

Example: Quicksort

```
{- lo >= 0 && hi >= 0 -}  
{- lo < hi -}  
{- length(A) > 0 -}  
algorithm quicksort(A:List Int, lo:Int, hi:Int) {  
  if (lo >= 0 && hi >= 0 && lo < hi && length(A) > 0) {  
    p := partition(A, lo, hi)  
    quicksort(A, lo, p)  
    quicksort(A, p + 1, hi)  
  } else {  
    return ERROR  
  }  
}  
{- isSorted(A) -}
```

```
algorithm partition(A:List Int, lo:Int, hi:Int) {  
  mid = (lo + hi) / 2  
  pivot := A[mid]  
  ...  
}
```

Machine-Checked Mathematics