```
array-count_wf  THM

⊢  ∀T:Type, P:(T→𝔹), a:array(T). array-count(v.P(v);a) ∈ ℕ(|a|+1)
| by Unfold ‘array-count‘ 0
|
|\
| 1. T : Type
| 2. P : T→𝔹
| 3. a : array(T)
| ⊢  0≤sum(if P(a[i])→ 1 else 0 fi | i < |a|)
|   by (BackThru
|       Thm* ∀n:ℕ, f:(ℕn→ℤ). (∀x:ℕn. 0≤f(x)) ⇒ 0≤sum(f(x) | x < n)
|       {non_neg_sum})
|      THEN
|      SplitOnConclITE
|
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. 1. T : Type
. 2. P : T→𝔹
. 3. a : array(T)
. ⊢  sum(if P(a[i])→ 1 else 0 fi | i < |a|)<|a|+1
.   by (Inst
.       Thm* ∀k,b:ℕ, f:(ℕk→ℤ).
.             (∀x:ℕk. f(x)≤b) ⇒ sum(f(x) | x < k)≤b·k
.       {sum_bound}
.       [|a|;1;λi.if P(a[i])→ 1 else 0 fi])
.      THEN
.      (All ReduceSOAps)
.      THEN
.      SplitOnConclITE
END
```