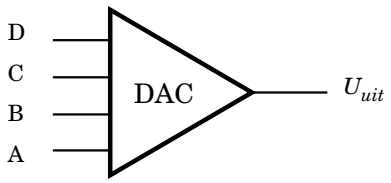
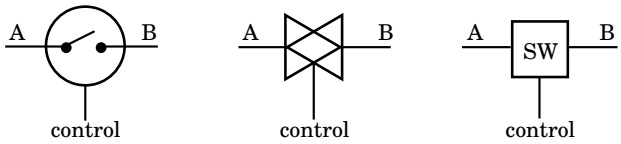
Hoofdstuk 6

AD- en DA-conversie

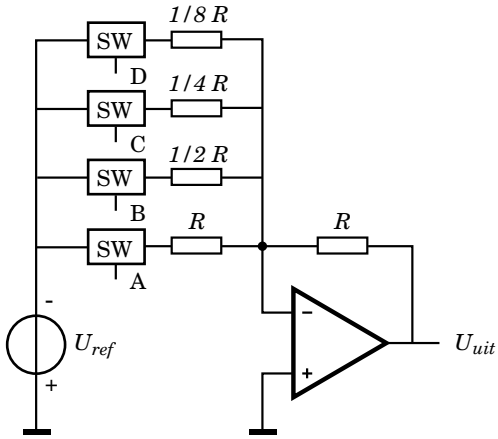


Figuur 6.1 4-bit DAC

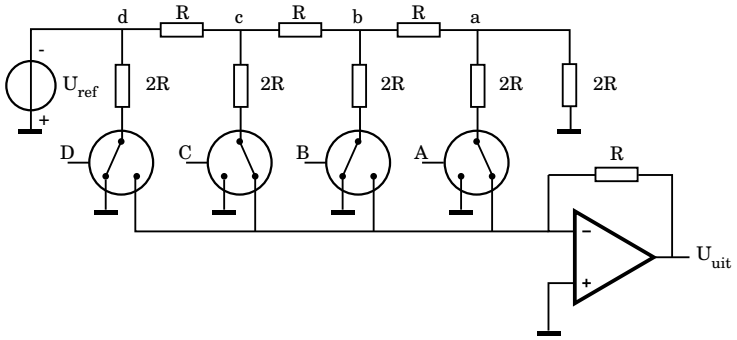
Computersystemen en embedded systemen (LvM)



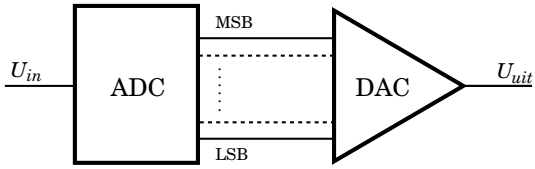
Figuur 6.2 Symbolen analog switch



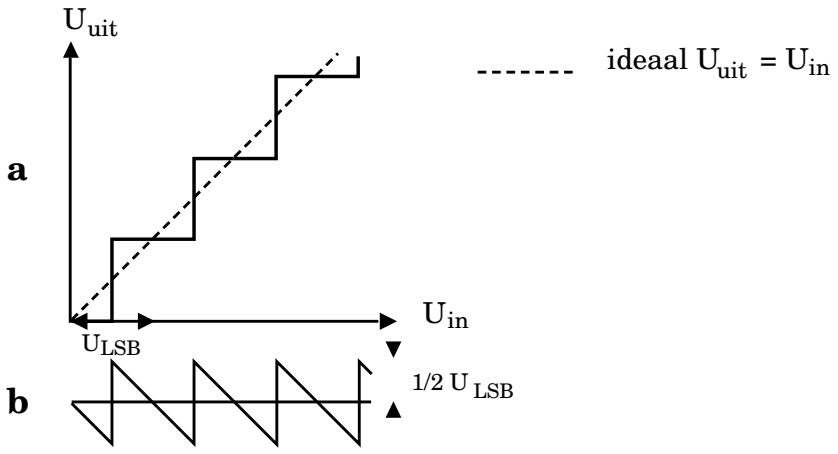
Figuur 6.3 Principe-realisatie van een DAC met een opamp



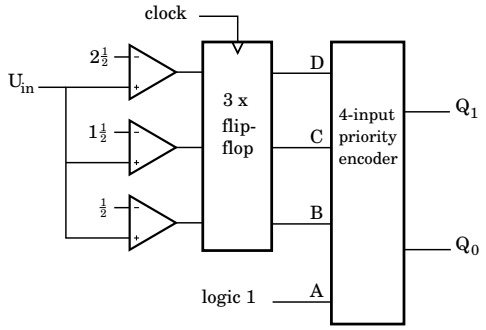
Figuur 6.4 Realisatie van een DAC met een opamp en een ladder-netwerk



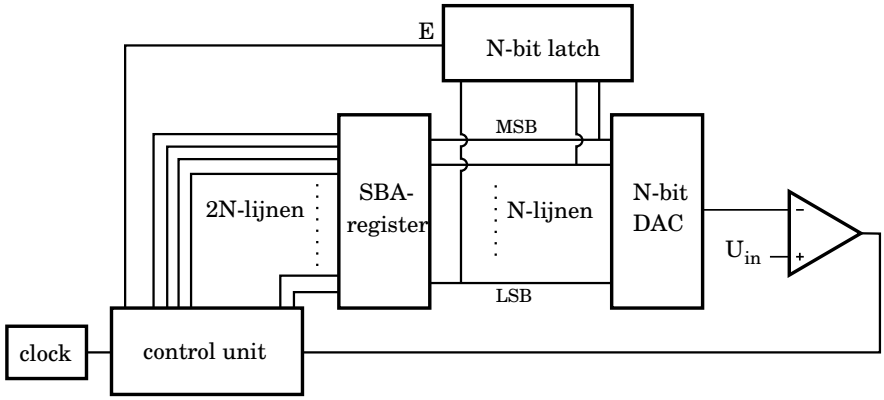
Figuur 6.5 Ideale DAC in serie met een ADC



Figuur 6.6 **a)** $U_{uit}(U_{in})$ voor ADC-DAC-combinatie

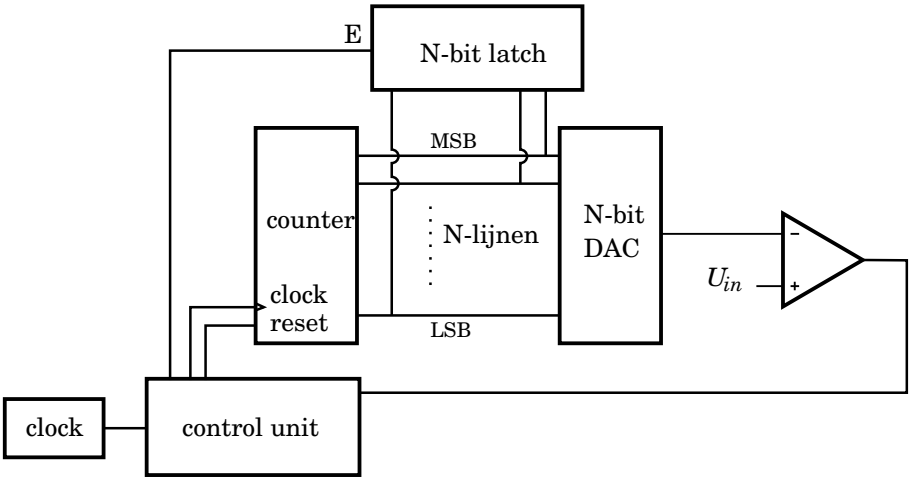


Figuur 6.7 2-bit ADC volgens de parallelmethode

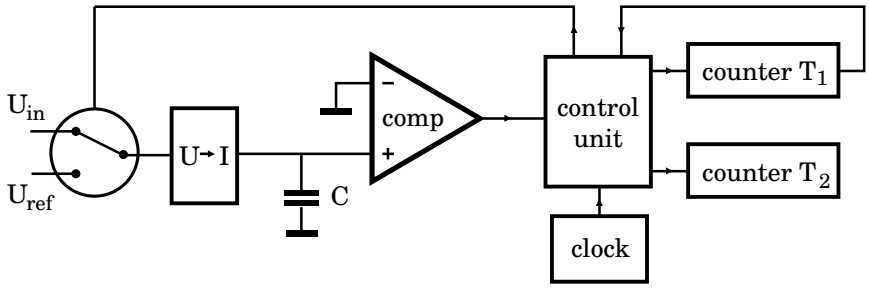


Figuur 6.8 Blokschema ADC volgens SBA-methode

Computersystemen en embedded systemen (LvM)

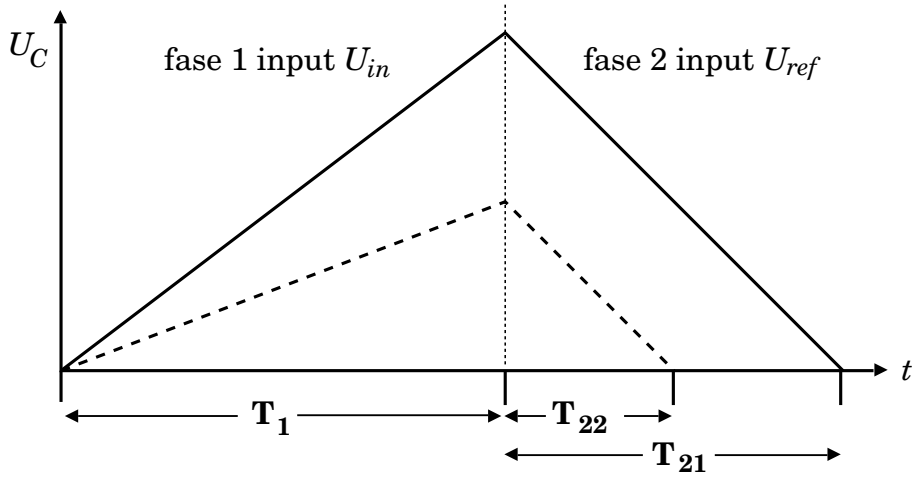


Figuur 6.9 Blokschema ADC met counter en DAC

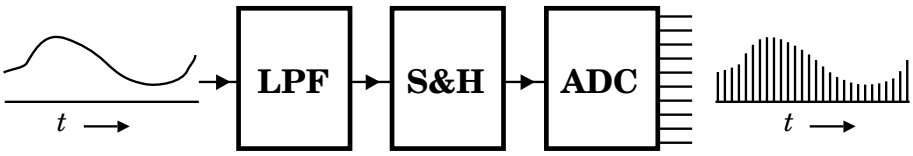


Figuur 6.10 ADC met dual ramp integration

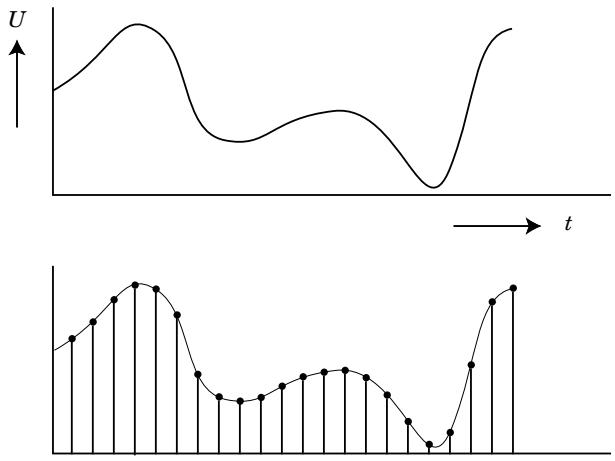
Computersystemen en embedded systemen (LvM)



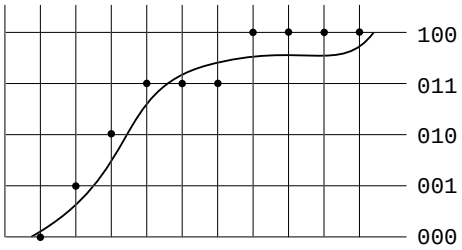
Figuur 6.11 Spanning over C als functie van de tijd



Figuur 6.12 A-D-conversieproces

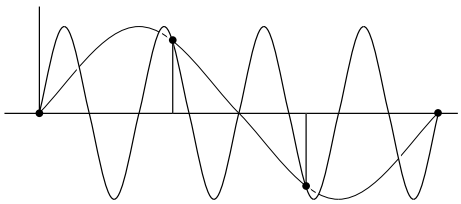


Figuur 6.13 Samplingproces

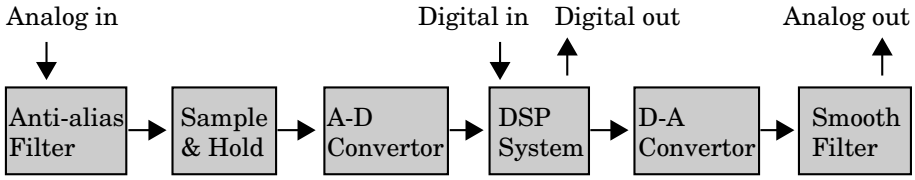


Figuur 6.14 Samplefout bij een zekere resolutie

Figuur 6.15 Samplefout bij hogere resolutie

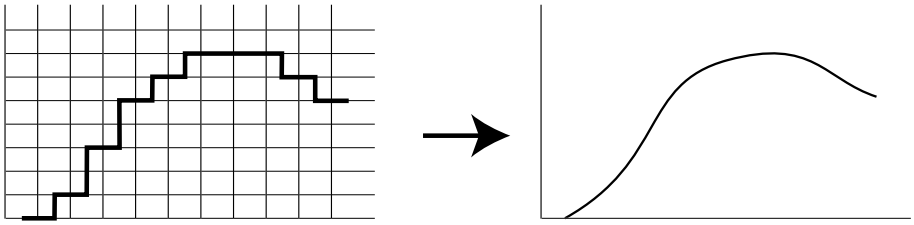


Figuur 6.16 Sampletheorema

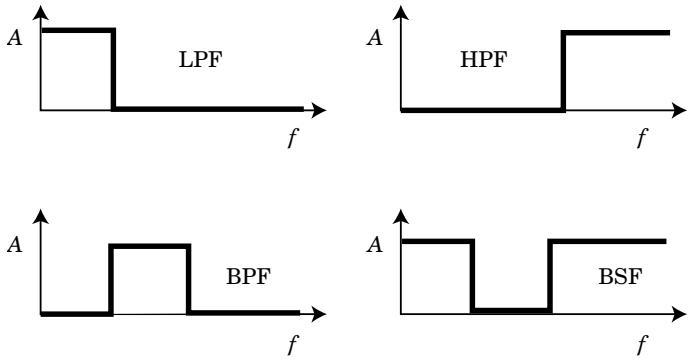


Figuur 6.17 Overzicht van DSP

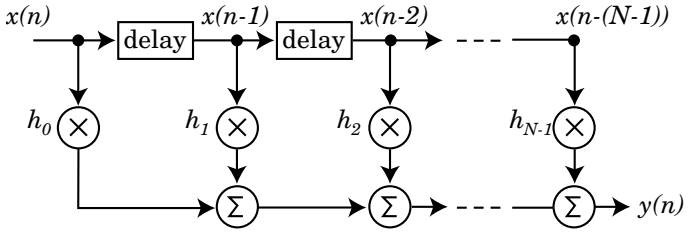
Computersystemen en embedded systemen (LvM)



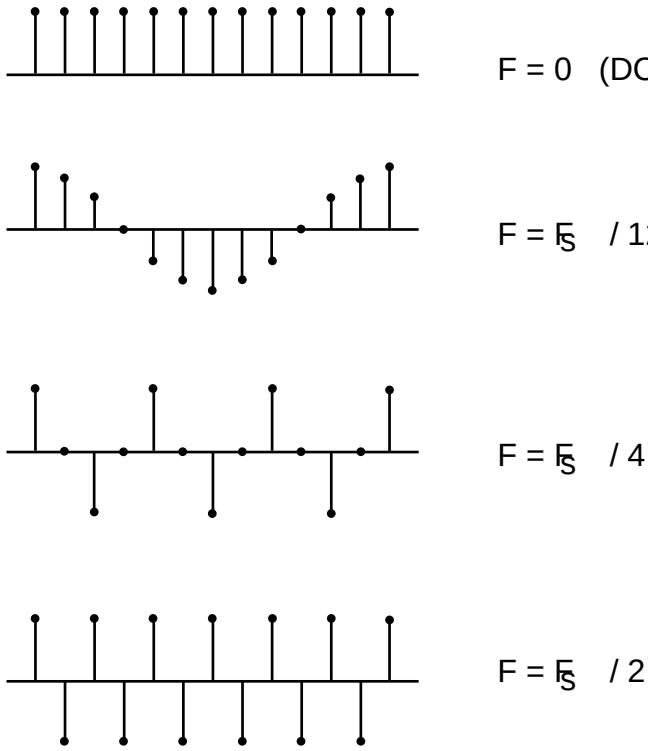
Figuur 6.18 Effect van laagdoorlaatfilter



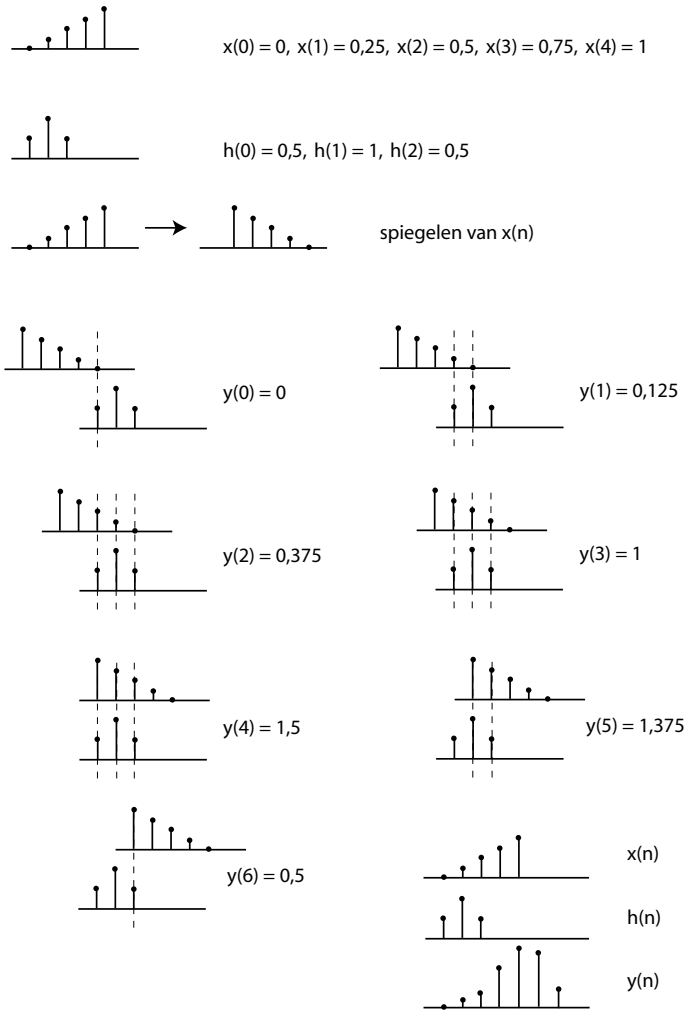
Figuur 6.19 Basisfilters



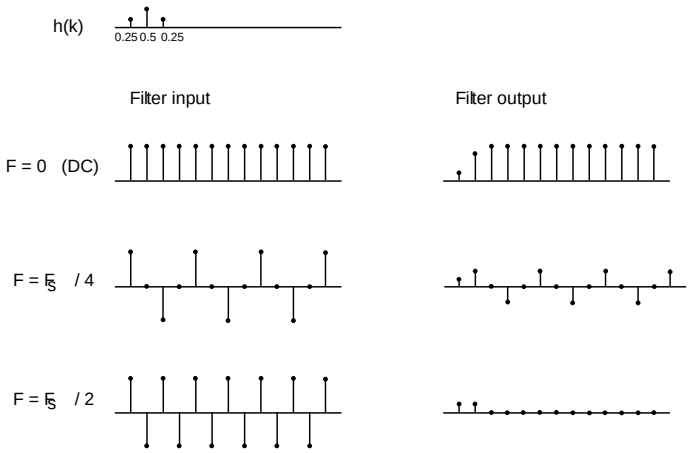
Figuur 6.20 Finite Impluse Response



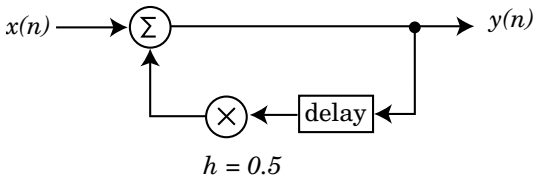
Figuur 6.21 Samples van sinusvormige signalen



Figuur 6.22 Convolutie van twee samplesets

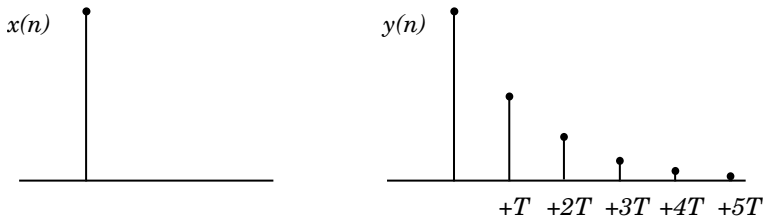


Figuur 6.23 Werking van een eenvoudig LPF

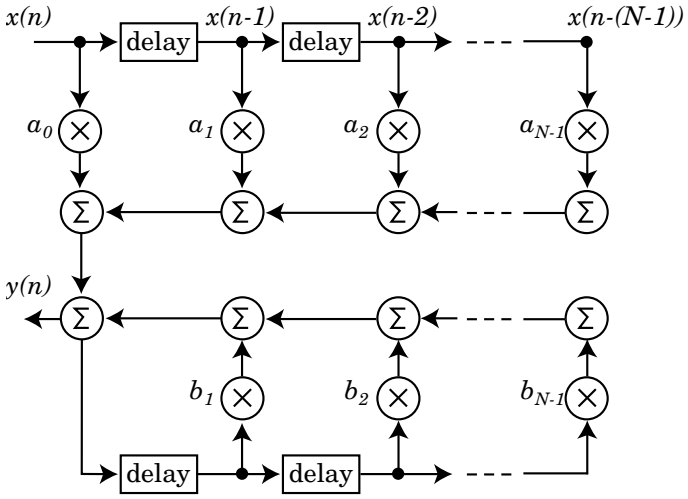


Figuur 6.24 Infinite Impulse Response

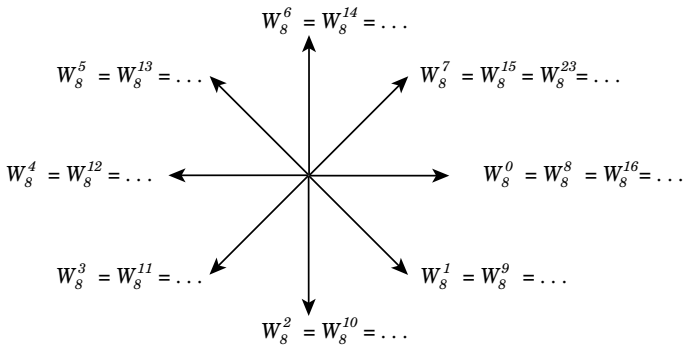
Computersystemen en embedded systemen (LvM)



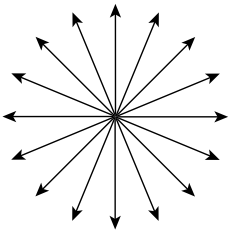
Figuur 6.25 Voorbeeld van IIR filter



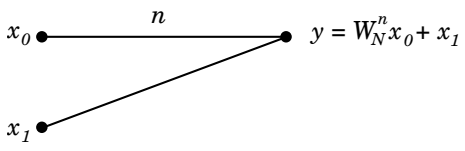
Figuur 6.26 Realisatie van een IIR-filter



Figuur 6.27 Fasehoeken acht-punts FFT

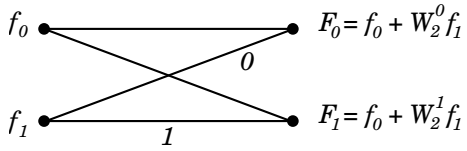


Figuur 6.28 Fasehoeken zestien-punt FFT

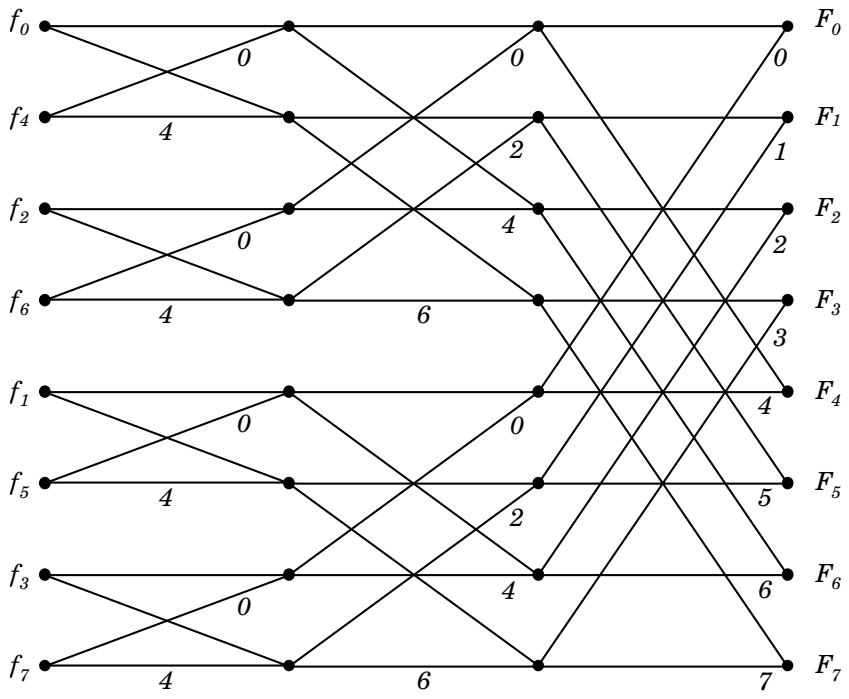


Figuur 6.29 Signal flowdiagram

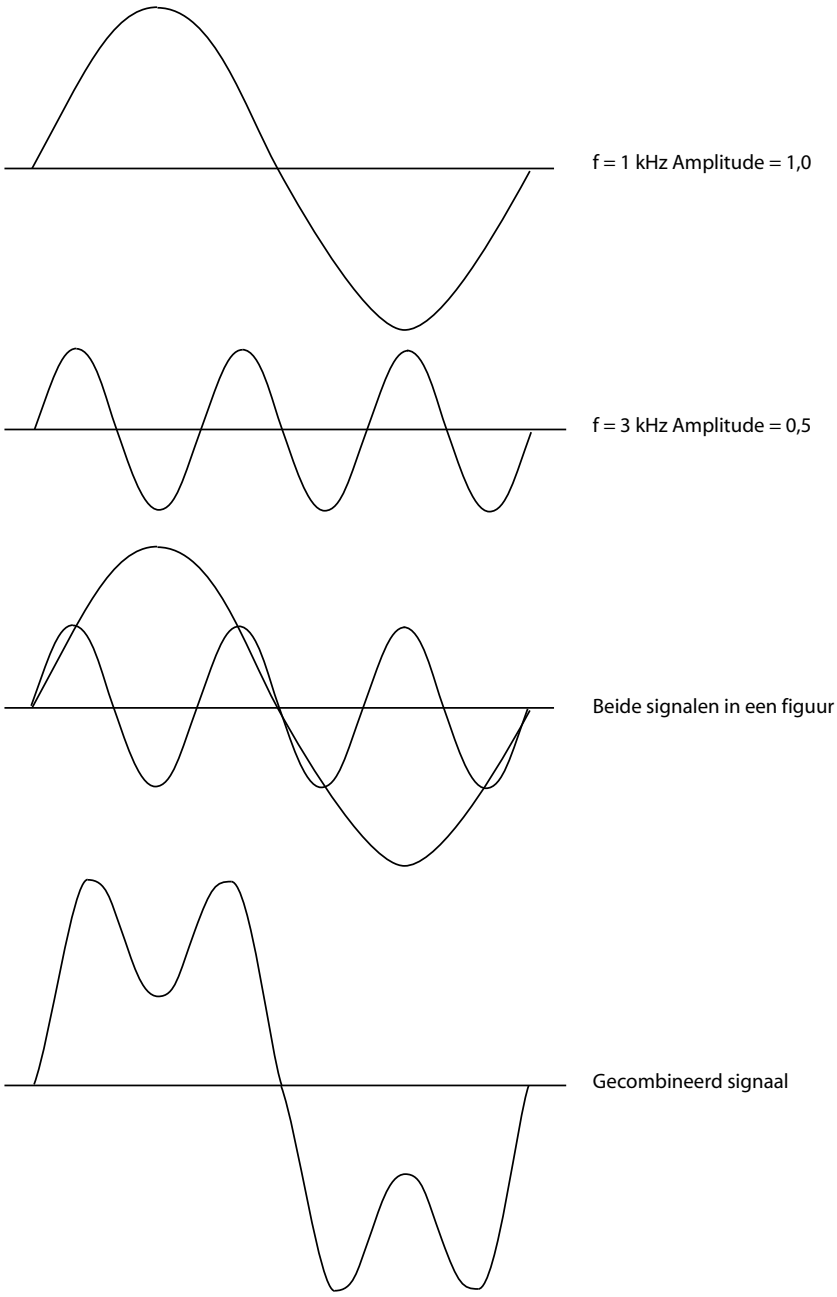
Computersystemen en embedded systemen (LvM)



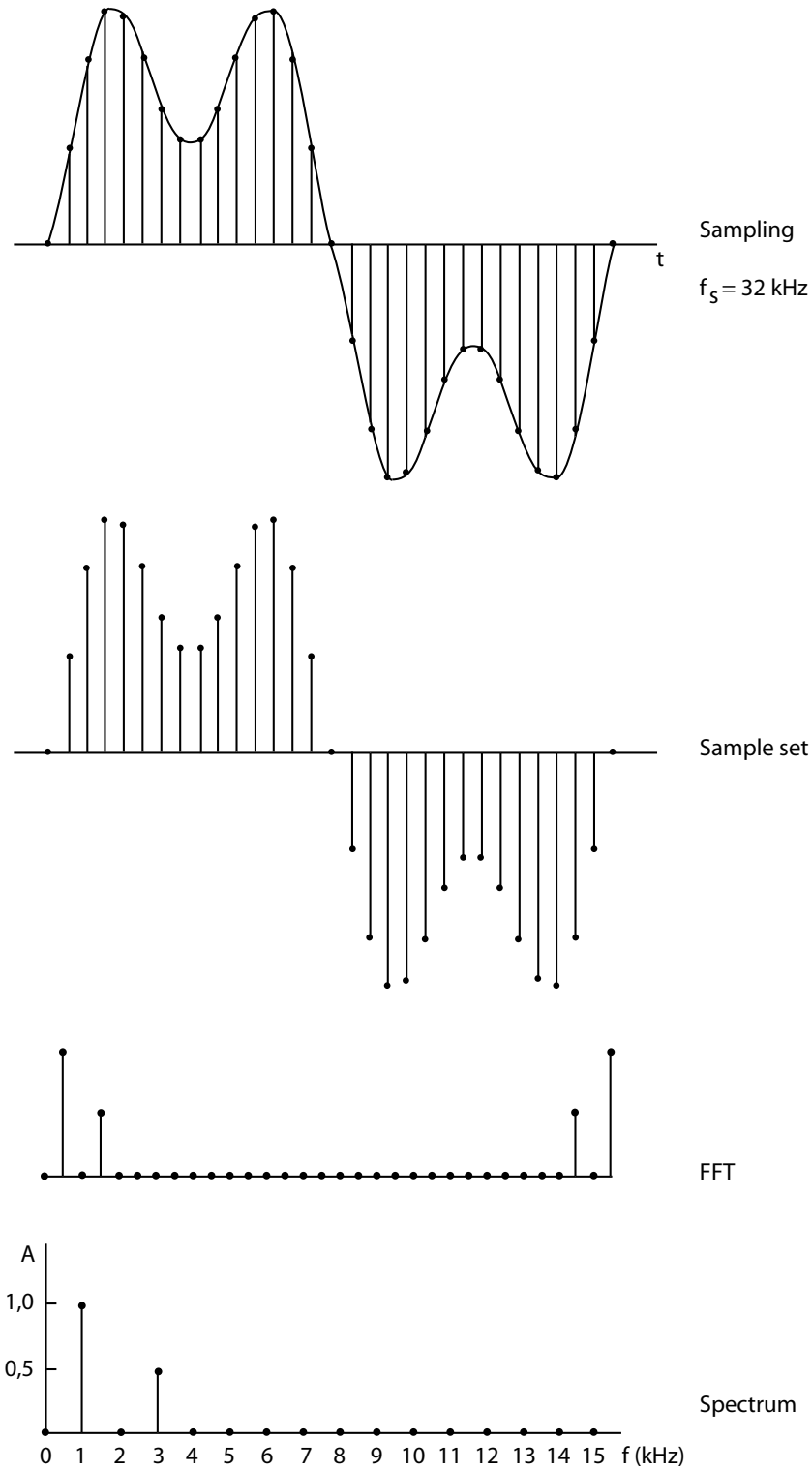
Figuur 6.30 Butterfly voor twee-punts FFT



Figuur 6.31 Acht punts FFT



Figuur 6.32 Samengesteld signaal bestaande uit twee sinussen



Figuur 6.33 FFT van een samengesteld sinussignaal