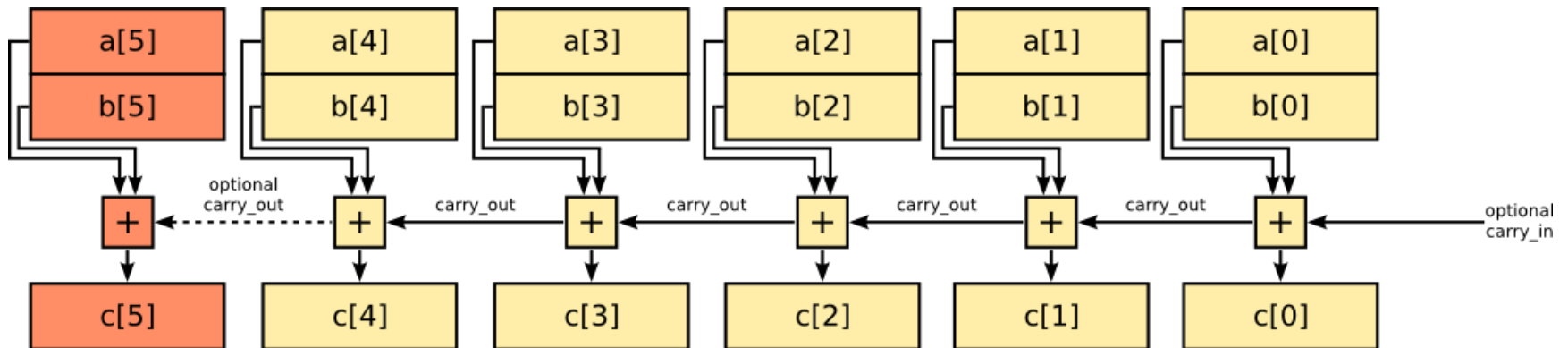
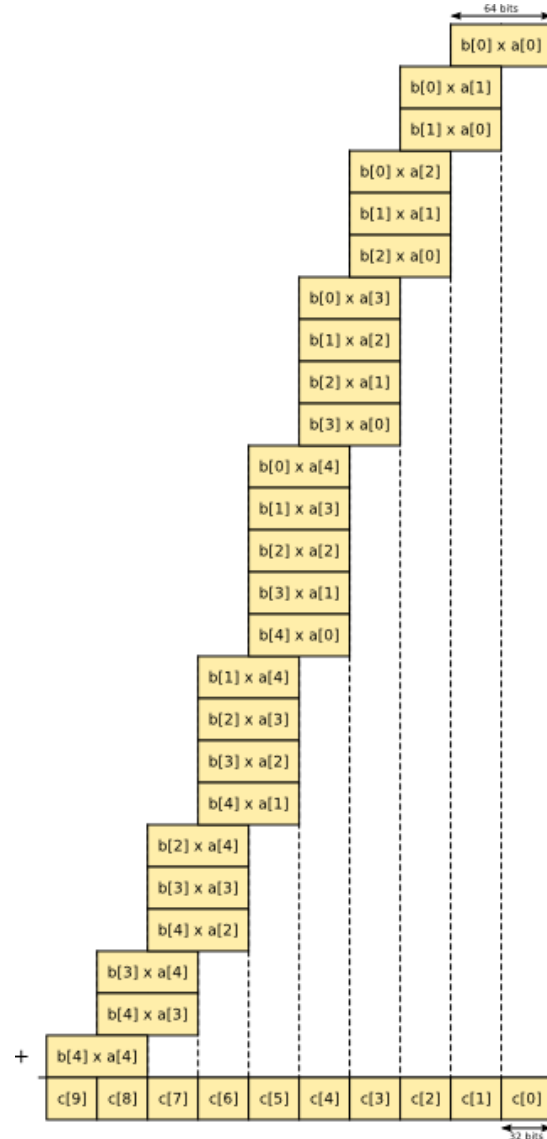
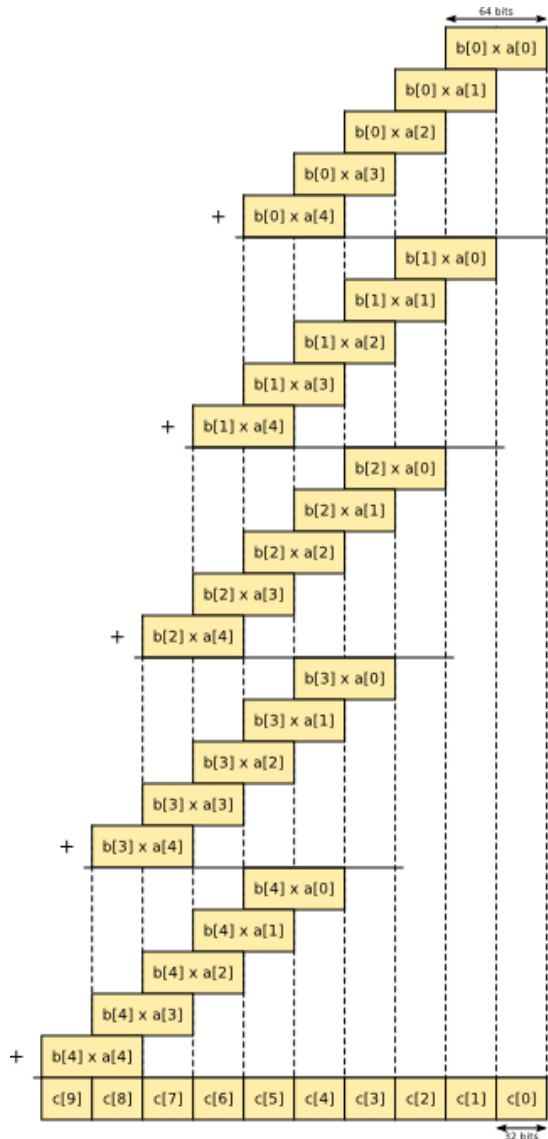


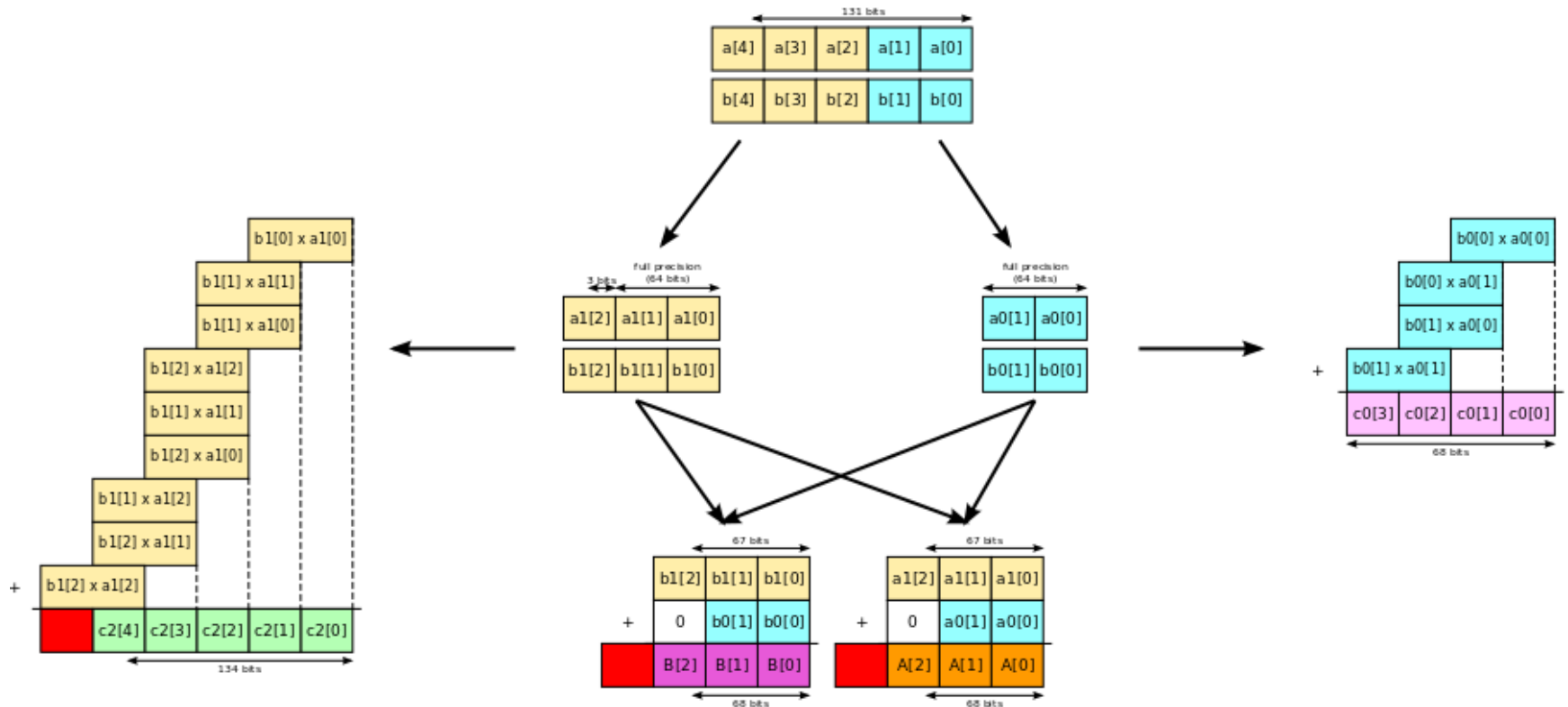
# Addition / Subtraction



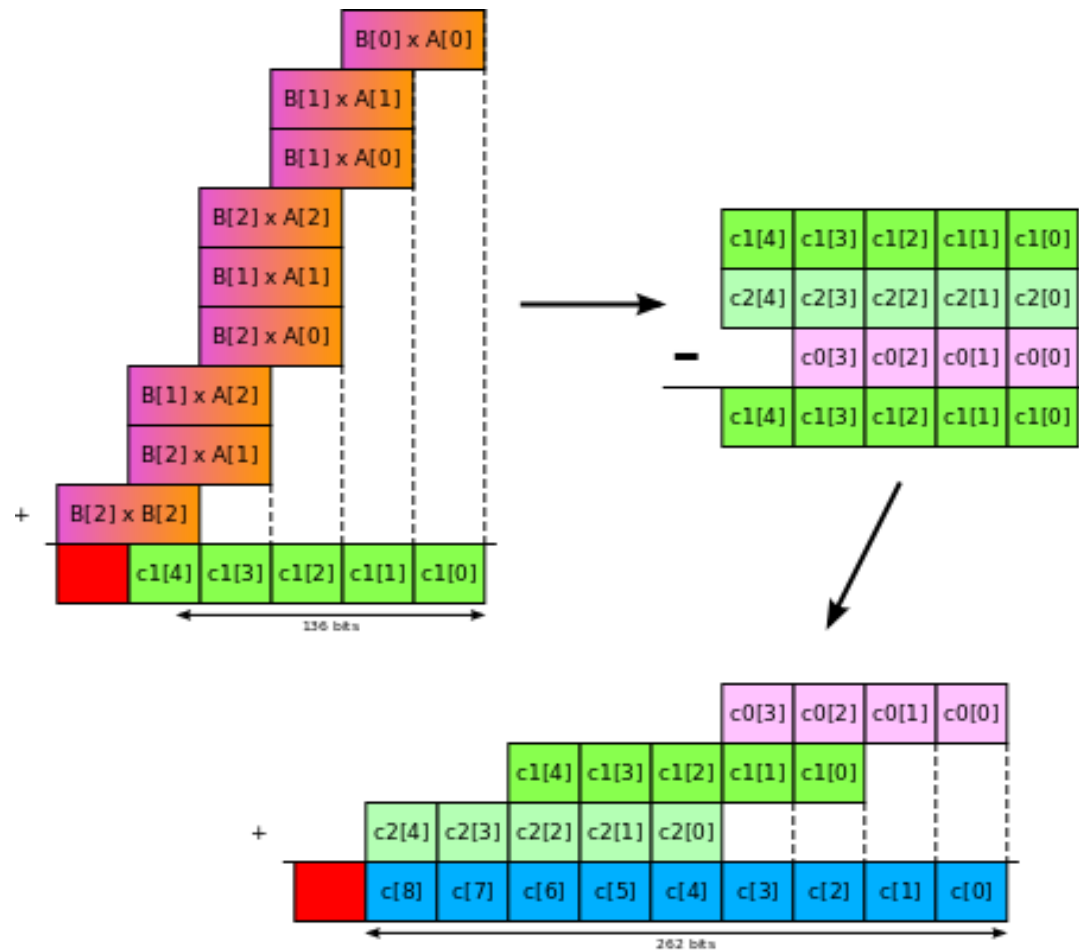
# Multiplication



# Karatsuba Multiplication (1)

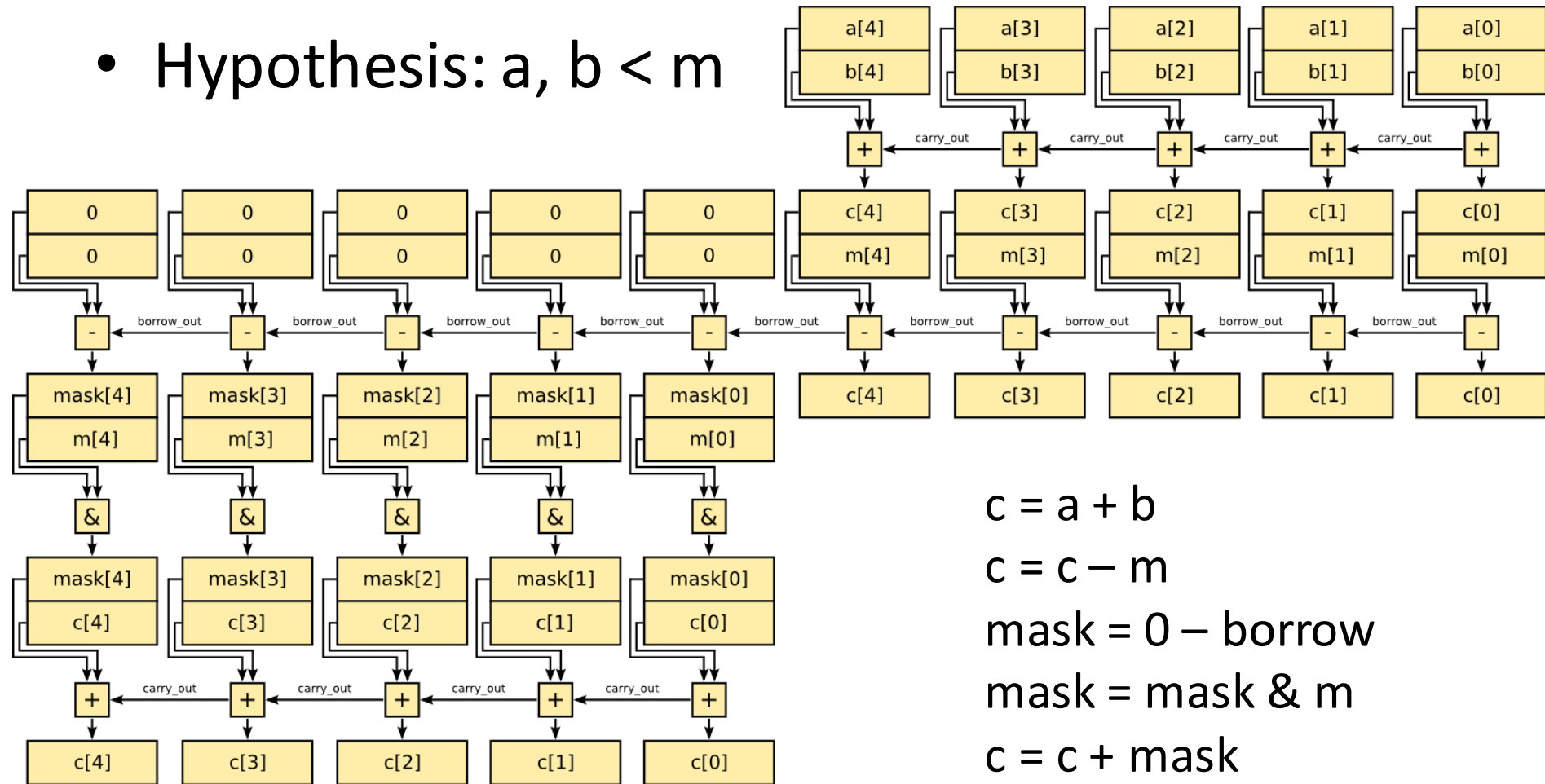


# Karatsuba Multiplication (2)



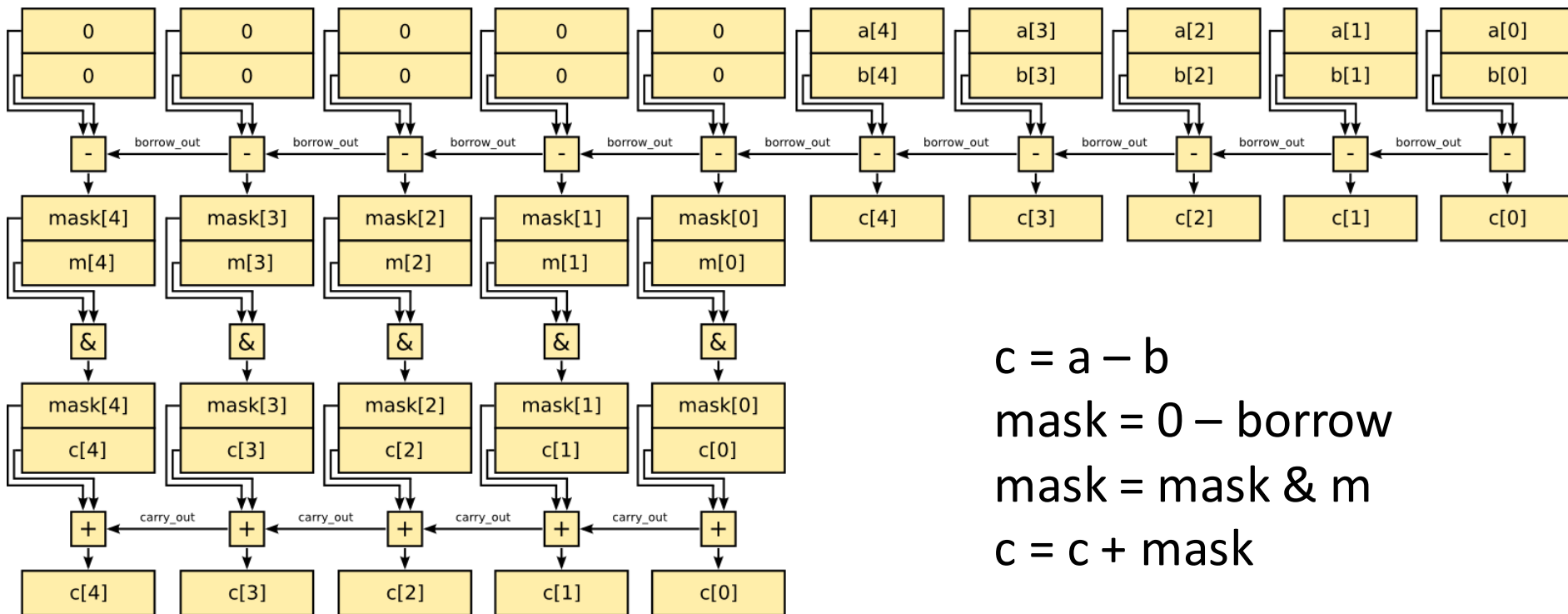
# Modular Addition

- Hypothesis:  $a, b < m$



# Modular Subtraction

- Similar to modular addition
- Hypothesis:  $a, b < m$



$$c = a - b$$

$$\text{mask} = 0 - \text{borrow}$$

$$\text{mask} = \text{mask} \& m$$

$$c = c + \text{mask}$$