ESERCIZIO 23° - 1ª PARTE

$$x = x_0 \cdot 2^{m/2} + x_1$$

$$y = y_0 \cdot 2^{m/2} + y_1$$

$$x \cdot y = (x_0 \cdot 2^{m/2} + x_1)(y_0 \cdot 2^{m/2} + y_1) =$$

$$= x_0 y_0 2^m + x_0 y_1 2^{m/2} + x_1 y_0 2^{m/2} + x_1 y_1 =$$

$$= x_0 y_0 2^m + 2^{m/2}(x_0 y_1 + x_1 y_0) + x_1 y_1 =$$

$$x_0 y_0 + x_0 y_1 + x_1 y_0 + x_1 y_1 =$$

$$= x_0 (y_0 + y_1) + x_1 (y_0 + y_1) = (x_0 + x_1)(y_0 + y_1)$$

$$(x_0 + x_1)(y_0 + y_1) = x_0 y_0 + x_0 y_1 + x_1 y_0 + x_1 y_1$$

$$(x_0 + x_1)(y_0 + y_1) - x_0 y_0 - x_1 y_1 = x_0 y_1 + x_1 y_0$$

MULTIPLY (x, y)

$$x = x_0 + x_1$$

$$y = y_0 + y_1$$

$$a = \text{MULTIPLY}(x_0, y_0)$$

$$b = \text{MULTIPLY}(x_1, y_1)$$

$$e = \text{MULTIPLY}((x_0 + x_1), (y_0 + y_1))$$

$$\text{return } a \cdot 2^m + b + (e - a - b) \cdot 2^{m/2}$$