Fsm exercise: solution

```
accept(_,Final,Q,[]) :- member(Q,Final).



member(X,[X|_]).
member(X,[_|L]):- member(X,L).
```

Fsm exercise: solution

```
accept(_,Final,Q,[]) :- member(Q,Final).

accept(Trans,Final,Q,[H|T]) :-
                        member([Q,H,Qn],Trans),
                        accept(Trans,Final,Qn,T).
member(X,[X|_]).
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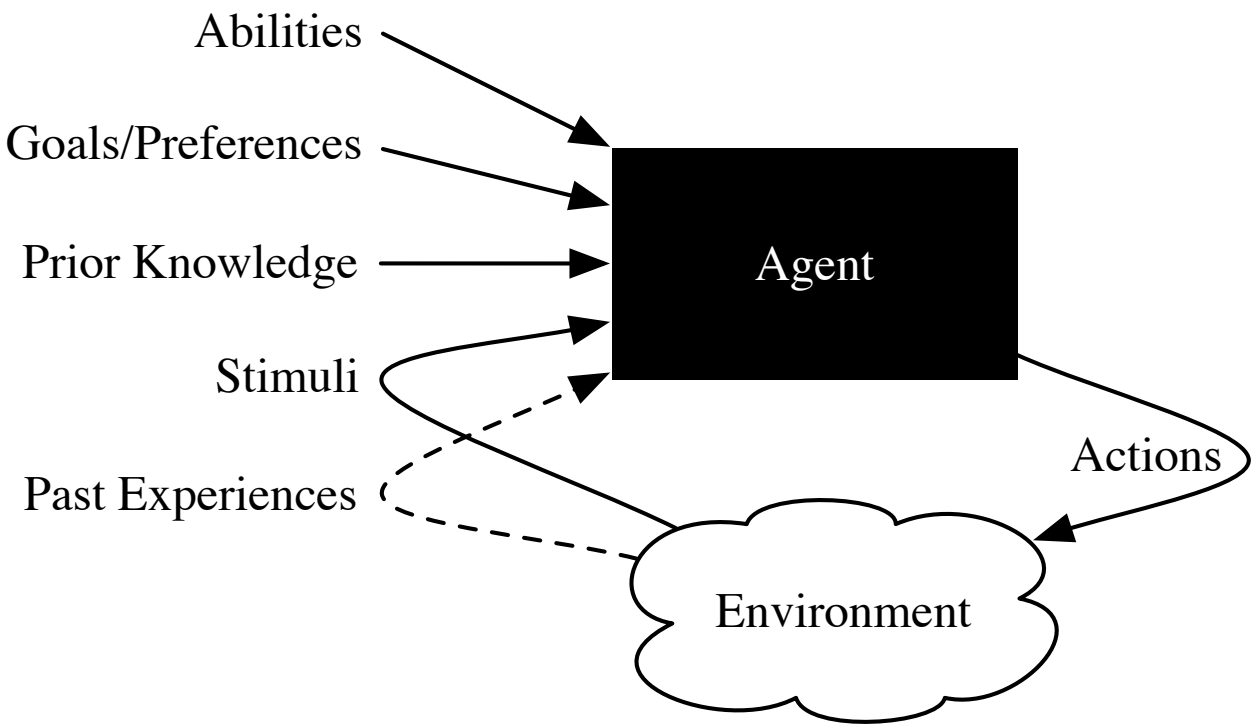

Search (in Prolog)

Given `goal`, `arc`

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search(Node) :- goal(Node).

search(Node) :- arc(Node,Next), search(Next).
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`Node as [Q,UnseenString]`

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search(Q,S,F,T) :- arc([Q,S],[Qn,Sn],T),
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```

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accept(T,F,Q,S) :- search(Q,S,F,T).
```

Prolog as search

```
i :- p,q.

i :- r.

p.

r.

_____________

| ?- i.
```

Prolog as search

```
i :- p,q.                          [i]

i :- r.

p.

r.

_____________

| ?- i.                    StartNode = [i]
```

Prolog as search

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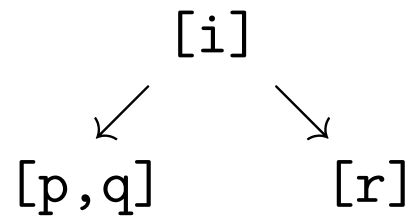
```

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Prolog as search

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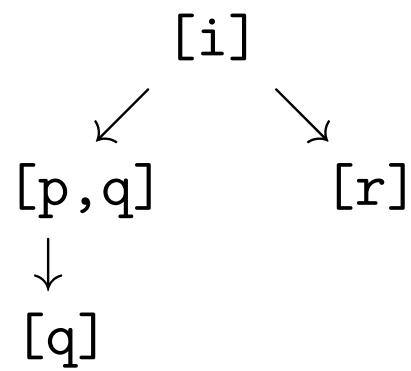

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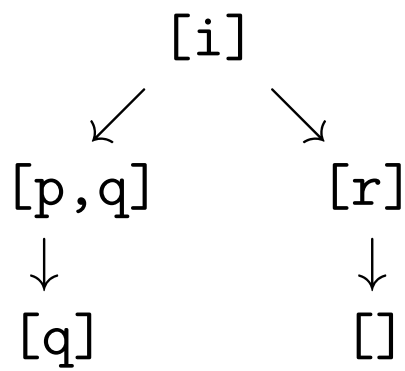


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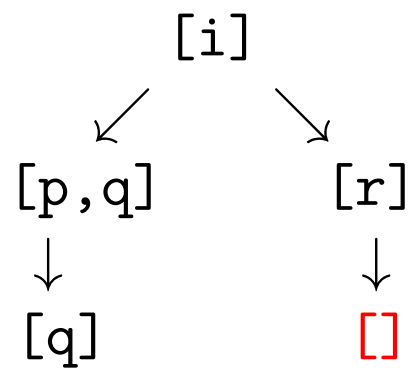

```
| ?- i.

yes
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StartNode = [i]

goal([]).
```

Prolog as search

```
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p.

r.
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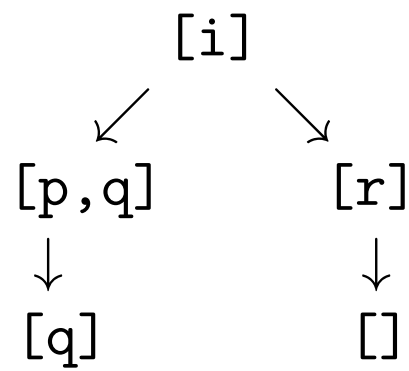

```
| ?- i.

yes
```

```
StartNode = [i]

goal([]).
```

```
prove(Node) :- goal(Node) .
prove(Node) :- arc(Node,Next), prove(Next).
```

KB and arc

```
i :- p,q.

i :- r.

p.

r.
```

KB and arc

```
i :- p,q.
```

```
[i,p,q]
```

```
i :- r.
```

```
[i,r]
```

```
p.
```

```
[p]
```

```
r.
```

```
[r]
```

KB and arc

```
i :- p,q.
```

```
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```
[i,r]
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```
p.
```

```
[p]
```

```
r.
```

```
[r]
```

```
KB = [[i,p,q],[i,r],[p],[r]]
```

KB and arc

```
i :- p,q.                    [i,p,q]

i :- r.                       [i,r]

p.                             [p]

r.                             [r]

                    KB = [[i,p,q],[i,r],[p],[r]]

arc(Node1,Node2,KB) :- ??
```

KB and arc

```
i :- p,q.                    [i,p,q]

i :- r.                       [i,r]

p.                             [p]

r.                             [r]

                  KB = [[i,p,q],[i,r],[p],[r]]
```

```
arc([H|T],N,KB) :- member([H|B],KB), append(B,T,N).
```

KB and arc

```
i :- p,q.                    [i,p,q]

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p.                             [p]

r.                             [r]

                  KB = [[i,p,q],[i,r],[p],[r]]
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```
arc([H|T],N,KB) :- member([H|B],KB), append(B,T,N).

prove(Node,KB) :- goal(Node) ;
                  arc(Node,Next,KB), prove(Next,KB).
```

Non-termination

```
i :- p,q.                                   [i]

i :- r.

p :- i.

r.
```

```
| ?- i.
```

```
prove([],_).

prove([H|T],KB) :- member([H|B],KB), append(B,T,Next),
                   prove(Next,KB).
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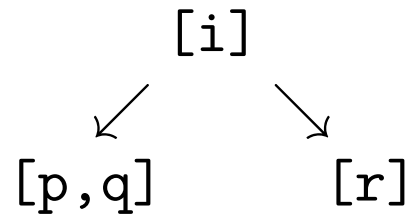


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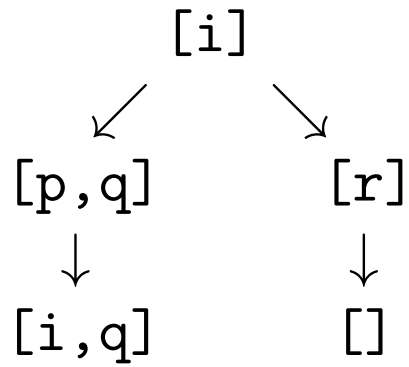


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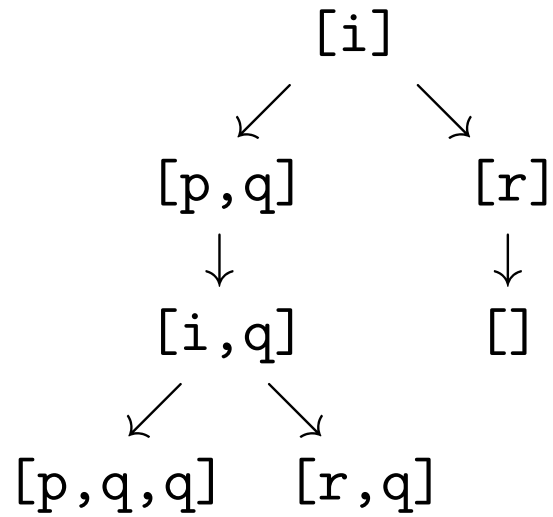


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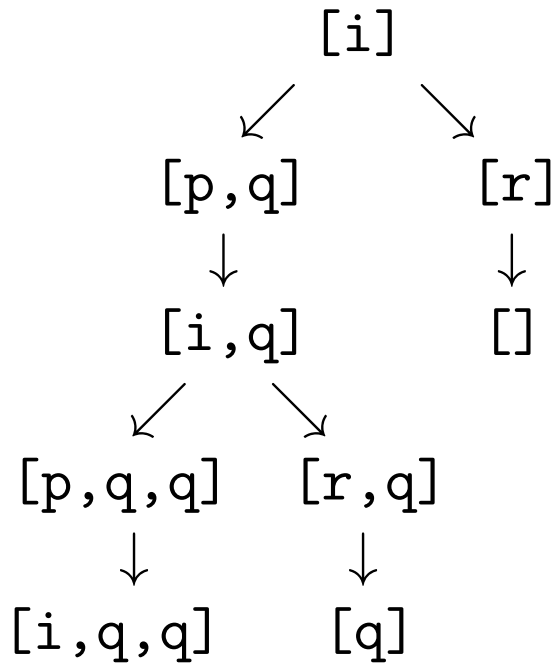


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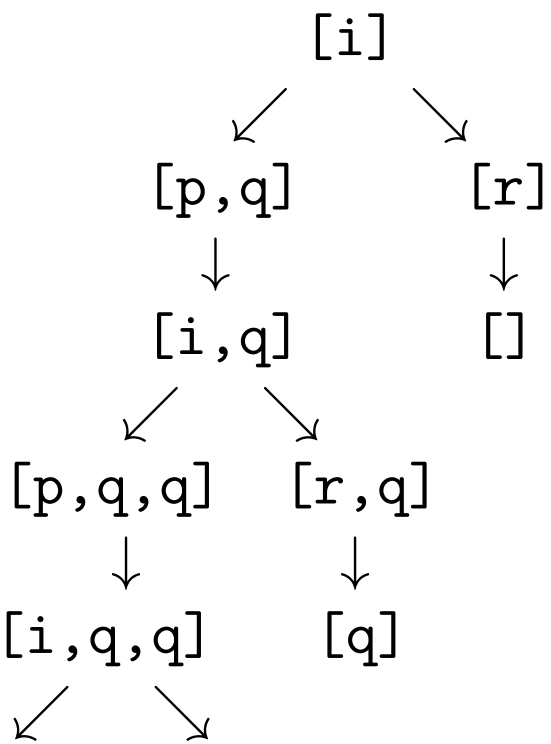


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