```
count_pairs_wf  THM

⊢  ∀T:Type, L:T List, P:(T→T→𝔹). count(x < y in L | P(x,y)) ∈ ℕ
| by Unfold ‘count_pairs‘ 0 THEN Auto THEN Try (Complete Auto’)
|
.....set predicate .....
1. T : Type
2. L : T List
3. P : T→T→𝔹
⊢  0≤sum(if (i<₂j)∧₂P(L[i],L[j])→ 1 else 0 fi | i < ||L||; j < ||L||)
| by Unfold ‘double_sum‘ 0 THEN BackThruLemma ‘non_neg_sum‘ THEN Auto’
|
THEN BackThruLemma ‘non_neg_sum‘ THEN Auto’
|
1. T : Type
2. L : T List
3. P : T→T→𝔹
4. i : ℕ||L||
5. j : ℕ||L||
⊢  0≤if (i<₂j)∧₂P(L[i],L[j])→ 1 else 0 fi
  by GenConcl ((i<₂j)∧₂P(L[i],L[j])) = b THEN Auto’

     THEN SplitOnConclITE THEN Auto’
END
```