



# COMP4418: Knowledge Representation and Reasoning

Prolog IV — Controlling Execution

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# The Cut Operator (!)

- Sometimes we need a way of preventing Prolog finding all solutions
- The *cut* operator is a built-in predicate that prevents backtracking
- It violates the declarative reading of a Prolog program
- Use it VERY sparingly!!

# Backtracking

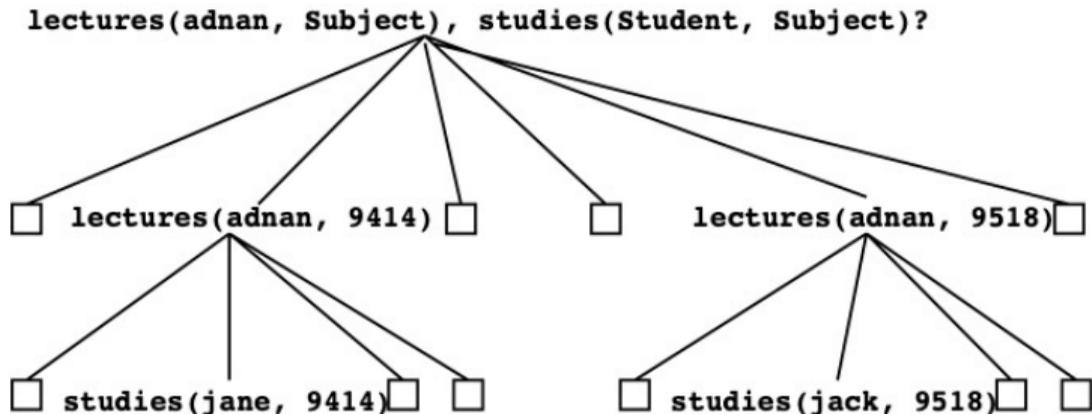
lectures(adnan, Subject), studies(Student, Subject)?

Subject = 4418

Student = jane

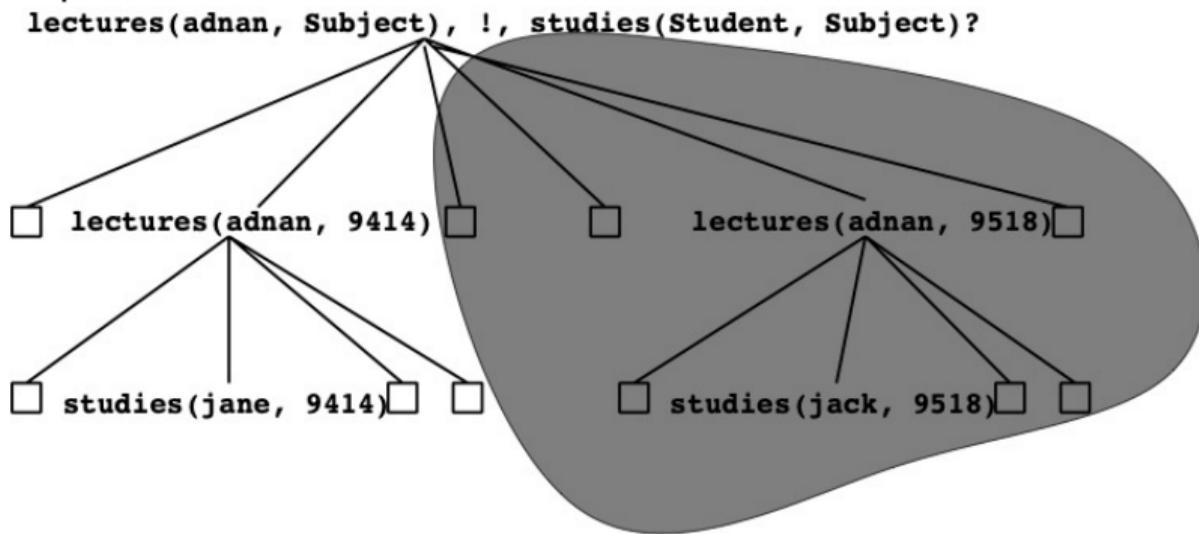
Subject = 9518

Student = jack



# Cut Prunes the Search

- Prevents backtracking to goals left of the cut by throwing away remaining choice points



# Example

```
overdue(Today, Title, CatNo, MemFamily) :-  
    loan(CatNo, MemNo, _, DueDate),  
    later(Today, DueDate), !,  
    book(CatNo, Title, _),  
    member(MemNo, name(MemFamily, _), _).
```

# Controlling Execution

- Some methods for controlling execution in Prolog:
  - Ordering of clauses (facts and rules)
  - Ordering of subgoals within a rule
  - Cut (!) operator
- Use each with care