

# Logická funkce

$$F = f(A, B, C, D) = C.D + A.B./C + C./A$$

## Pravdivostí tabulka

A	B	C	D	Y
0	0	0	0	0
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1

## Funkce přepsaná do bitobé tabulky

$$F = f(A, B, C, D) = C.D + A.B./C + C./A$$

b7	b6	b5	b4	b3	b2	b1	b0	des
F		A	B	C	D			helpChar
	F		A	B	C	D		helpChar>>1
			BA	CB	DC			firstAND
	nA	nB	nC	nD				~helpChar<<1
			BAnC	CBnD				secondAnd
		nF		nA	nB	nC		~helpChar>>2
				CnA	DnB			thirdAnd

```

#include <stdio.h>
#include <ADUC812.H>
//realizace logické fce
sbit iA = P2^5;
sbit iB = P2^4;
sbit iC = P2^3;
sbit iD = P2^2;
sbit oF = P2^7;

unsigned char helpChar, firstAnd, secondAnd, thirdAnd;
void main ()
{iteration:    helpChar=P2;
              firstAnd= helpChar&(helpChar>>1); //b2
              secondAnd= firstAnd&(~helpChar<<1); //b4
              thirdAnd= helpChar&(~helpChar>>2); //b3
              helpChar= firstAnd<<1|secondAnd>>1|thirdAnd;

              if ((helpChar&0x08)==0) oF=0; else oF=1;
              goto iteration;
}

```

$$F = f(A, B, C, D) = C.D + A.B./C + C./A$$

```

#include <stdio.h>
#include <aduc812.h>
unsigned char bdata inputChar;
sbit iA = P2^5;
sbit iB = P2^4;
sbit iC = P2^3;
sbit iD = P2^2;
sbit oF = P2^7;
main ()
{iteration:      inputChar=P2;
  oF=(iC&&iD||iA&&iB&&~iC||iC&&~A);
goto iteration
}

```

```

#include <stdio.h>
#include <aduc812.h>
code unsigned char outputTruthTable[]={0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 1, 1, 1, 0, 1};
main()
{
  unsigned char input,filteredInput;
  iteration: input=P2>>2;
  filteredInput= 0x0F & input;
  if (outputTruthTable[filteredInput]==1) P2 |= 0x80 ;
    else P2 &= 0x7F;

  goto iteration;
}

```