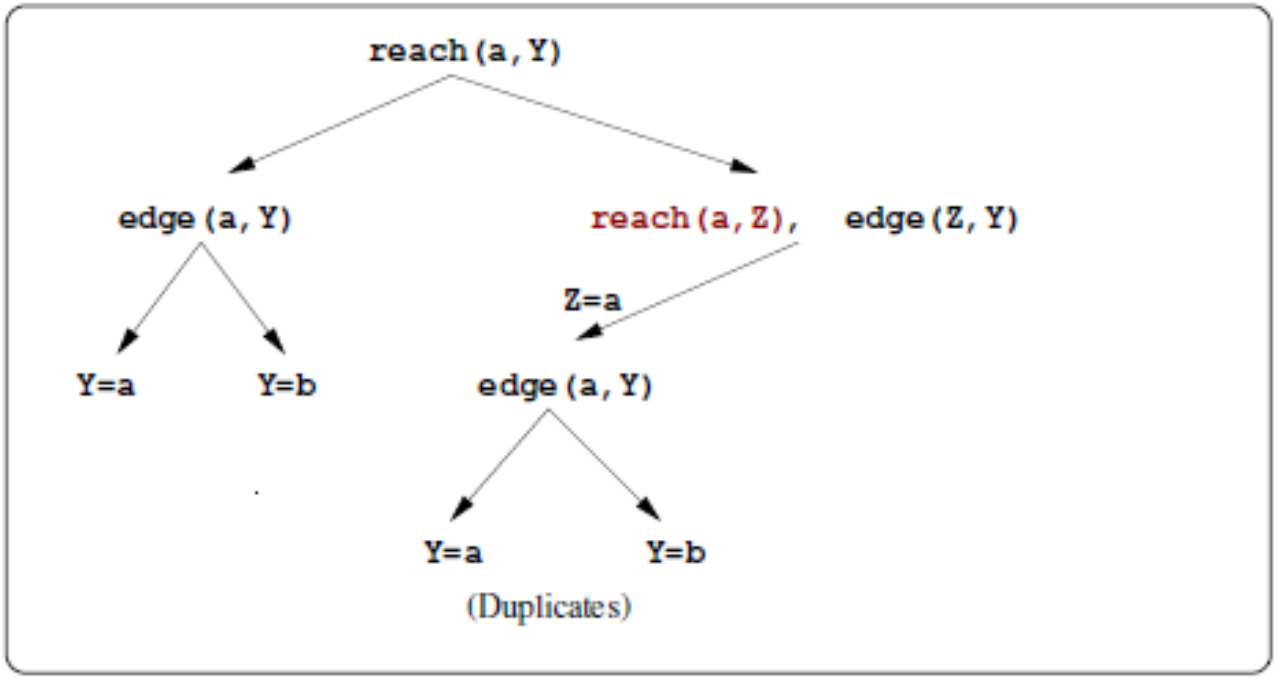

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reach(a,V) **Answers**

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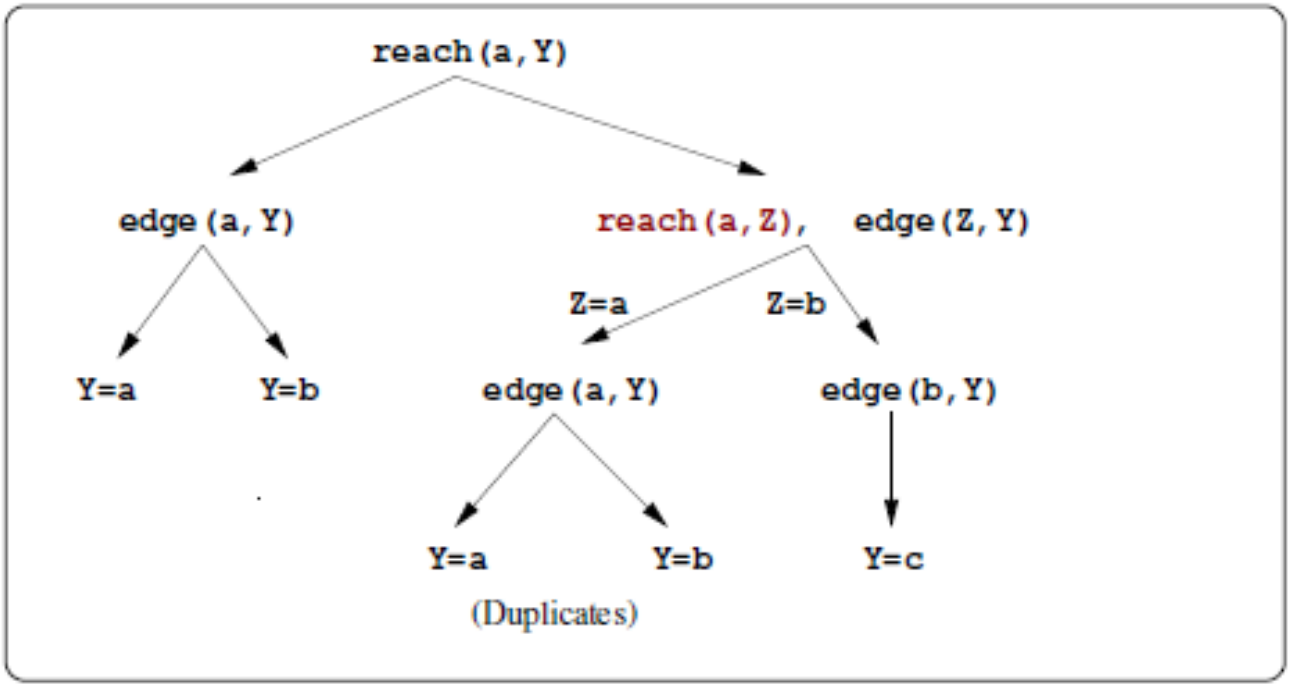

- **Calls**

reach(a,V) **Answers**

V = a

V = b

V = c

Tabled Resolution

reach(X,Y) :– edge(X,Y).

reach(X,Y) :– reach(X,Z), edge(Z,Y).

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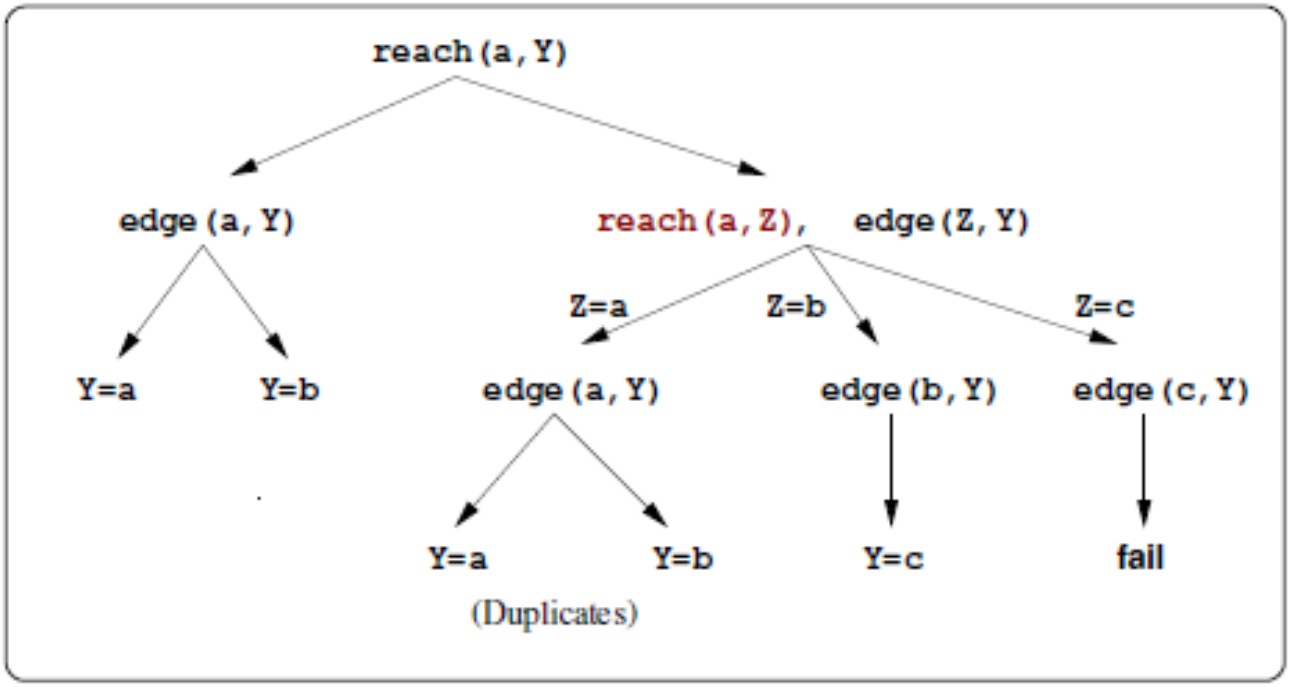

- **Calls**

reach(a,V) **Answers**

V = a

V = b

V = c

Answer completion!