

P-SCAN-3( $x, n$ )

```
1 let  $y[1:n]$  and  $t[1:n]$  be new arrays
2  $y[1] = x[1]$ 
3 if  $n > 1$ 
4     P-SCAN-UP( $x, t, 2, n$ )
5     P-SCAN-DOWN( $x[1], x, t, y, 2, n$ )
6 return  $y$ 
```

P-SCAN-UP( $x, t, i, j$ )

```
1 if  $i == j$ 
2     return  $x[i]$ 
3 else
4      $k = \lfloor (i + j)/2 \rfloor$ 
5      $t[k] = \text{spawn}$  P-SCAN-UP( $x, t, i, k$ )
6      $right =$  P-SCAN-UP( $x, t, k + 1, j$ )
7     sync
8     return _____ // fill in the blank
```

P-SCAN-DOWN( $v, x, t, y, i, j$ )

```
1 if  $i == j$ 
2      $y[i] = v \otimes x[i]$ 
3 else
4      $k = \lfloor (i + j)/2 \rfloor$ 
5     spawn P-SCAN-DOWN(_____,  $x, t, y, i, k$ ) // fill in the blank
6     P-SCAN-DOWN(_____,  $x, t, y, k + 1, j$ ) // fill in the blank
7 sync
```