

实验七：A/D 转换器的使用

The circuit diagram illustrates a digital logic implementation of a sequence detector. The components and their connections are as follows:

- U7: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Outputs Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7.
- U8: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U9: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U10: NOT gate** - Input A16. Output Y0.
- U11: NAND gate** - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U2: 74ALS138** (3-to-8 decoder) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Outputs Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7.
- U3: SN74ALS138** (3-to-8 decoder) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Outputs Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7.
- U4-A: LM324** (OpAmp) - Non-inverting input (+) connected to VREF(+). Inverting input (-) connected to output. Output connected to R1 (510k).
- U4-B: LM324** (OpAmp) - Non-inverting input (+) connected to VREF(+). Inverting input (-) connected to output. Output connected to R2 (510k).
- U5: 74ALS138** (3-to-8 decoder) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Outputs Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7.
- U6: AND gate** - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U7: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U8: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U9: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U10: NOT gate** - Input A16. Output Y0.
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- U2: 74ALS138** (3-to-8 decoder) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Outputs Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7.
- U3: SN74ALS138** (3-to-8 decoder) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Outputs Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7.
- U4-A: LM324** (OpAmp) - Non-inverting input (+) connected to VREF(+). Inverting input (-) connected to output. Output connected to R1 (510k).
- U4-B: LM324** (OpAmp) - Non-inverting input (+) connected to VREF(+). Inverting input (-) connected to output. Output connected to R2 (510k).
- U5: 74ALS138** (3-to-8 decoder) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Outputs Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7.
- U6: AND gate** - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
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- U8: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U9: 74ALS00** (NAND gate) - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.
- U10: NOT gate** - Input A16. Output Y0.
- U11: NAND gate** - Inputs A16, A19, A18, A17, A15, A14, A13, A12, A11, A10, A9, A8, A7, A6, A5, A4, A3, A2, A1, A0. Output Y0.

① 画出地址译码电路
如上图所示

② 写出为完成实验②及实验③所编写的程序段

```
1. //T0832-2.c
2.
3. #include <stdio.h>
4. #include <stdlib.h>
5. #include <conio.h>
6. #include <bios.h>
7. #include <ctype.h>
8. #include <process.h>
9.
10. void key(void);
11. void delay(int time);
12.
13. //*****根据查看配置信息修改下列符号值*****
14. #define IOY0      0x3000
15. // #define IOY1      0x3040
16. //*****
17. #define DA0832      IOY0 + 0x40*2
18. #define AD0809      IOY0 + 0x00*2
19. int ch1;
20.
21. void main()
22. {
23.     int data;
24.     while(1){
25.         for(ch1=0;ch1<0x7f;ch1++){
26.             {
27.                 outp(DA0832, ch1);
28.                 delay(0xf00);
29.                 printf("%02X\n",ch1);
30.                 outp(AD0809, 0x00);
31.
32.                 data = inp(AD0809);
33.                 delay(0xf00);
34.                 printf("%02X\n", data);
35.                 printf("\n");
36.             }
37.         }
38.     }
39.
40. void delay(int time)
41. {
42.     int i;
43.     int j;
```

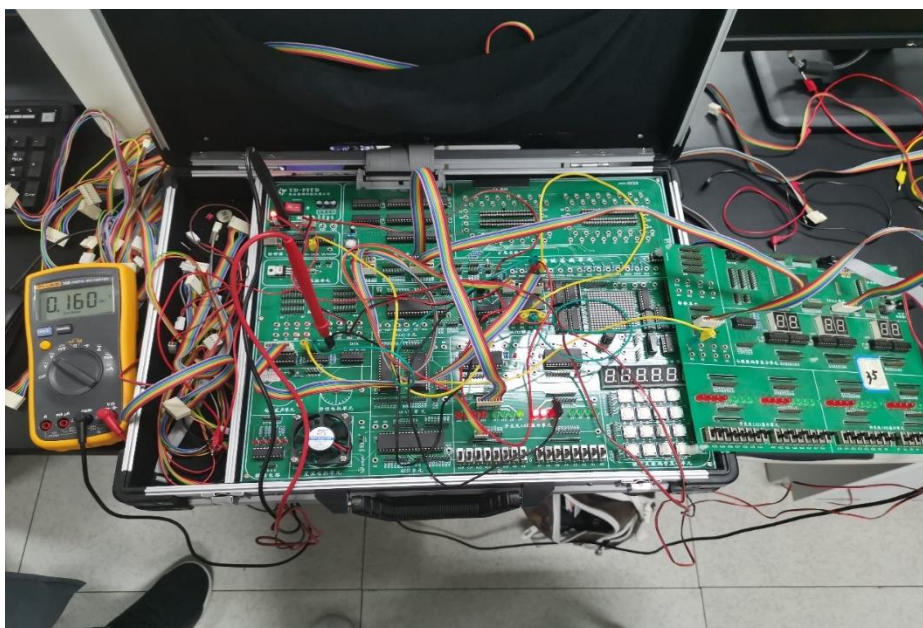
```

44.     for(i=0;i<=time;i++)
45.     {
46.         for(j=0;j<=0xf00;j++)
47.         {   }
48.     }
49.     return;
50. }

```

三、实验结果

试验箱接线如下：



控制台输出如下：

