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Technika cyfrowa – projekt

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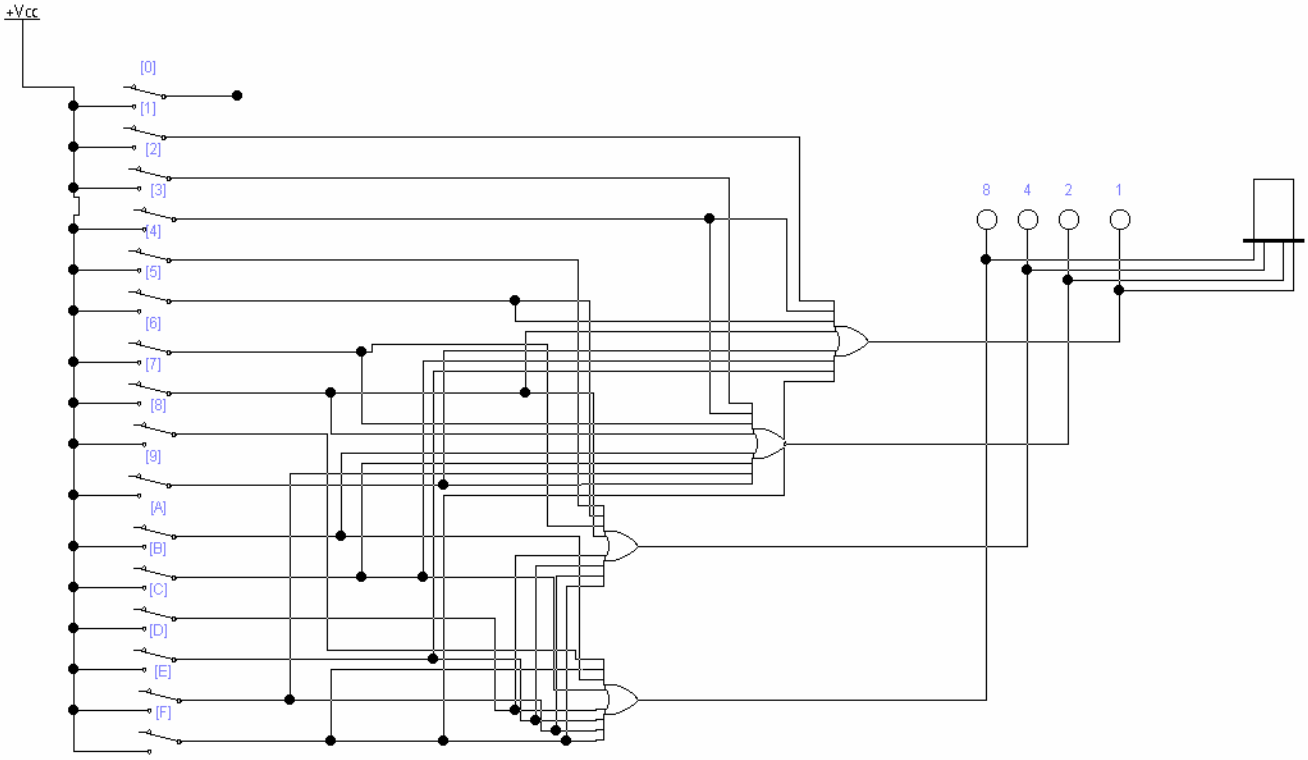
Temat: Klawiatura 16 przyciskowa
Opis: Koder z kodu *1 z 16* na kod *binarny*. Wejście to 16 klawiszy. Wyjście to 4 diody LED
Układy: ispGAL22v10, LSI2032.pdf

1. Funkcja logiczna

$$Out1 = In1 \vee In3 \vee In5 \vee In7 \vee In9 \vee In11 \vee In13 \vee In15$$
$$Out2 = In2 \vee In3 \vee In6 \vee In7 \vee In10 \vee In11 \vee In14 \vee In15$$
$$Out3 = In4 \vee In5 \vee In6 \vee In7 \vee In12 \vee In13 \vee In14 \vee In15$$
$$Out4 = In8 \vee In9 \vee In10 \vee In11 \vee In12 \vee In13 \vee In14 \vee In15$$

2. Workbench



3. Cupl

```
Name     Keyb16 ;
PartNo   00 ;
Date     2005-05-07 ;
Revision 01 ;
Designer Jedynak Grobelny ;
Company  MY ;
Assembly None ;
Location  ;
Device  G22V10LCC ;

/* *************** INPUT PINS *********************/
PIN  [3..7]   = [In0..4];
PIN [9..13] = [In5..9];
PIN [16..21] = [In10..15];

/* *************** OUTPUT PINS *********************/

PIN [23..26] = [Out1..4];

 /*                                  */


Out1 = In1 # In3  # In5 # In7 # !In9 # !In11 # !In13 # !In15  ;
Out2 = In2 # In3 # In6 # In7 # !In10 # !In11# !In14 # !In15 ;
Out3 = In4 # In5 # In6 # In7 # !In12 # !In13 # !In14 # !In15 ;
Out4 = !In8 # !In9 # !In10 # !In11 # !In12 # !In13 # !In14 #
        !In15 ;
```

4. PDS

```
XPIN IO XCE LOCK 28;
OB11 (XC4, C4);
XPIN IO XCE LOCK 27;
OB11 (XC3, C3);
XPIN IO XCE LOCK 26;
OB11 (XC2, C2);
XPIN IO XCE LOCK 25;
OB11 (XC1, C1);

XPIN IO XI16 LOCK 22;
IB11 (I16, XI16);
XPIN IO XI15 LOCK 21;
IB11 (I15, XI15);
XPIN IO XI14 LOCK 20;
IB11 (I14, XI14);
XPIN IO XI13 LOCK 19;
IB11 (I13, XI13);
XPIN IO XI12 LOCK 18;
IB11 (I12, XI12);
XPIN IO XI11 LOCK 17;
IB11 (I11, XI11);
XPIN IO XI10 LOCK 16;
IB11 (I10, XI10);
XPIN IO XI9 LOCK 15;
IB11 (I9, XI9);
XPIN IO XI8 LOCK 10;
IB11 (I8, XI8);
XPIN IO XI7 LOCK 9;
IB11 (I7, XI7);
XPIN IO XI6 LOCK 8;
IB11 (I6, XI6);
XPIN IO XI5 LOCK 7;
IB11 (I5, XI5);
XPIN IO XI4 LOCK 6;
IB11 (I4, XI4);
XPIN IO XI3 LOCK 5;
IB11 (I3, XI3);
XPIN IO XI2 LOCK 4;
IB11 (I2, XI2);
XPIN IO XI1 LOCK 3;
IB11 (I1, XI1);

SIGTYPE C2 OUT;
SIGTYPE C3 OUT;
SIGTYPE C4 OUT;
EQUATIONS
C1 = I2 # I4  # I6 # I8 # !I10 # !I12 # !I14 # !I16     ;
C2 = I3 # I4 # I7 # I8 # !I11 # !I12# !I15 # !I16 ;
C3 = I5 # I6 # I7 # I8 # !I13 # !I14 # !I15 # !I16 ;
C4 = !I9 # !I10 # !I11 # !I12 # !I13 # !I14 # !I15 # !I16 ;
END;
```