Logic Programming in Prolog

- **Search Trees**
  - voter
  - farm buildings
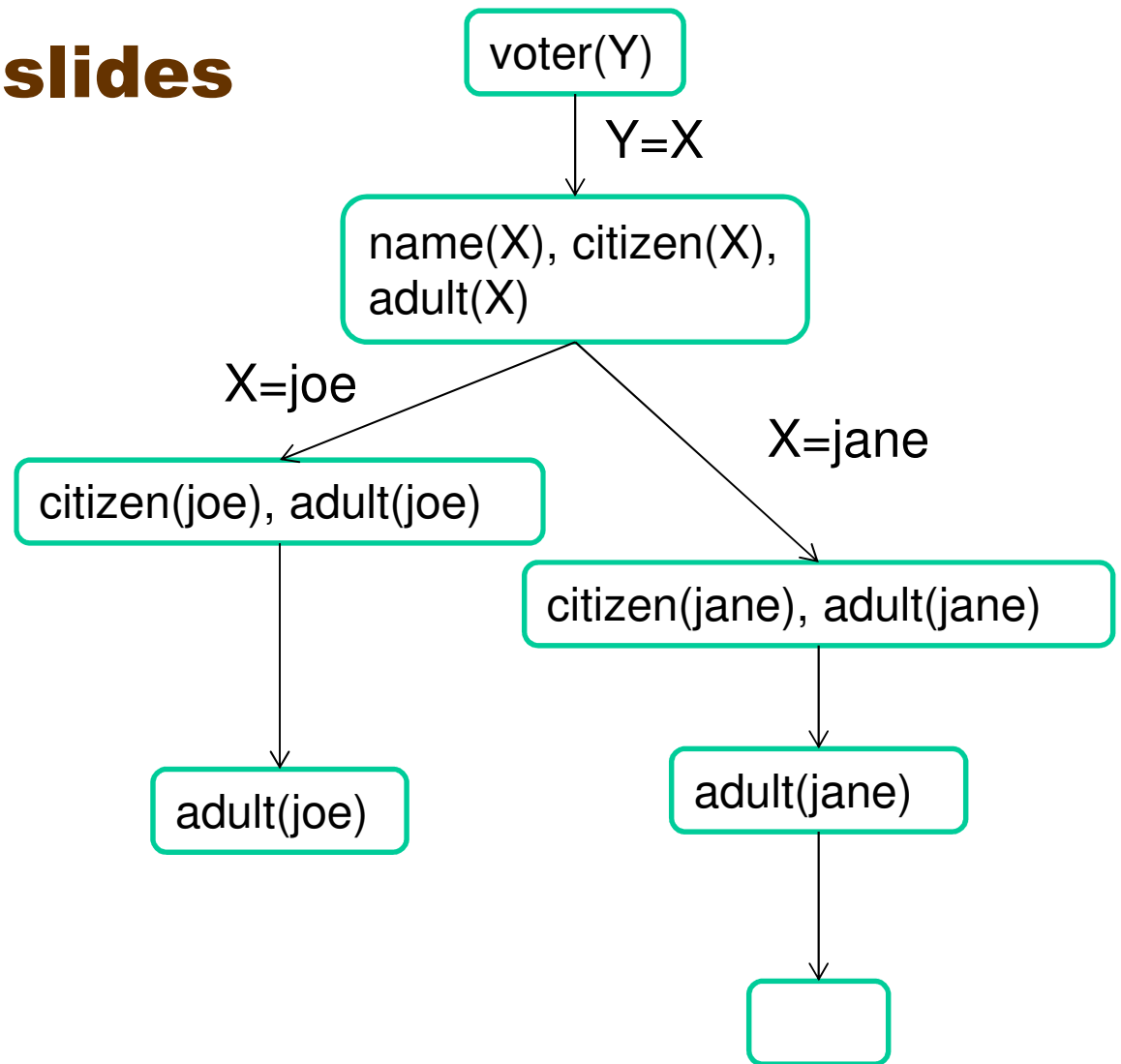
- ***Remark***
  - I use _ to distinguish free variables: X, _X, __X, ___X etc.
  - it may be easier to number: X, X_1, X_2, X_3 etc.

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Example from slides

```
name(joe).
name(jane).
citizen(jane).
citizen(joe).
adult(jane).
voter(X):-
      name(X),
      citizen(X),
      adult(X).

?- voter(Y).
```

voter(Y)

Y=X

name(X), citizen(X), adult(X)

X=joe

citizen(joe), adult(joe)

X=jane

citizen(jane), adult(jane)

adult(joe)

adult(jane)

Example discussed on the board

Building categories:

```
parent(building,farmbuilding).
parent(farmbuilding,barn).
parent(farmbuilding,silo).
parent(farmbuilding,house).
parent(barn,horsebarn).
parent(barn,cowbarn).
typeof(X,Y):- parent(Z,X),typeof(Z,Y).
typeof(X,Y):- parent(Y,X).

?- typeof(cowbarn,A).
```

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typeof(cowbarn, A)

X=cowbarn, Y=A _____X=cowbarn, _____Y = A

parent(Z,cowbarn),typeof(Z,A)   parent(A, cowbarn)

Z=barn   A=barn

typeof(barn,A)

_X=barn, _Y = A   _____X=barn, _____Y = A

parent(_Z,barn),typeof(_Z,A)   parent(A, barn)

_Z=farmbuilding   A = farmbuilding

typeof(farmbuilding,A)

__X=farmbuidling, __Y = A   ____X=farmbuilding, _____Y = A

parent(__Z,farmbuilding),typeof(__Z,A)   parent(A, farmbuilding)

__Z=building   A = building

typeof(building,A)

___X=building, __Y = A   _____X=building, ___Y = A

parent(___Z,building),typeof(___Z,A)   parent(A, building)