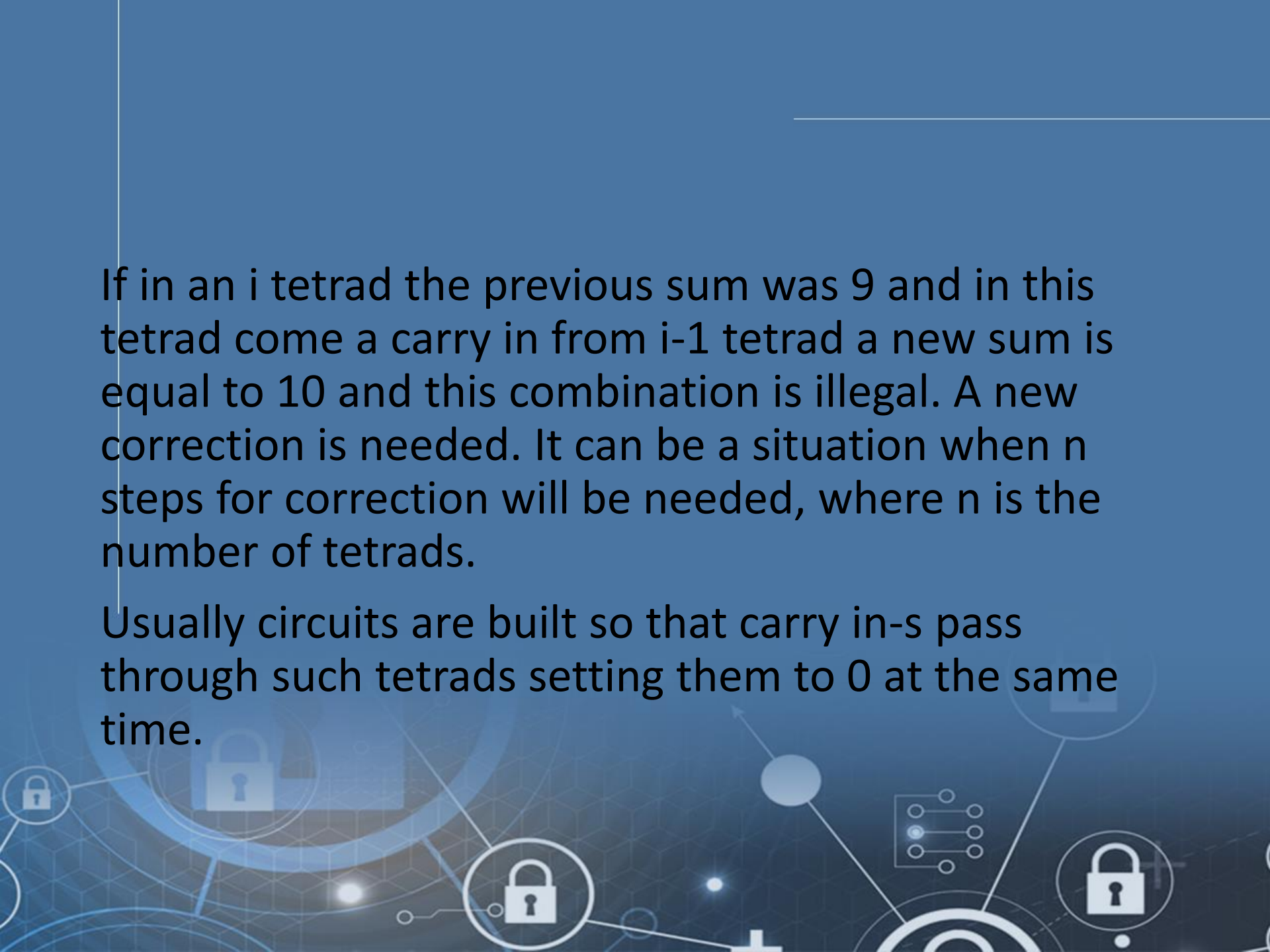
BSD ARITHMETIC

Rules for BCD addition

1. If the sum is smaller or equal to 9 the addition is done without correction.
2. If after addition illegal combination appears or carry out occurs the correction is 6 (0110).
3. Carry out which appears after correction is added to the next tetrad.

If in an i tetrad the previous sum was 9 and in this tetrad come a carry in from i-1 tetrad a new sum is equal to 10 and this combination is illegal. A new correction is needed. It can be a situation when n steps for correction will be needed, where n is the number of tetrads.

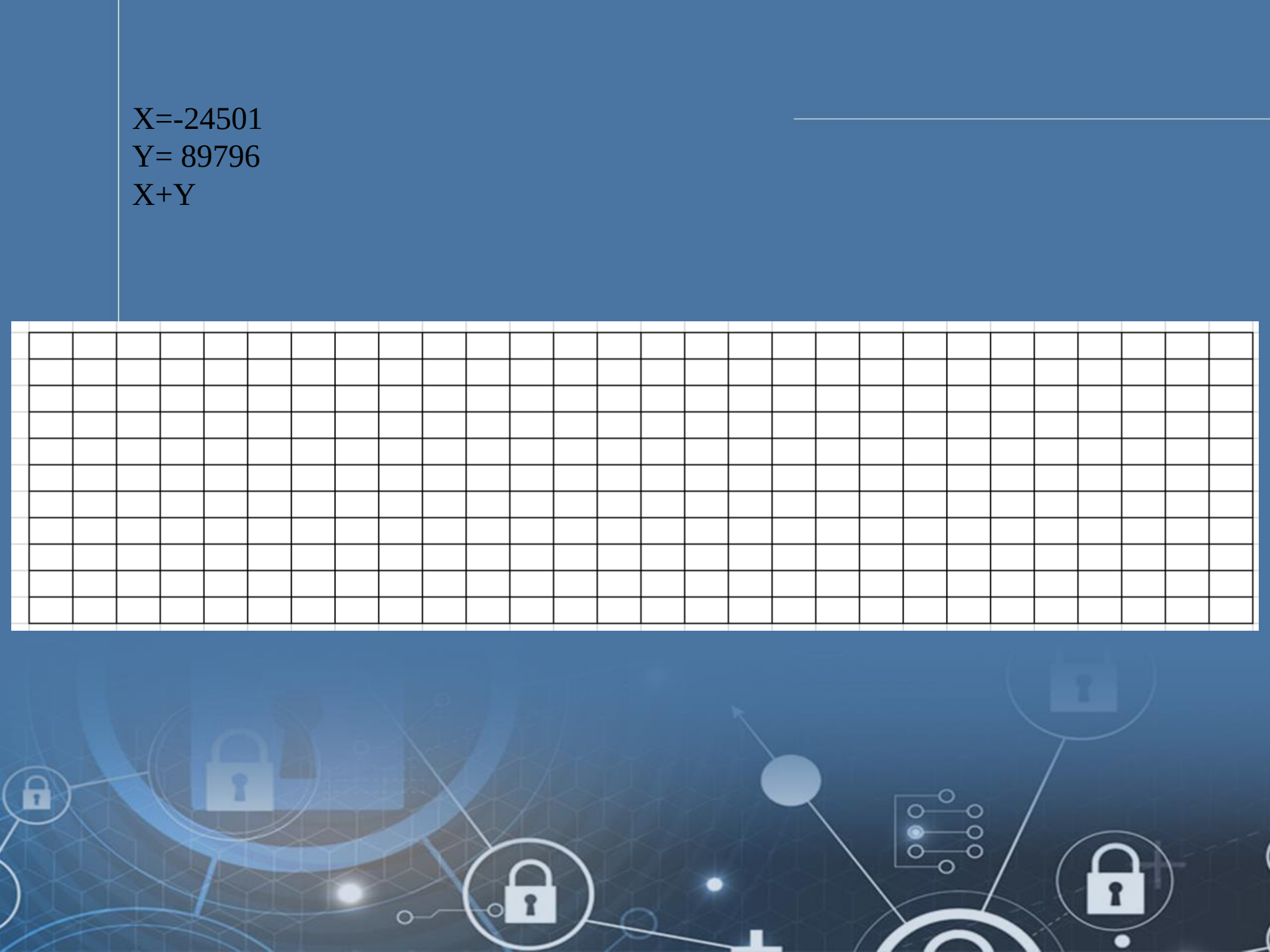
Usually circuits are built so that carry in-s pass through such tetrads setting them to 0 at the same time.



Addition and subtraction of signed BSD numbers

- Sign representation
- + 0000
- - 1001
- Representation in two’s complement system
- Xcd=-38765
- Xcc=-61235
- Xcd+Xcc=100000
- Each digit is complemented to 9, the least significant digit – to (9+1)

X=-24501
Y= 89796
X+Y



X=72345
Y= -24341
X+Y

X=34562
Y= 90230
X-Y