

CONTROLLED ACCESS

↳ ချိတ်ဆက်ခန့်ခွဲရန်
↳ Collision

- In controlled access, the stations consult one another to find which station has the right to send. A station cannot send unless it has been authorized by other stations. We discuss three popular controlled-access methods.
 - Reservation (မဆယ်)
 - Polling (မဆုံး)
 - Token Passing

Concept :

Reservation

↳ msg

- Reservation Frame

- N stations

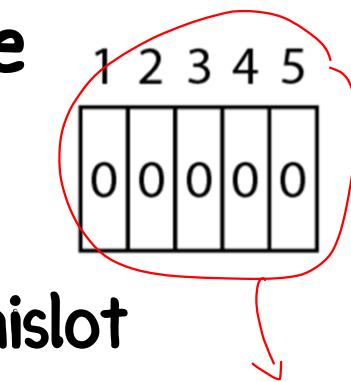
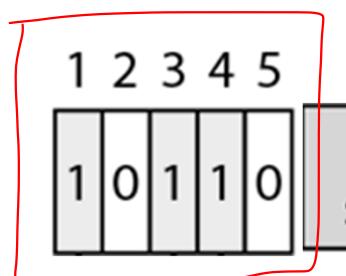
- N reservation minislot

- Example

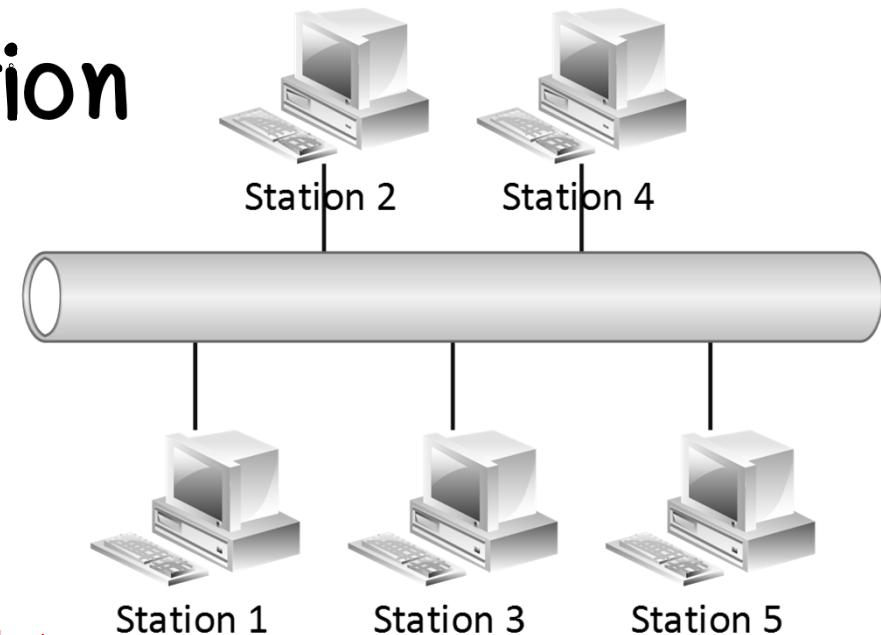
- 5 stations

- stations 1, 3, and 4 have made reservation

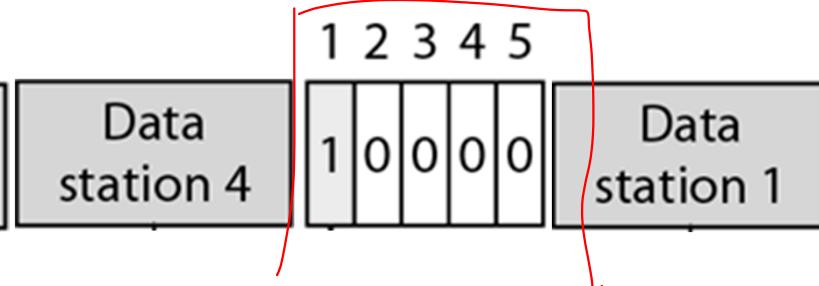
- station 1 has made reservation



only station.



process reservation again and again.



...

Concept:

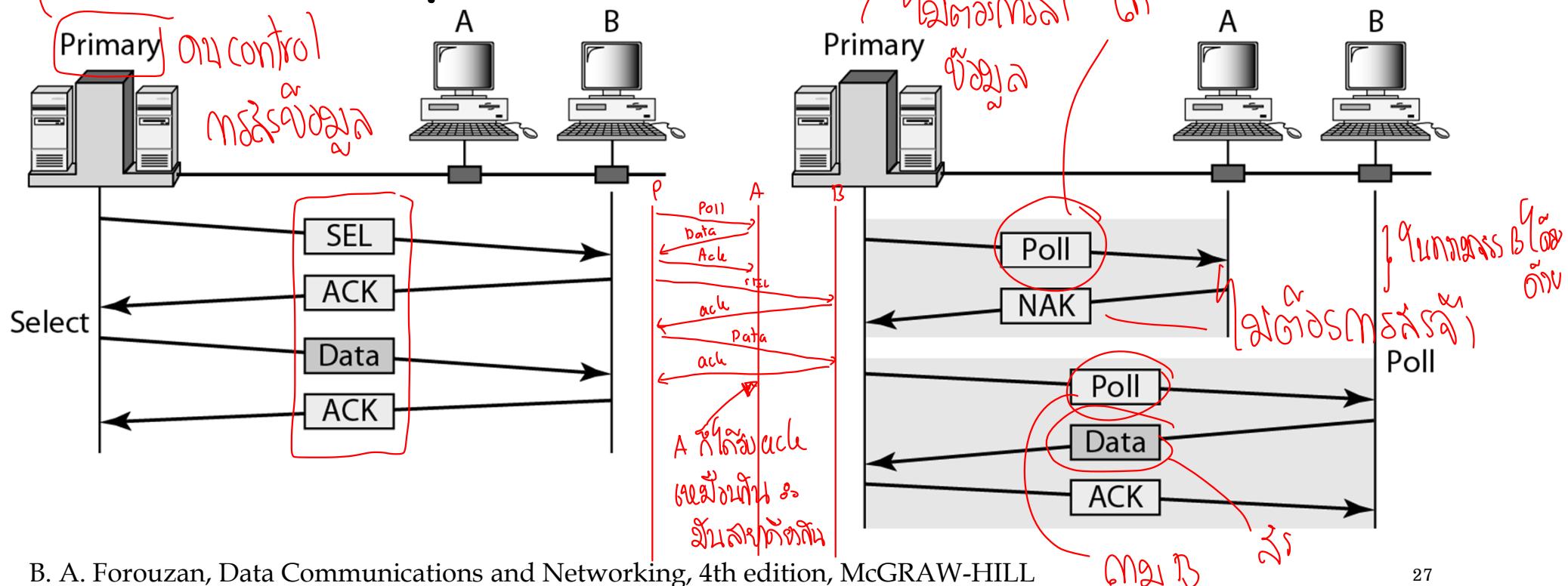
Polling

- Topologies

- one device is designated as a primary station

- the other devices are secondary stations

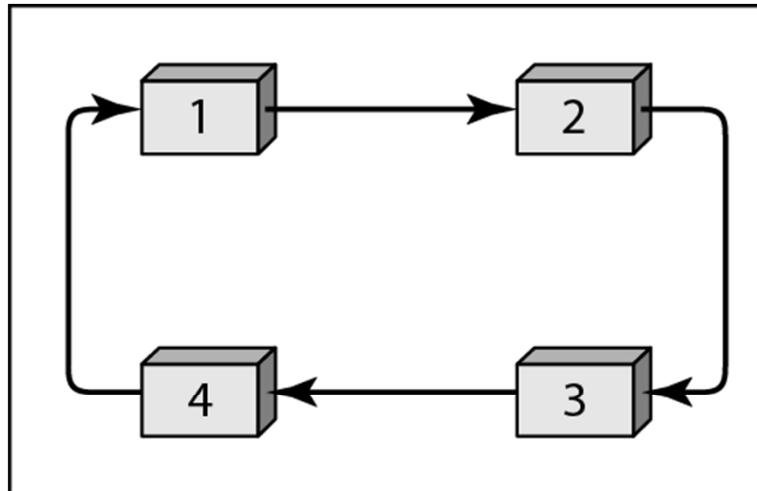
- Select and poll functions



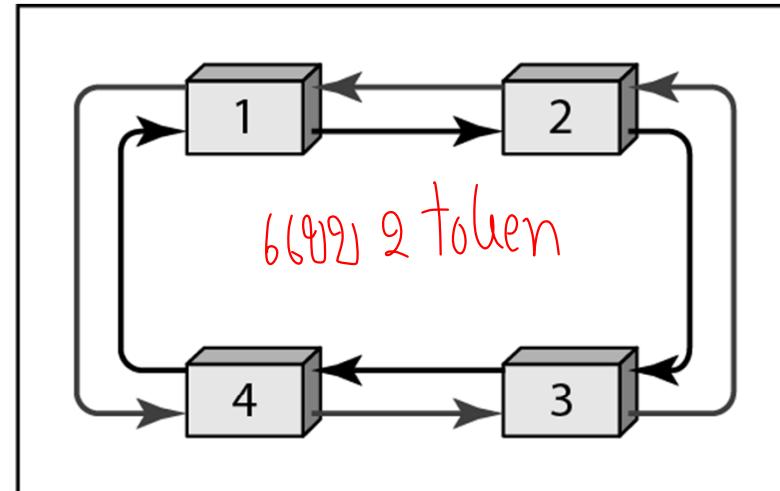
Token-passing

as global token , ring $\frac{1}{2}$ of share media
FDDI (Fiber Distributed Data Interface)
CDDI (Copper Distributed Data Interface)

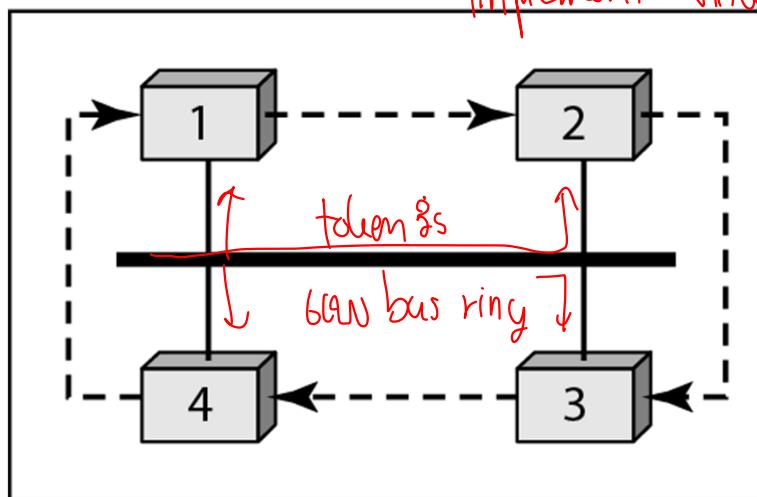
Token Ring (IEEE 802.5)



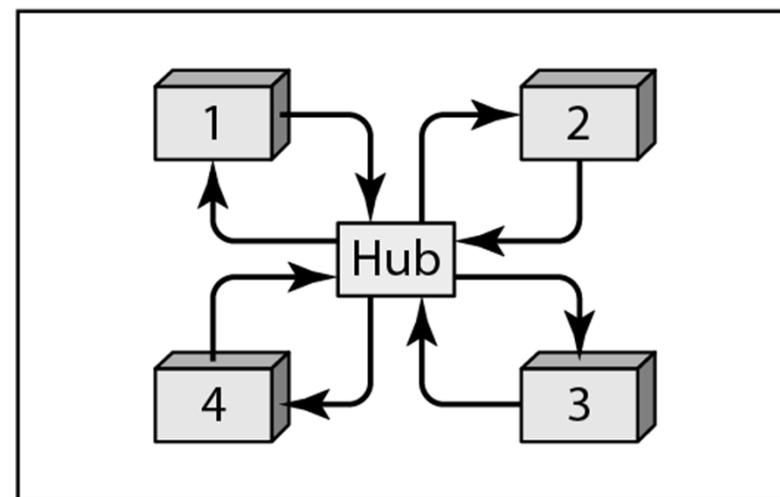
a. Physical ring



b. Dual ring



c. Bus ring



d. Star ring

Token BUS (IEEE 802.4)

CHANNELIZATION

ខ្លួនឯងបានពេះក្នុង Collision , ឥឡូវ channel នៃវា bandwidth

- Channelization is a multiple-access method in which ~~ស្រីប~~ the available bandwidth of a link is shared in time, frequency, or through code, between different stations. In this section, we discuss three channelization protocols.
 - Frequency-Division Multiple Access (FDMA) ~~ប្រើបច្ចេកទេស~~
 - Time-Division Multiple Access (TDMA) ~~ប្រើបច្ចេកលេខា~~
 - Code-Division Multiple Access (CDMA) ~~ប្រើបច្ចេកកូដ~~

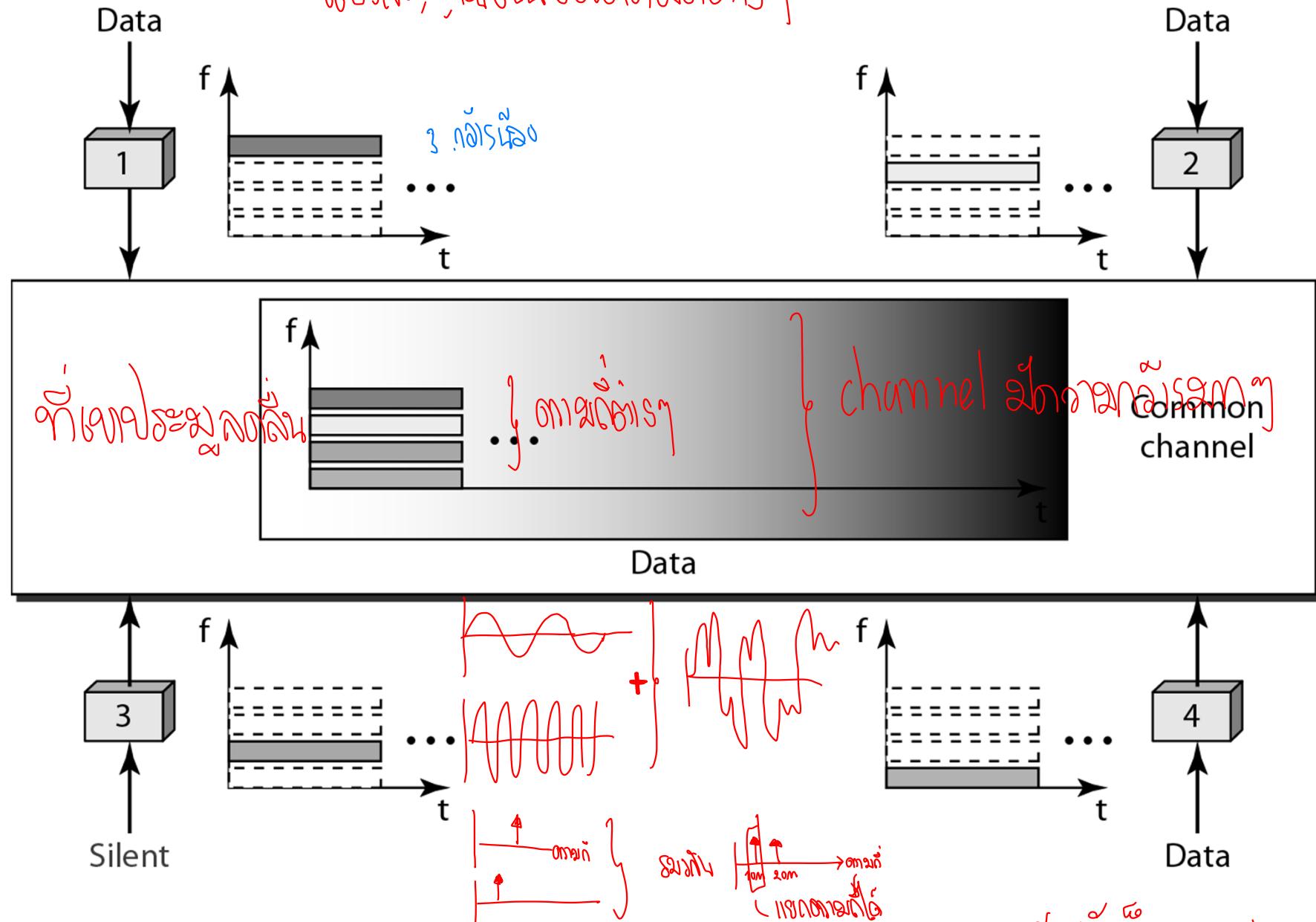
Channelization

- In FDMA, the available bandwidth of the common channel is divided into bands that are separated by guard bands.
- In TDMA, the bandwidth is just one channel that is timeshared between different stations.
- In CDMA, one channel carries all transmissions simultaneously.

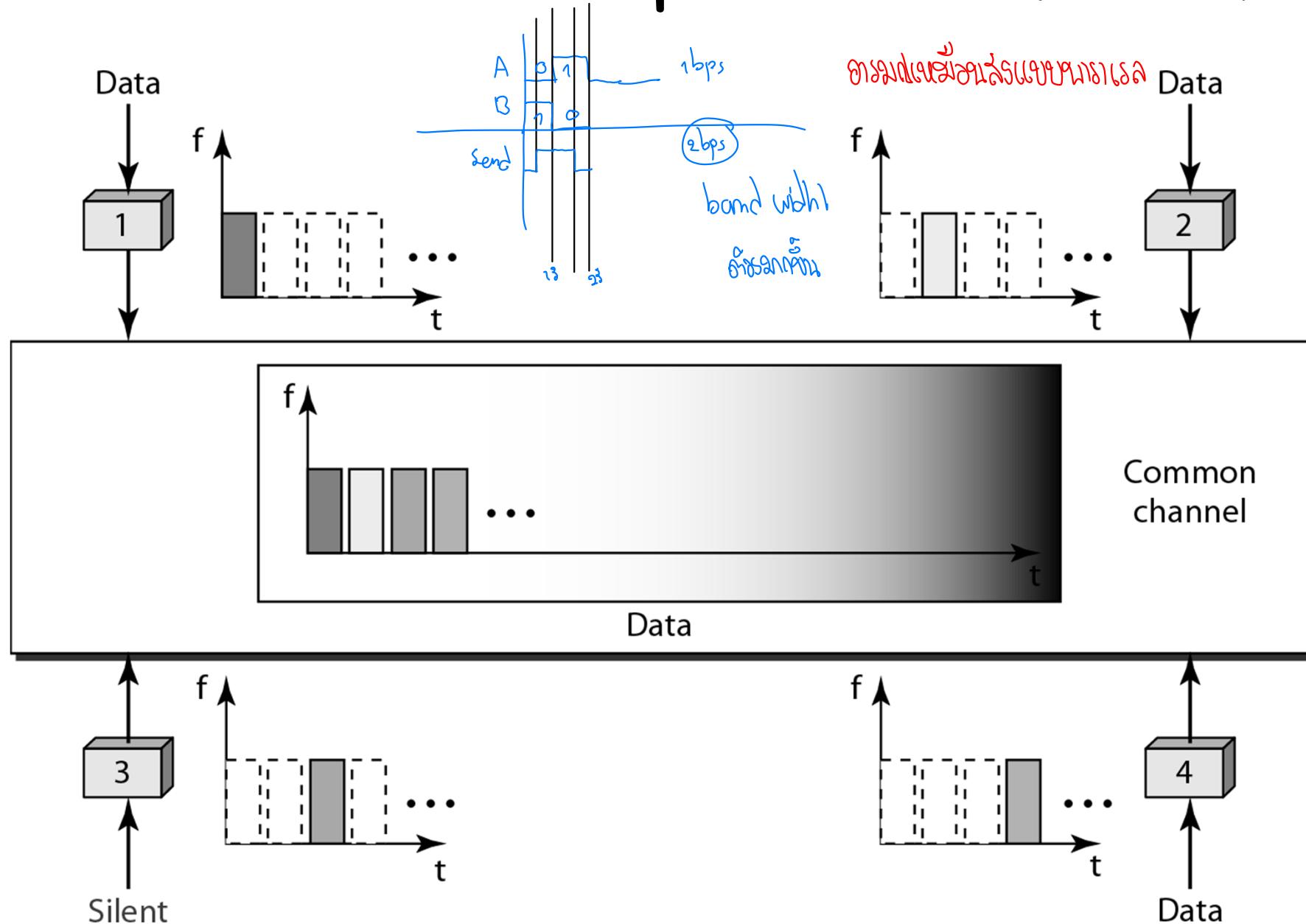
Concept:

Frequency-division multiple access (FDMA)

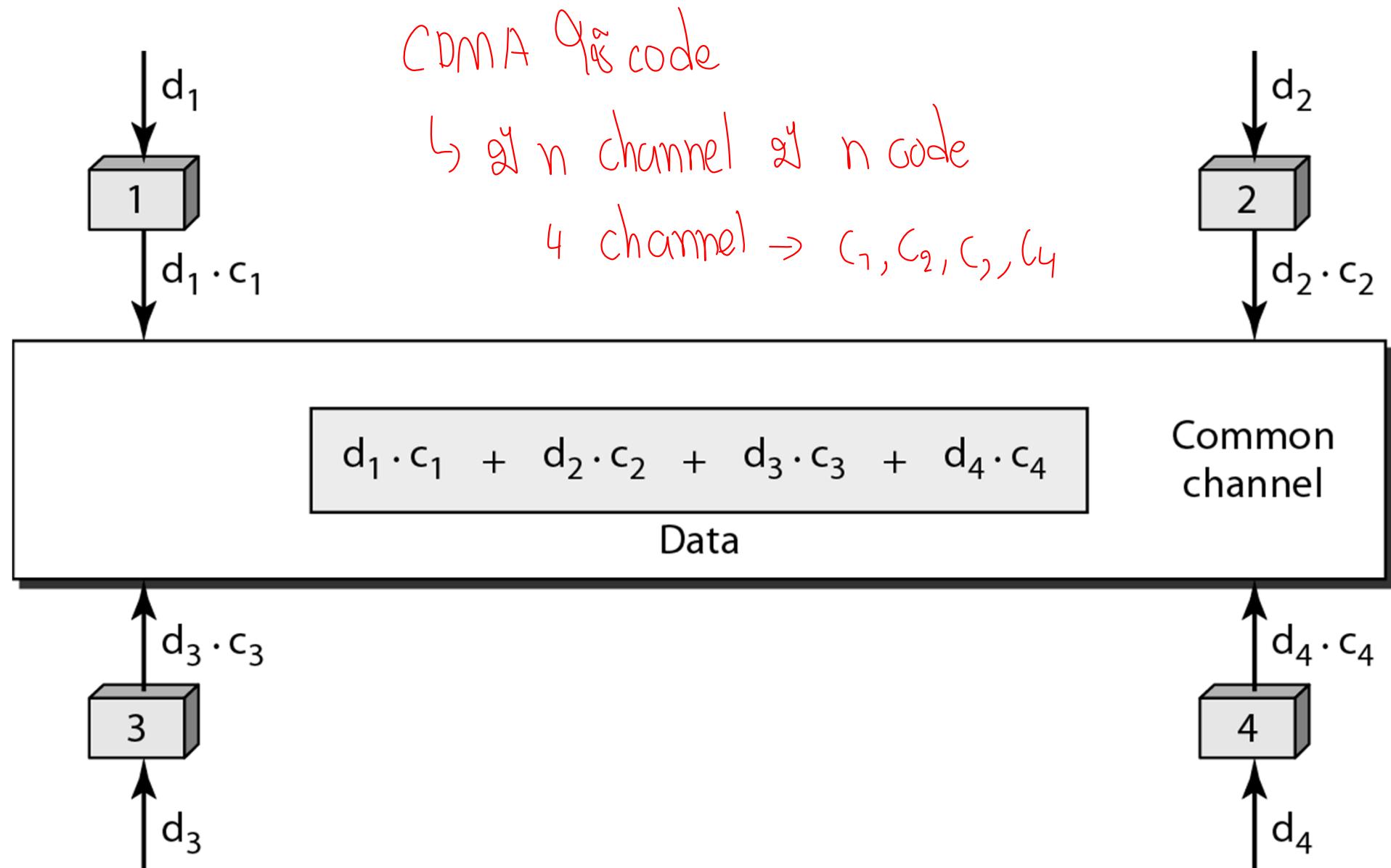
ឯកសារណ៍ប្រើប្រាស់វរនតាមទំនួរ



Time-division multiple access (TDMA)



Simple idea of communication with code



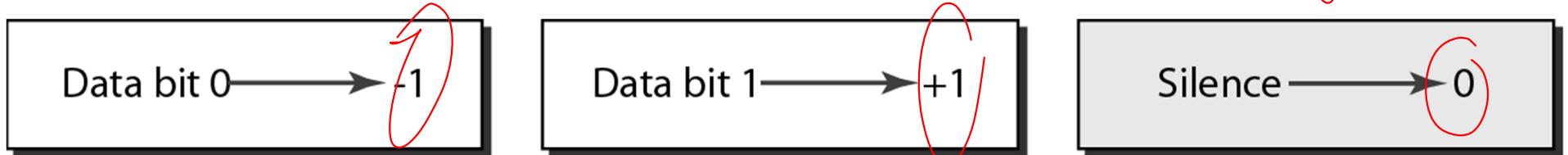
Simple idea of communication with code

- Idea
 - If we multiply each code by another, we get 0
 - If we multiply each code by itself, we get 4

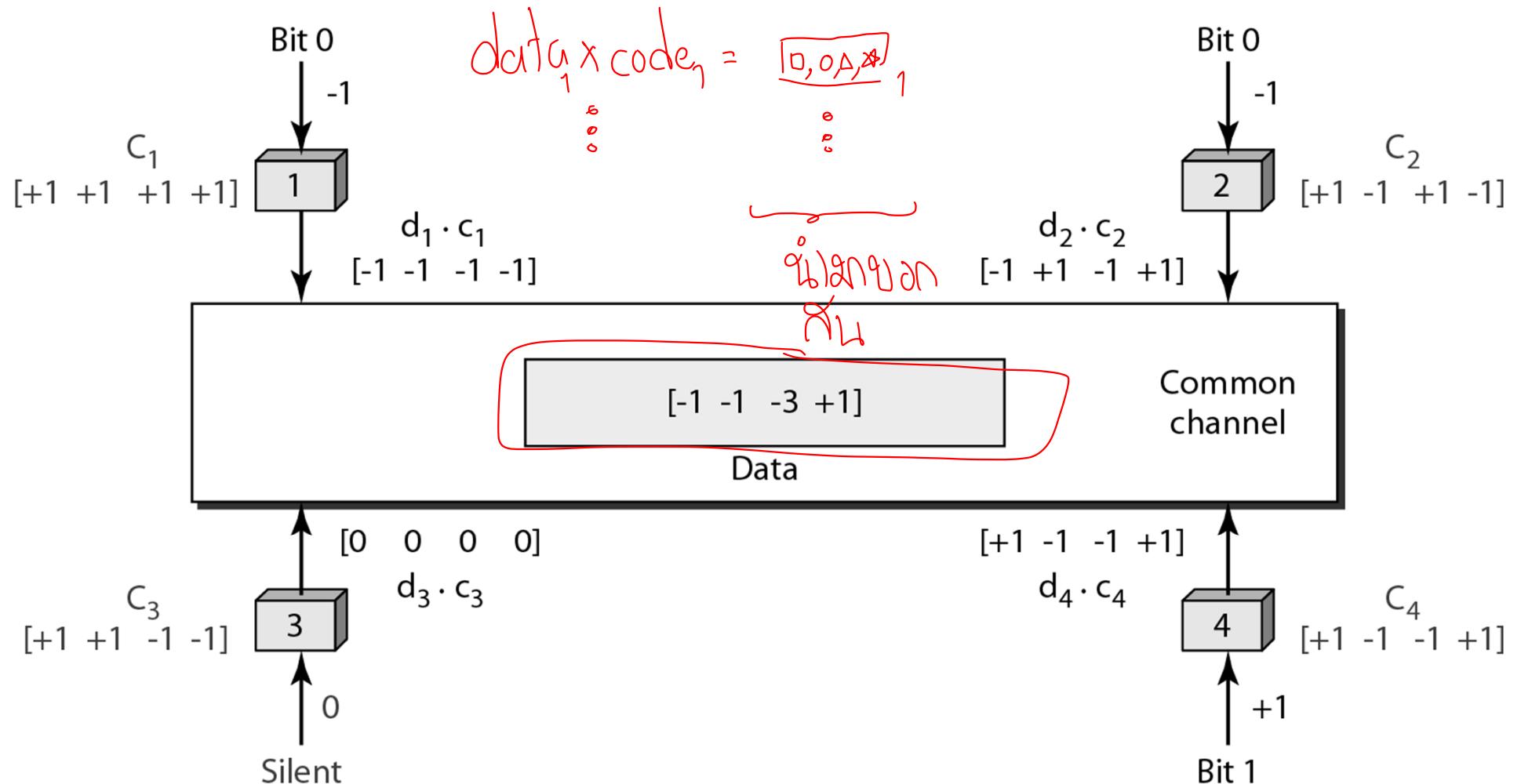
- Chip sequences *(Code)*

C_1	C_2	C_3	C_4
[+1 +1 +1 +1]	[+1 -1 +1 -1]	[+1 +1 -1 -1]	[+1 -1 -1 +1]

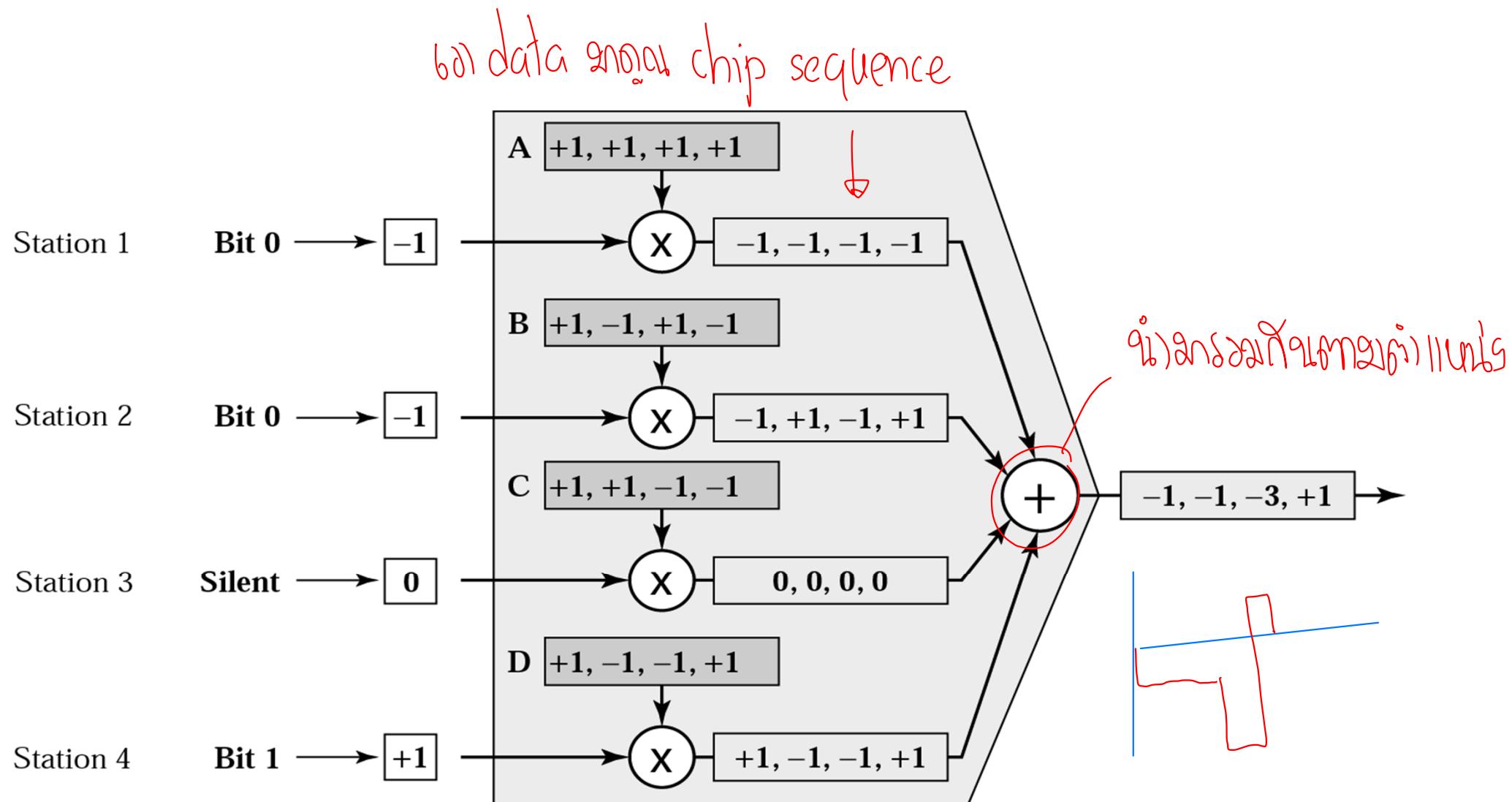
- Data representation in CDMA = ග්‍යෙවුම් හෝ මෙහෙතුරුවා



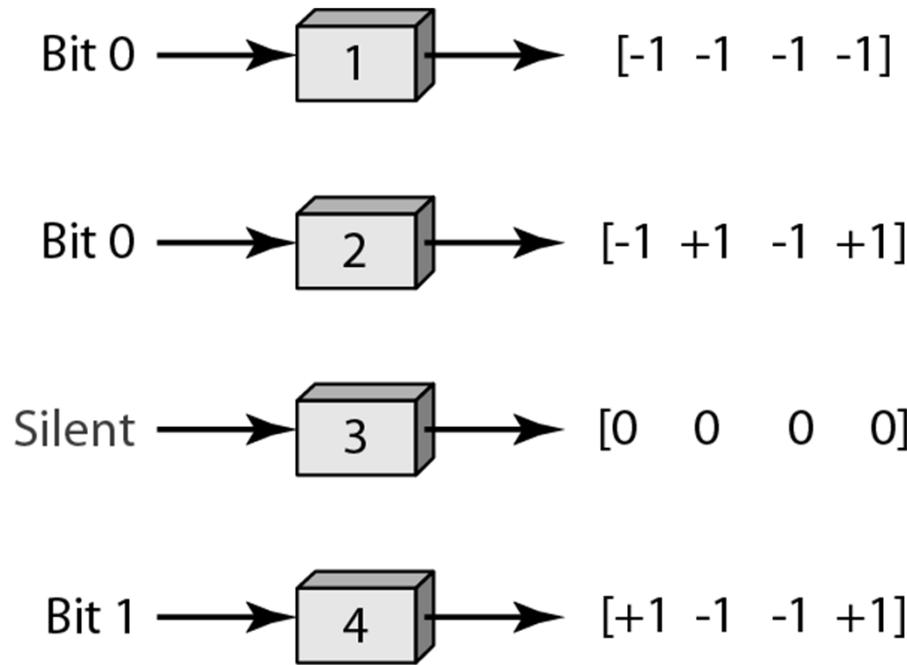
Sharing channel in CDMA



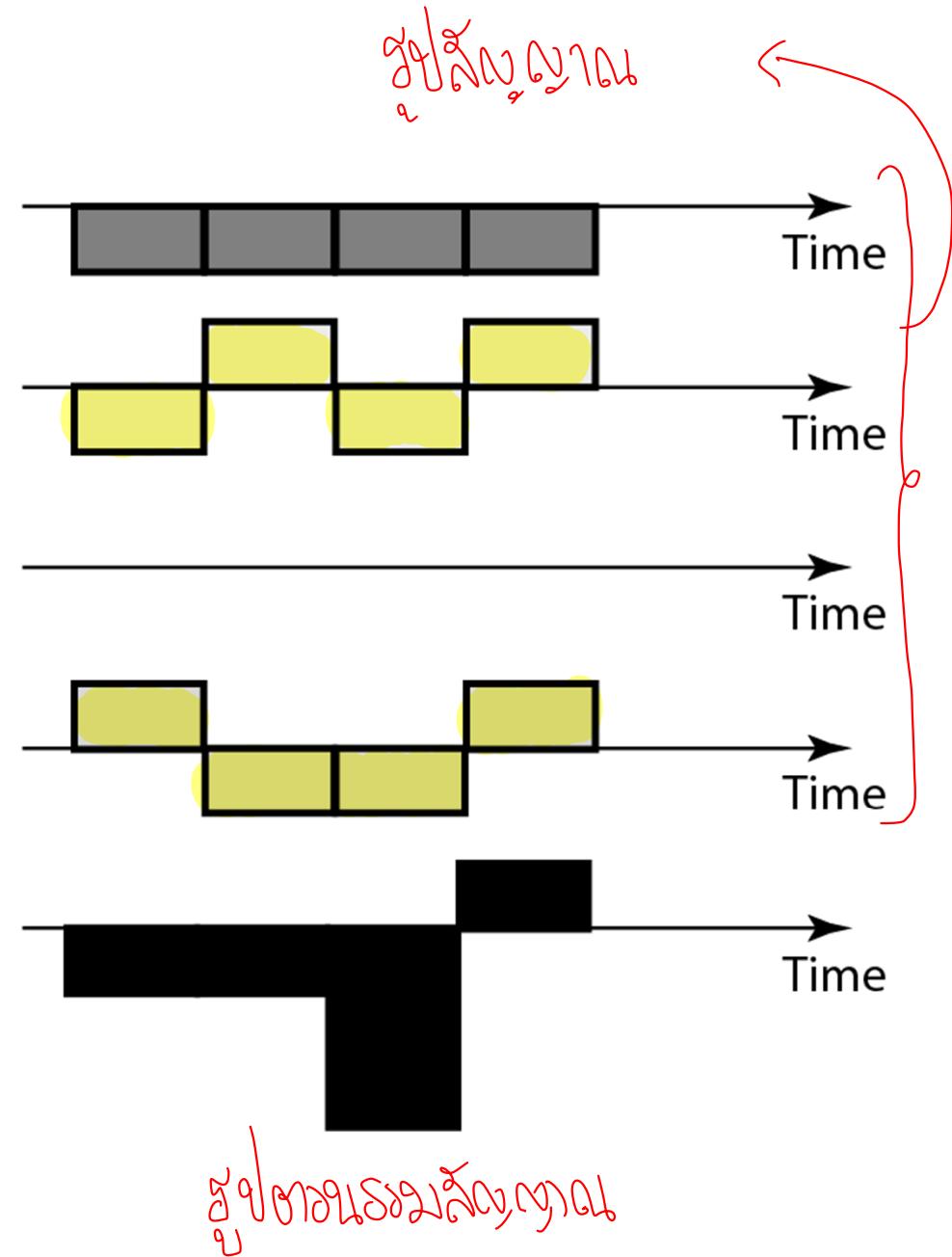
CDMA multiplexer



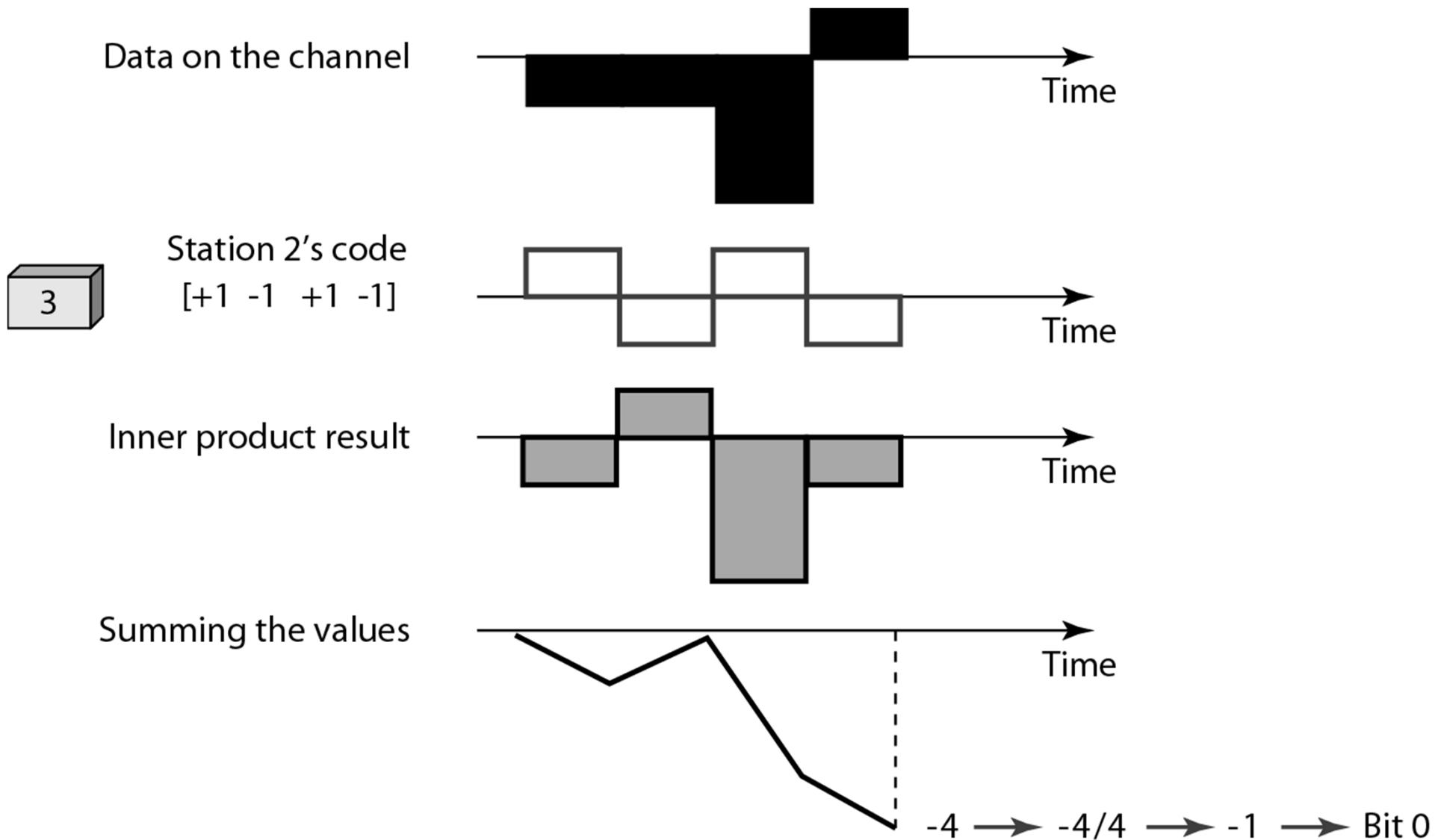
Digital signal created by four stations in CDMA



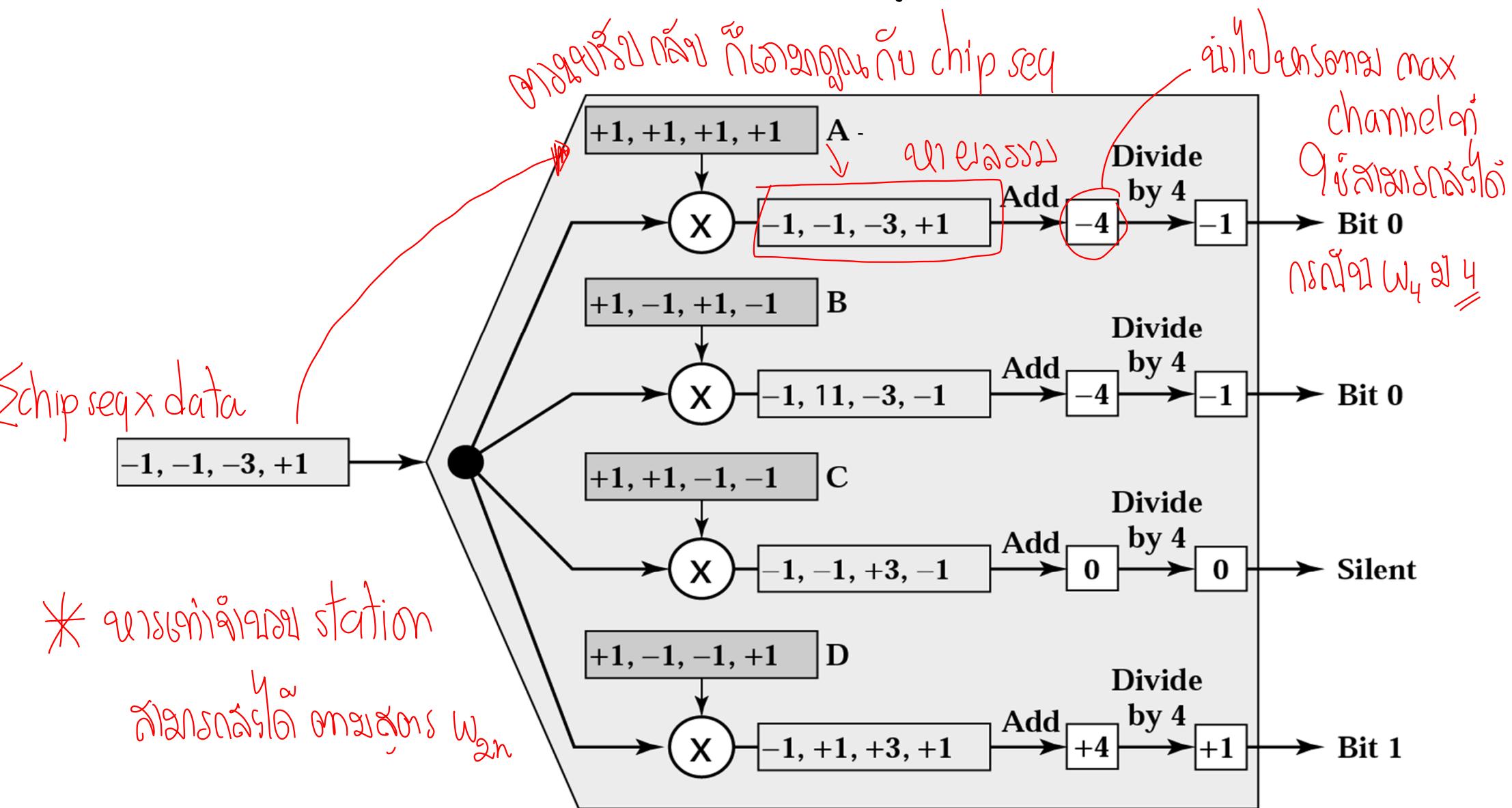
Data on the channel



Decoding of the composite signal for one in CDMA



CDMA demultiplexer



General rule and examples of creating Walsh tables

$$W_1 = [+1]$$

$$W_{2N} = \begin{bmatrix} W_N & W_N \\ W_N & \bar{W}_N \end{bmatrix}$$

a. Two basic rules

$$W_1 = [+1]$$

$$W_2 = \begin{bmatrix} +1 & +1 \\ +1 & -1 \end{bmatrix}$$

$$W_4 = \begin{matrix} / \\ 2(2) \end{matrix}$$

$+1$	$+1$	$+1$	$+1$
$+1$	-1	$+1$	-1
$+1$	$+1$	-1	-1
$+1$	-1	-1	$+1$

chip sequence
↑
 $\begin{matrix} 1 & 0 & 1 & 1 & 0 & 1 & 0 & 1 \end{matrix}$
 W_4 გთხოვ 4
channel

b. Generation of W_1 , W_2 , and W_4

The number of sequences in a Walsh table needs to be $N = 2^n$