

# Quick Sort

- (1) `quicksort([], []).`
- (2) `quicksort([X|Unsorted], Sorted) :-  
 partition(X,Unsorted,Small,Big),  
 quicksort(Small,Sorted1),  
 quicksort(Big,Sorted2),  
 append(Sorted1, [X|Sorted2], Sorted).`
- (3) `partition(X,[], [],[]).`
- (4) `partition(X,[Y|Unsorted], [Y|Small],Big) :-  
 Y<X, partition(X,Unsorted,Small,Big).`
- (5) `partition(X,[Y|Unsorted], Small,[Y|Big]) :-  
 Y>X, partition(X,Unsorted,Small,Big).`

## More Efficient Quick Sort Using Difference Lists

- (1) `quicksort(Unsorted,Sorted) :-  
      quicksort2(Unsorted, Sorted-[]).`
- (2) `quicksort2([],E-E).`
- (3) `quicksort2([X|Unsorted], Sorted-E) :-  
      partition(X,Unsorted,Small,Big),  
      quicksort2(Small,Sorted-[X|E1]),  
      quicksort2(Big,E1-E).`