DLD Assignment 4

Rajesh Kumar Rajoriya

January 1, 2021

1 C code

```c
// by Rajesh Kumar Rajoriya
//This program implements the incremental decoder using boolean logic in C

#include <stdio.h>

//The  main function
int main(void)
{

//2 bits = 1 baud
//4 bits = 1 nibble
//8 bits = 1 byte

//unsigned char takes input as 1 byte

unsigned char Z=0x01,Y=0x00,X=0x00,W=0x01;  //inputs in hex
unsigned char one = 0x01;      //used for displaying the output in bit
unsigned char A,B,C,D;         //outputs

D = (W&X&Y&(~Z))|((~W)&(~X)&(~Y)&Z);      //Boolean function for D
B=((~Z)&(~Y)&(~X)&W)|((~Z)&(~Y)&X&(~W))|((~Z)&Y&(~X)&W)|((~Z)&Y&X&(~W));//Boolean function for B
C=((~Z)&(~Y)&X&W)|((~Z)&Y&(~X)&(~W))|((~Z)&Y&(~Z)&W)|((~Z)&Y&X&(~W)); //Boolean function for C
A = ((~W)&(~X)&(~Y)&(~Z))|((~W)&(X)&(~Y)&(~Z))|((~W)&(~X)&Y&(~Z))|((~W)&X&Y&(~Z))|((~W)&(~X)&(~Y)&(Z));
//Boolean function for A

printf("%x%x%x%x "  ,one&Z,one&Y,one&X,one&W); //Input ZYXW
printf("%x%x%x%x\n"  ,one&D,one&C,one&B,one&A);   //Output DCBA
return 0;
}
```