Compute the **time** (propagation delay) and **area** required by the 4-bits Carry-Save-Adder, that is an adder for three values A, B and C, shown here below.

Compute the **speedup** of 4-bits Carry-Save-Adder with respect to the standard binary ripple-carry adder.
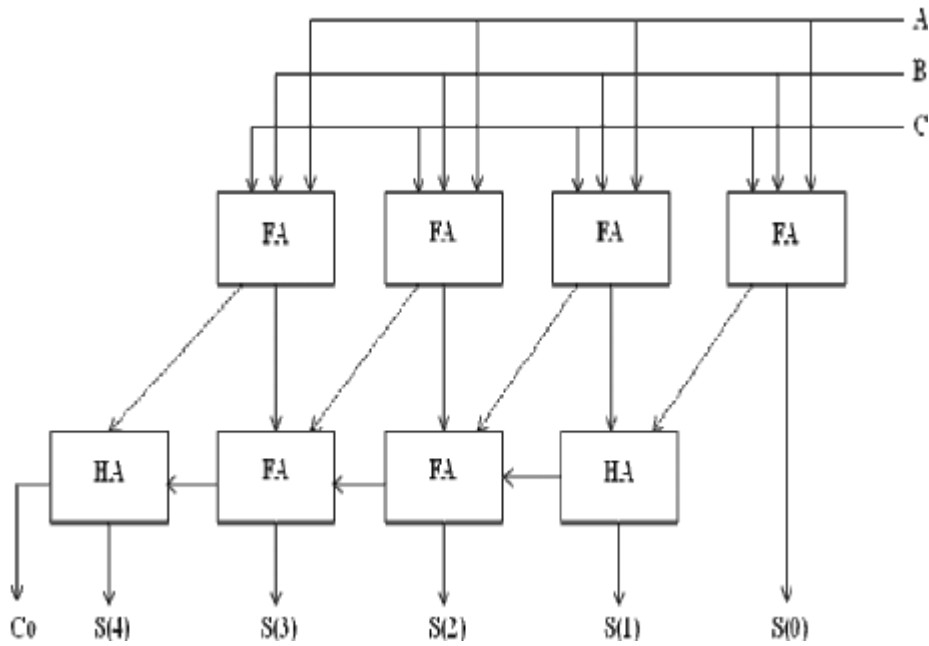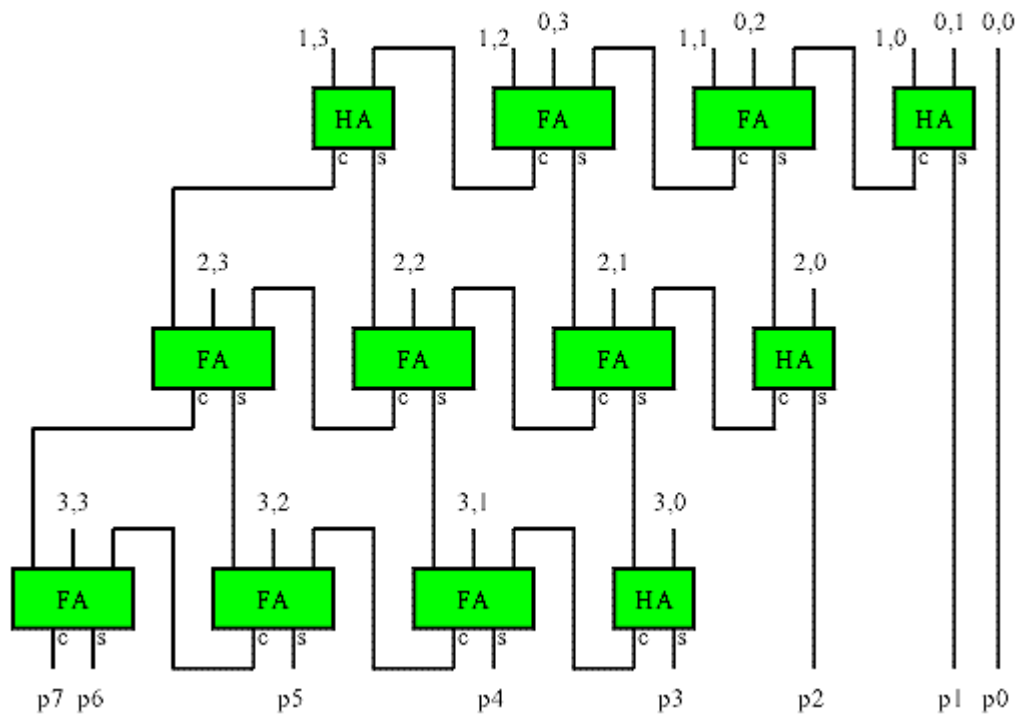
Compute the **time** (propagation delay) and **area** required by the 4-bits **ripple carry array multiplier**, shown here below.

Given the values A= -12 give its RB (Redundant Binary) representation. Given B = 00 10 00 00 11 in the RB representation, convert it in decimal.

Show the execution of operation A+B. Verify the value of the results.

Given the values A= -12 give its RB (Redundant Binary) representation. Given B = 00 10 00 00 11 in the RB representation, convert it in decimal.

- Determine two ways to choose the moduli set for using the **residue number system** to represent values in the number range [0; 479], considering:
  o the conventional choice consisting of **3 moduli** $\{2^n-1; 2^n; 2^n+1\}$,
  o a moduli set consisting of **4 moduli**.
- Compare the different choices with respect to the number of bits necessary for the representation, and consider also the number of bits needed for representing the range [0; 479] with the conventional binary system.

Consider the following radix-10 values and the digit set [0 13] and execute the addition

A = 9 11 3 12   and   B = 10 5 9 8

Consider the following radix-5 values and the digit set [0 8] and execute the addition:

A = 3 5 4 7   and   B = 7 3 6 5

Show the scheme and the execution of the pipelined addition 13+10 and verify the result.

Show the scheme and the execution of the pipelined addition 13+10 and verify the result.

Given the values A=3 and B=2, utilise the following schemes to obtain the result of the multiplications: AxB, Ax(-B) and (-A) x(- B). Verify the results.