

C code

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1 //Code written on December 30, 2020
2
3 //Revised December 30, 2020
4
5 // by maheshvasimalla
6
7 //This program implements the incremental decoder using boolean
  logic in C
8
9 #include <stdio.h>
10
11 //The main function
12 int main( void )
13 {
14
15 //2 bits = 1 baud
16 //4 bits = 1 nibble
17 //8 bits = 1 byte
18
19 //unsigned char takes input as 1 byte
20
21 unsigned char Z=0x01,Y=0x00,X=0x00,W=0x01; //inputs in hex
22 unsigned char one = 0x01; //used for displaying the output in bit
23 unsigned char A,B,C,D; //outputs
24
25 D = (W&X&Y&(~Z)) | ((~W)&(~X)&(~Y)&Z); //Boolean function for D
26 B=((~Z)&(~Y)&(~X)&W) | ((~Z)&(~Y)&X&(~W)) | ((~Z)&Y&(~X)&W) | ((~Z)&Y&X
  &(~W));
27 C=((~Z)&(~Y)&X&W) | ((~Z)&Y&(~X)&(~W)) | ((~Z)&Y&(~Z)&W) | ((~Z)&Y&X&(~W)
  );
28 A = ((~W)&(~X)&(~Y)&(~Z)) | ((~W)&X&(~Y)&(~Z)) | ((~W)&(~X)&Y&(~Z))
  | ((~W)&X&Y&(~Z)) | ((~W)&(~X)&(~Y)&(Z));
29 //Boolean function for A
30
31 printf( "%x%x%x%x", one&Z, one&Y, one&X, one&W ); //Iutput ZYXW
32 printf( " " );
33 printf( "%x%x%x%x\n", one&D, one&C, one&B, one&A ); //Output DCBA
34 return 0;
35 }
```