

Programming Languages and Programming Methodologies (HB44)

Some notes on the use of `ifthenelse`.

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Definition of `max/3`

- `max(X,Y,Max)` is true iff `Max` is the maximum of the numbers `X` and `Y`
- If `X` is greater or equal to `Y` then `X` is the maximum
If `X` is less than `Y` then `Y` is the maximum
- `max(X,Y,Max) :- X >= Y, Max = X.`
`max(X,Y,Max) :- X < Y, Max = Y.`
/* or the following version with a red cut /
`max(X,Y,Max) :- X >= Y, !, Max = X.`
`max(X,Y,Max) :- Max = Y.`
/* Note `Max = X` for so-called steadfast code */

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- `max(X,Y,Max) :- X >= Y, !, Max = X.`
`max(X,Y,Max) :- Max = Y.`
/* Note `Max = X` after the `!` for so-called steadfast code
Otherwise ?- `max(3,1,1)`. Succeeds due to second clause*/

- `max(X,Y,Max) :-`
 `(X >= Y ->` `% if X >= Y`
 `Max = X` `% then Max = X`
 `;`
 `Max = Y` `% else Max = Y`
 `).`

- `!:(' >'(X >= Y, Max = X) , Max = Y)` `% predefined operators`

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- `max(X,Y,Max) :-`
 `(X >= Y ->` `% if X >= Y`
 `Max = X` `% then Max = X`
 `;`
 `Max = Y` `% else Max = Y`
 `).`
- `(If -> Then ; Else)` is true iff
 (1) `If` and `Then` are true or
 (2) `If` is false and `Else` is true
- `If -> Then; Else :- If, !, Then.` `% If succeeds only once`
`If -> Then; Else :- Else.`
 `% the scope of any cut in Then and Else is beyond the ifthenelse`
 `% scope of cut in If is limited to If`

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Some More Examples

```
p(1).
p(2).
H(X) :-
    ( p(X) ->
      write(then(X)), nl
    ;
      write(else(X)),nl
    ).
?- h(K).
  then(1)
  K = 1
  Yes
?- h(8).
  else(8)
  Yes
```

Some Examples

```
p(1).                r(2).
p(2).
H(X) :-
    ( p(X) ->
      write(then(X)), nl, r(X)
    ;
      write(else(X)),nl
    ).
?- h(K).
  then(1)
  No
?- h(8).
  else(8)
  Yes
```