

# MATRIX-MULTIPLY-RECURSIVE( $A, B, C, n$ )

```
1  if  $n == 1$ 
2      // Base case.
3       $c_{11} = c_{11} + a_{11} \cdot b_{11}$ 
4      return
5  // Divide.
6  partition  $A, B$ , and  $C$  into  $n/2 \times n/2$  submatrices
       $A_{11}, A_{12}, A_{21}, A_{22}; B_{11}, B_{12}, B_{21}, B_{22};$ 
      and  $C_{11}, C_{12}, C_{21}, C_{22};$  respectively
7  // Conquer.
8  MATRIX-MULTIPLY-RECURSIVE( $A_{11}, B_{11}, C_{11}, n/2$ )
9  MATRIX-MULTIPLY-RECURSIVE( $A_{11}, B_{12}, C_{12}, n/2$ )
10 MATRIX-MULTIPLY-RECURSIVE( $A_{21}, B_{11}, C_{21}, n/2$ )
11 MATRIX-MULTIPLY-RECURSIVE( $A_{21}, B_{12}, C_{22}, n/2$ )
12 MATRIX-MULTIPLY-RECURSIVE( $A_{12}, B_{21}, C_{11}, n/2$ )
13 MATRIX-MULTIPLY-RECURSIVE( $A_{12}, B_{22}, C_{12}, n/2$ )
14 MATRIX-MULTIPLY-RECURSIVE( $A_{22}, B_{21}, C_{21}, n/2$ )
15 MATRIX-MULTIPLY-RECURSIVE( $A_{22}, B_{22}, C_{22}, n/2$ )
```