Divider (1A)

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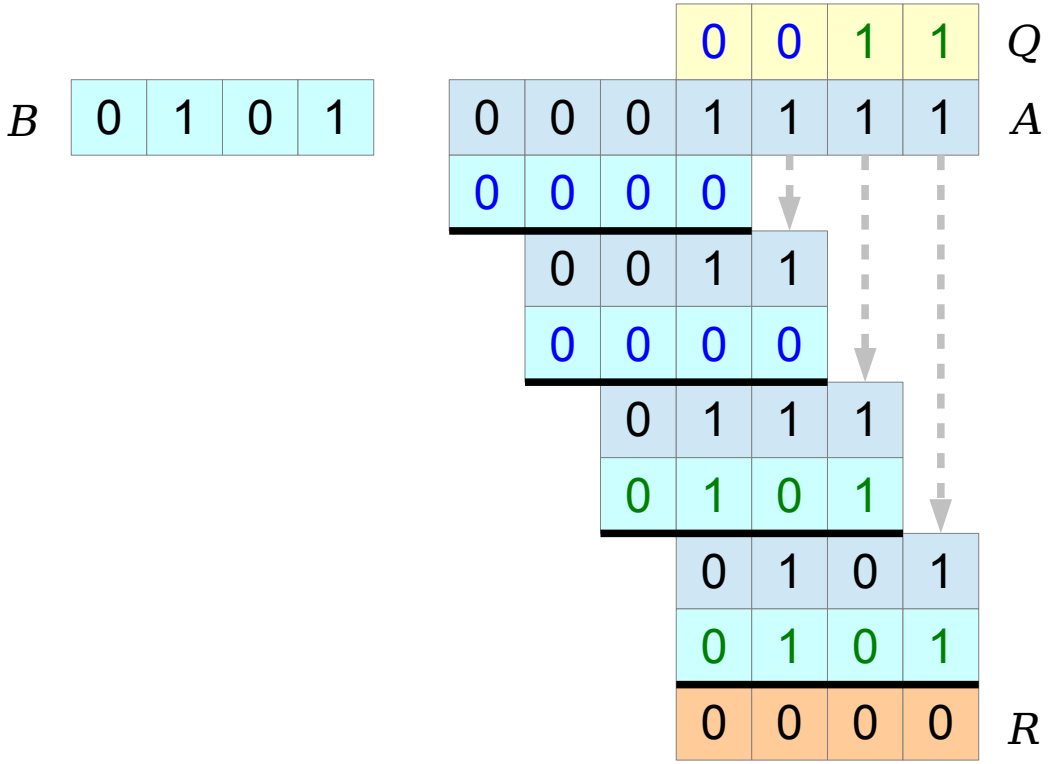
Please send corrections (or suggestions) to youngwlim@hotmail.com.

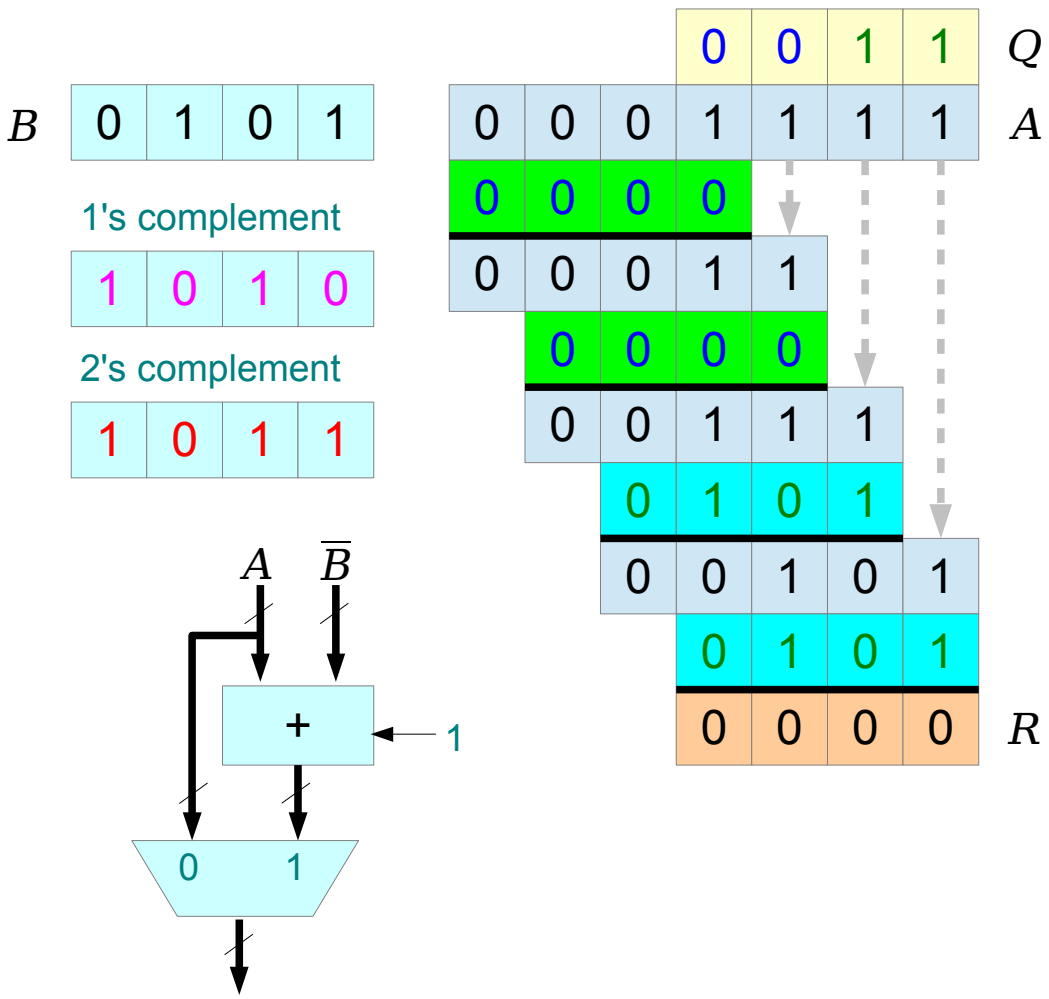
This document was produced by using OpenOffice and Octave.

Binary Division



2's Complement Subtraction

$A \div B$



	0	0	0	1
	1	0	1	1
0	1	1	0	0

No Carry
Do not Subtract

	0	0	1	1
	1	0	1	1
0	1	1	1	0

No Carry
Do not Subtract

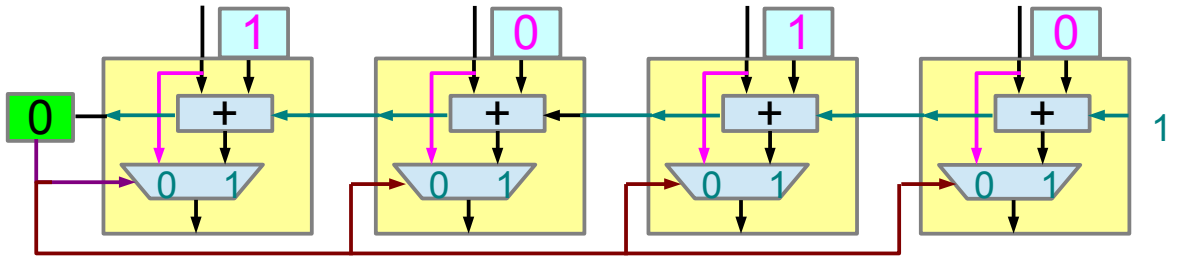
	0	1	1	1
	1	0	1	1
1	0	0	1	0

Carry
Q bit = 1

	0	1	0	1
	1	0	1	1
1	0	0	0	0

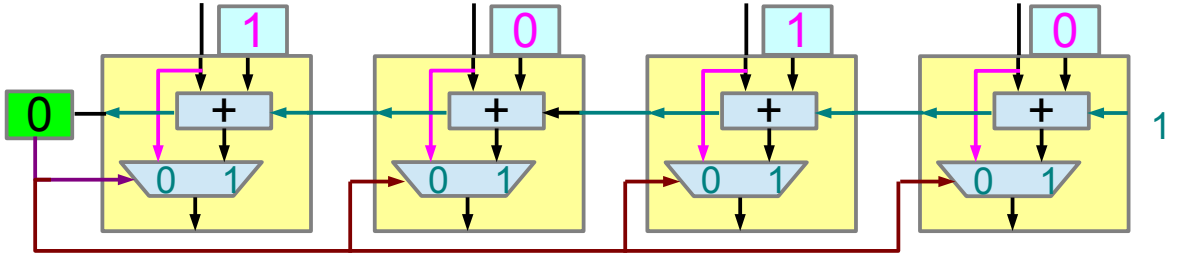
Carry
Q bit = 1

End Around Carry



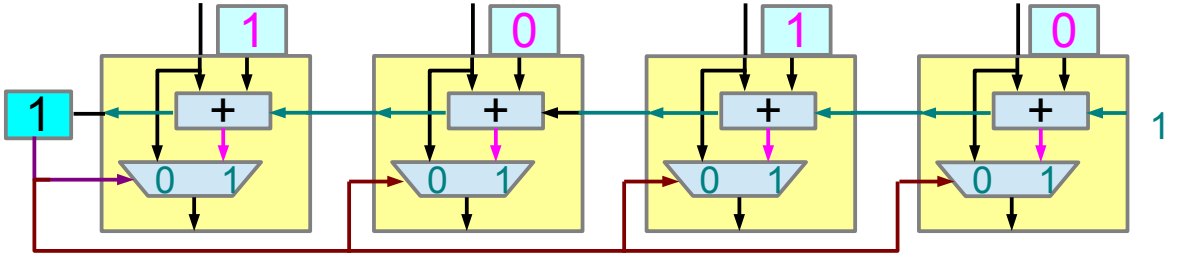
	0	0	0	1
	1	0	1	1
0	1	1	0	0

No Carry
No Subtraction



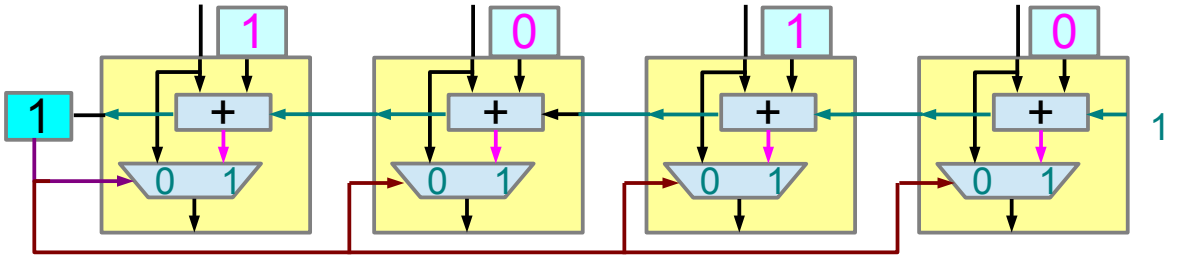
	0	0	1	1
	1	0	1	1
0	1	1	1	0

No Carry
No Subtraction



	0	1	1	1
	1	0	1	1
1	0	0	1	0

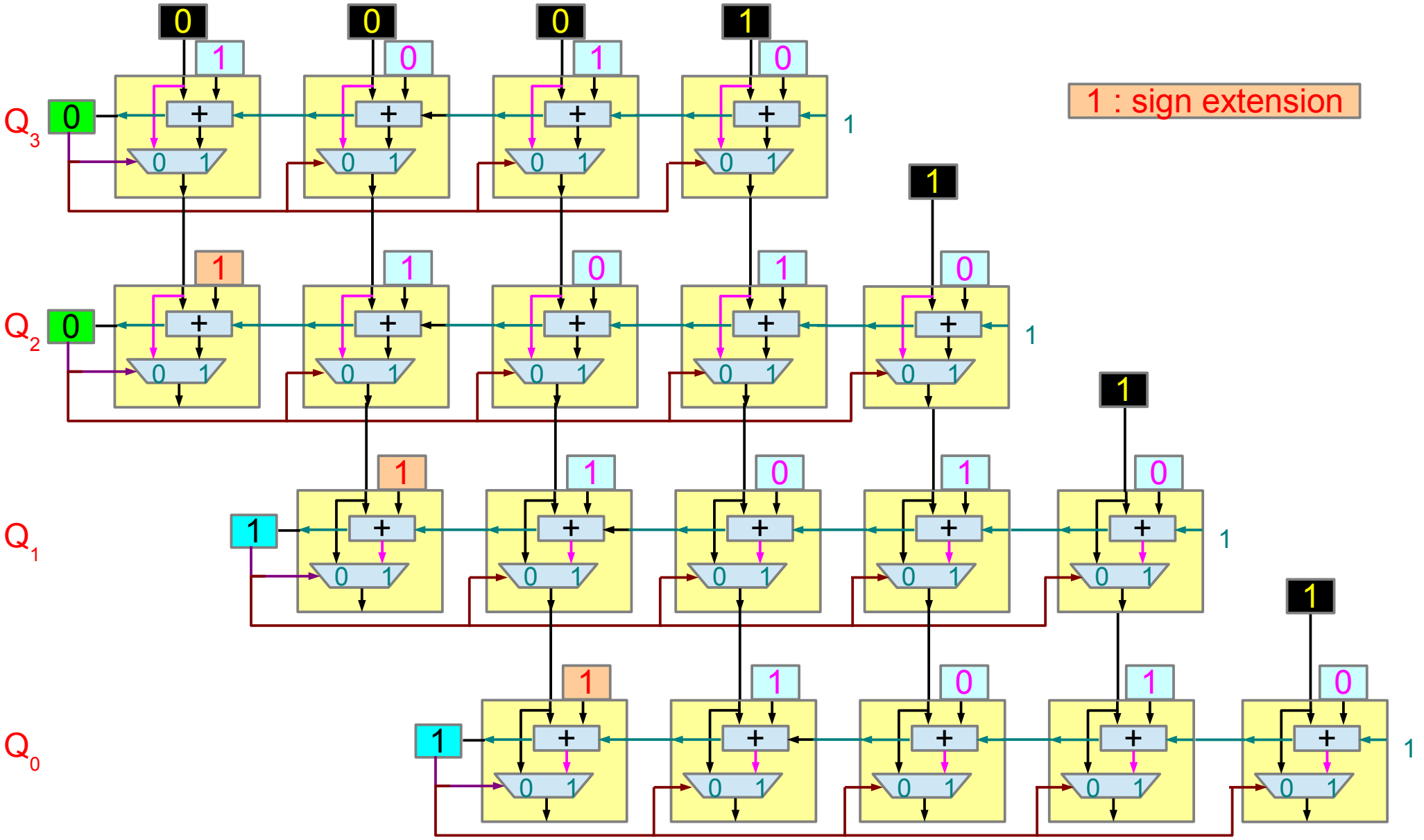
Carry
Q bit = 1



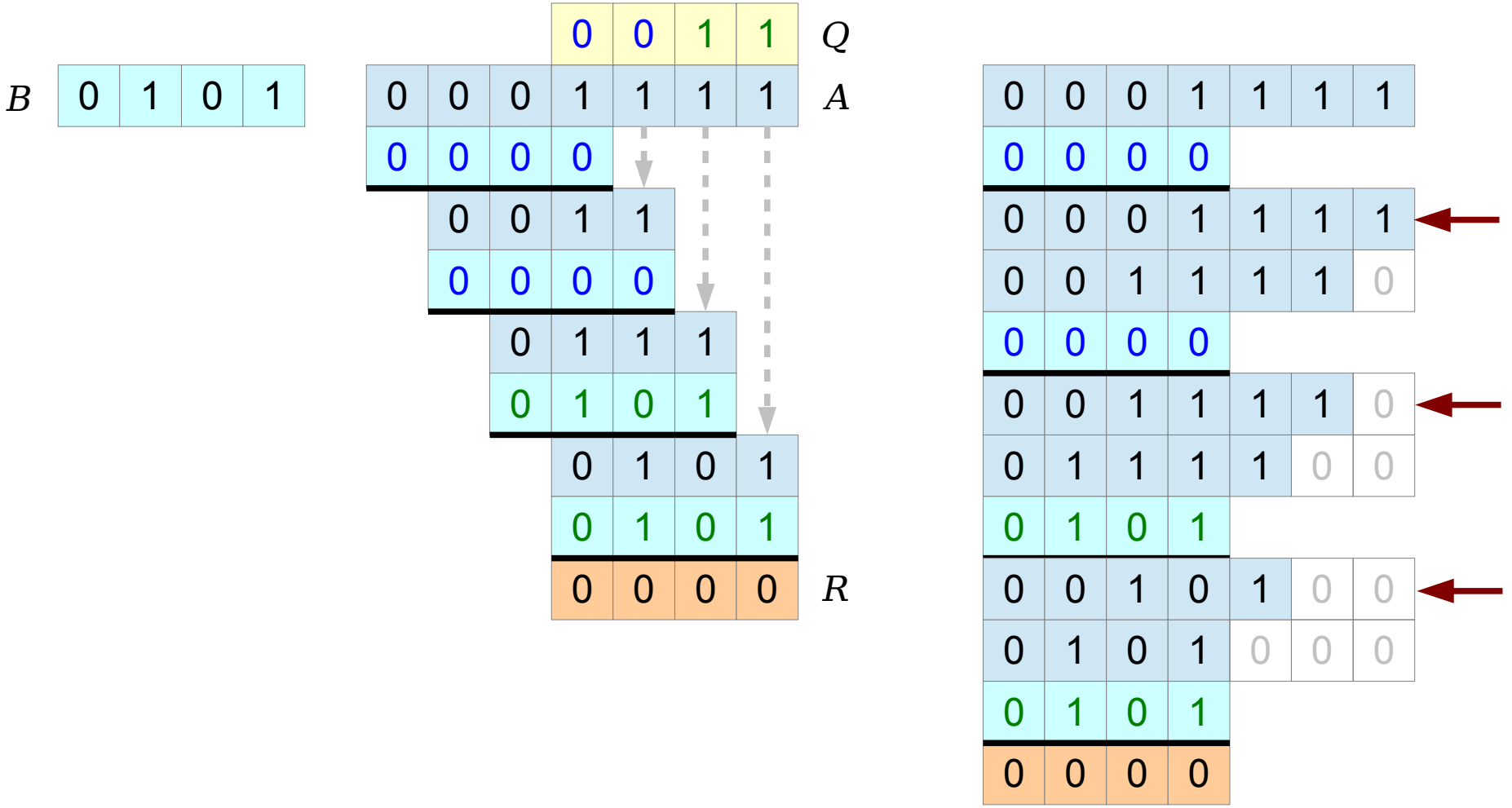
	0	1	0	1
	1	0	1	1
1	0	0	0	0

Carry
Q bit = 1

Divider

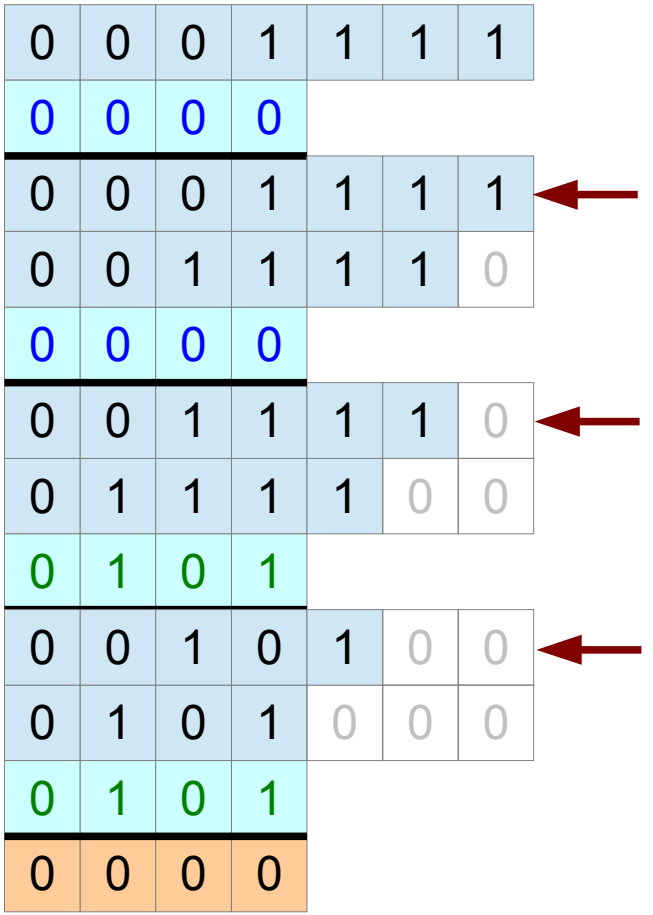


Binary Division – Dividend Shifting

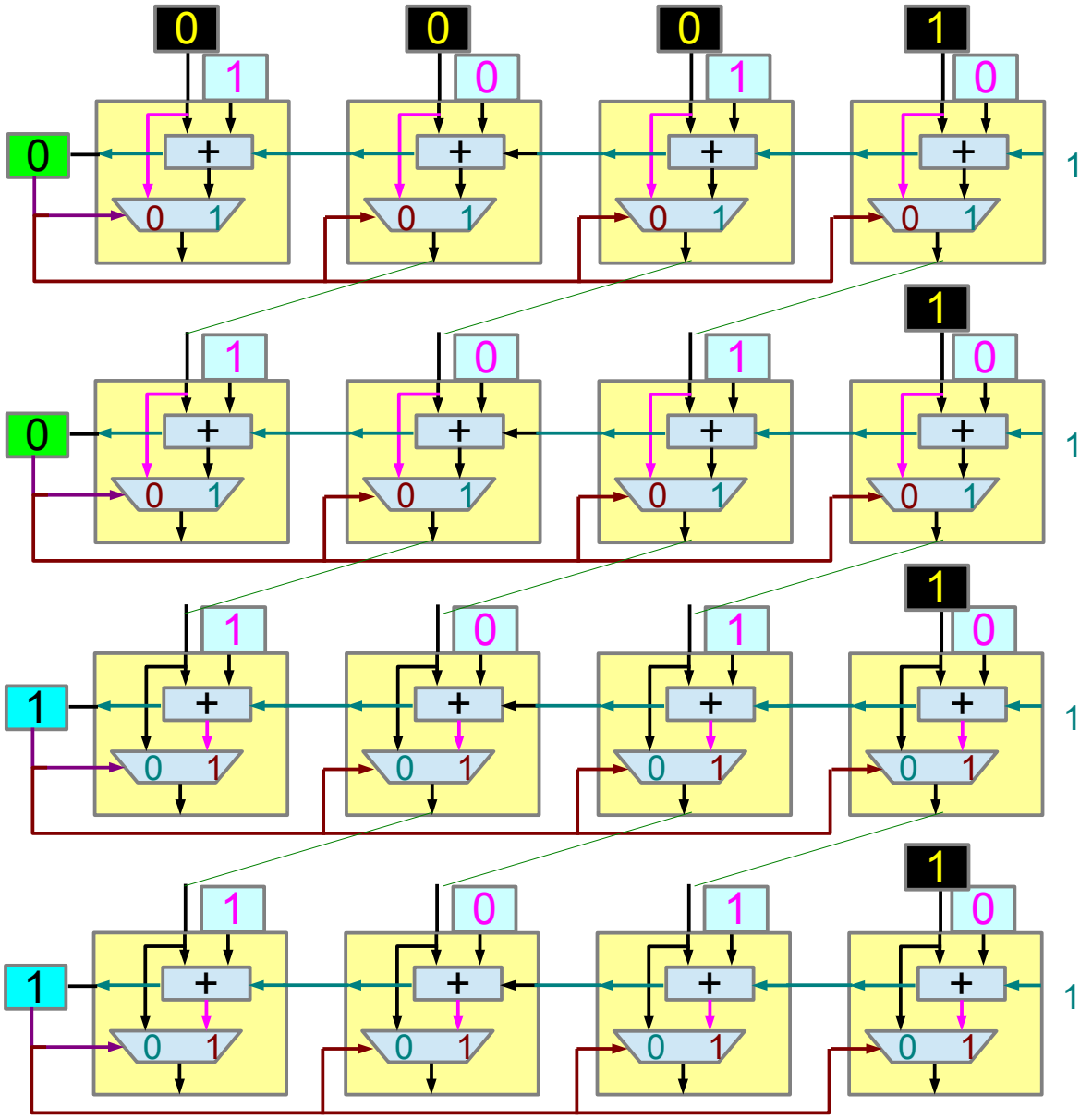


Binary Division – Dividend Shifting Algorithm

```
R = A
for i = N-1 to 0
      D = R – B
      if (D<0) then  Qi = 0, R' = R
      else           Qi = 1, R' = D
      if (i<>0) then R = 2R'
```



End Around Carry



References

[1] en.wikipedia.org
[2] D.M. Harris, S. L. Harris, “Digital Design and Computer Architecture”