Opdracht 3.1 Van binair naar decimaal

a. $00100101_{bin} = 2^5 + 2^2 + 2^0 = 32 + 4 + 1 = 37_{dec}$
b. $10011110_{bin} = 2^7 + 2^4 + 2^3 + 2^2 + 2^1 = 128 + 16 + 8 + 4 + 2 = 158_{dec}$
c. $11111010011_{bin} = 2^{10} + 2^9 + 2^8 + 2^7 + 2^6 + 2^4 + 2^1 + 2^0 = 2003_{dec}$

Opdracht 3.2 Van decimaal naar binair

a. $63_{dec} = 32 + 16 + 8 + 4 + 2 + 1 = 11\ 1111_{bin}$
   Zie je dat 63 een minder is dan 64?
   $64_{dec} = 100\ 0000$; 63 is dus een minder, ofwel 011 1111
b. 85 (dec) = 64 + 16 + 4 + 1 =
   $2^6 + 2^4 + 2^2 + 2^0 = 101\ 0101$ (bin)
c. $249_{dec} = 128 + 64 + 32 + 16 + 8 + 1 = 1111\ 1001_{bin}$

Opdracht 3.3 Hexadecimale notatie

a. $87_{dec} = 80 + 7 = 5 \times 16^1 + 7 \times 16^0 = 57_{hex}$
b. $A2_{hex} = A \times 16^1 + 2 \times 16^0 = 10 \times 16 + 2 \times 1 = 162_{dec}$
c. $FF_{hex} = F \times 16^1 + F \times 16^0 = 15 \times 16 + 15 \times 1 = 240 + 15 = 255_{dec}$
   $FF_{hex} = 1111\ 1111_{bin}$
d. 0101111100111011_{bin}
   Verdeel in groepjes van vier bits. Begin rechts.
   0101 1111 0011 1011
   Vertaal elk groepje afzonderlijk in de hexadecimale waarde.
   $0101 = 5_{dec} = 5_{hex}$
   $1111 = 15_{dec} = F_{hex}$
   $0011 = 3_{dec} = 3_{hex}$
   $1011 = 11_{dec} = B_{hex}$
   $0101\ 1111\ 0011\ 1011_{bin} = 5F3B_{hex}$

Opdracht 3.4 Hexadecimale kleurwaarden

a.

rood 255 groen 207 blauw 81 hex #FFCF51	rood 127 groen 94 blauw 180 hex #7F5EB4

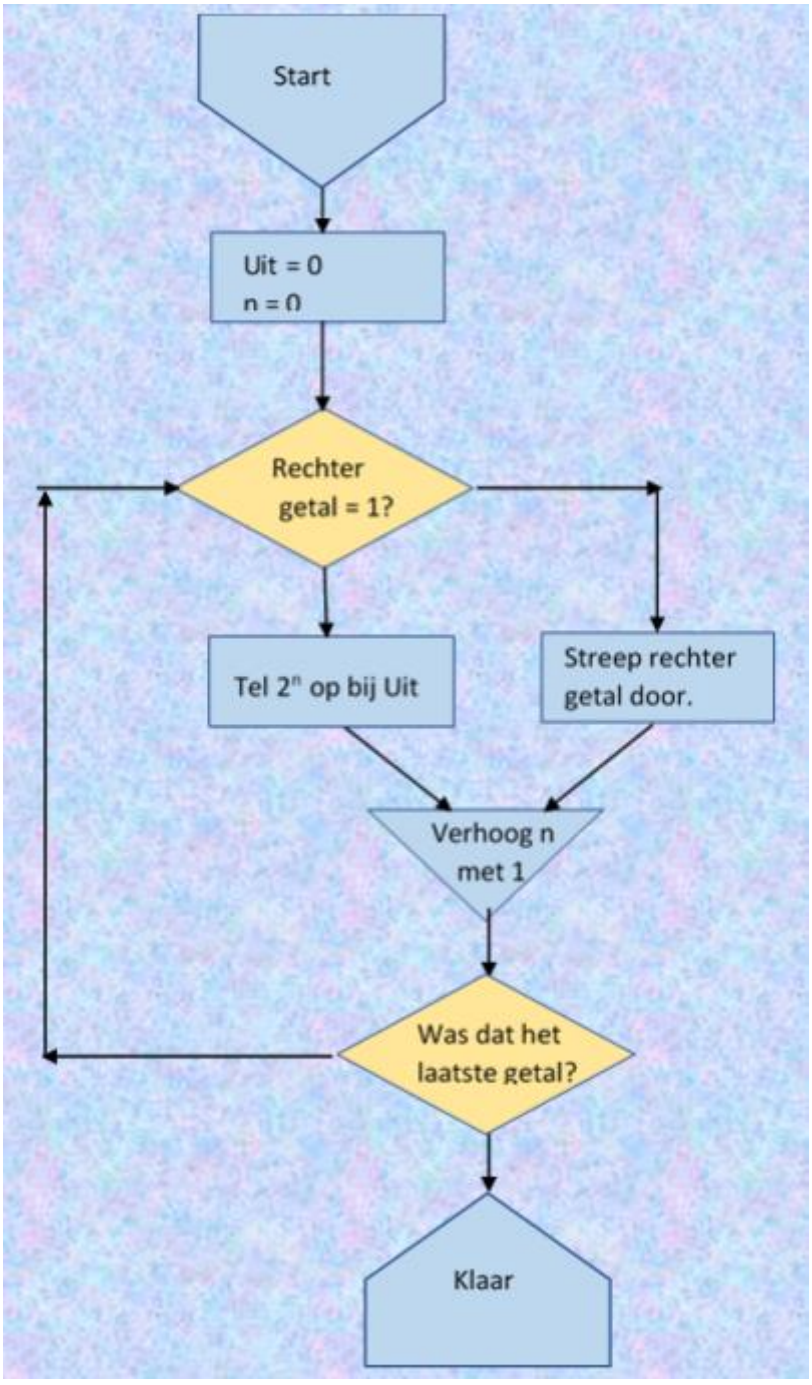
rood 138 groen 241 blauw 190 hex #8AF1BE	rood 241 groen 186 blauw 194 hex #F1BAC2

b.

rood 213 groen 227 blauw 121 hex #D5E379	rood 148 groen 61 blauw 152 hex #94D398

c. - wit
- blauw
- geel
- grijs
- oranje

Opdracht 3.5 Algoritme binair naar decimaal



Opdracht 3.6 Gemengde oefeningen

a. $0101\ 1010_{bin} = 2^6 + 2^4 + 2^3 + 2^1 = 64 + 16 + 8 + 2 = 90_{dec}$
$0101\ 1010_{bin} = 5_{dec}\ 10_{dec} = 5_{hex}\ A_{hex} = 5A$

b. $81A3CC_{hex} = 8 \times 16^5 + 1 \times 16^4 + A \times 16^3 + 3 \times 16^2 + C \times 16^1 + C \times 16^0$
$81A3CC_{hex} = 8 \times 16^5 + 1 \times 16^4 + A \times 16^3 + 3 \times 16^2 + C \times 16^1 + C \times 16^0$
$81A3CC_{hex} = 8 \times 1.048.576 + 1 \times 65.536 + 10 \times 4096 + 3 \times 256 + 12 \times 16 + 12 \times 1$

$81A3CC_{hex} = 8.388.608 + 65.536 + 40.960 + 768 + 192 + 12$
$81A3CC_{hex} = 8.496.076_{dec}$

c. $2017_{dec} = 1 \times 2^9 + 1 \times 2^8 + 1 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$
$2017_{dec} = 11\ 1111\ 1001_{bin}$

$2017_{dec} = 7 \times 16^2 + 14 \times 16^1 + 1 \times 16^0$
$2017_{dec} = 7 \times 16^2 + E \times 16^1 + 1 \times 16^0$
$2017_{dec} = 7E1_{hex}$