Embedded System Lab 2

Digital Input and Output

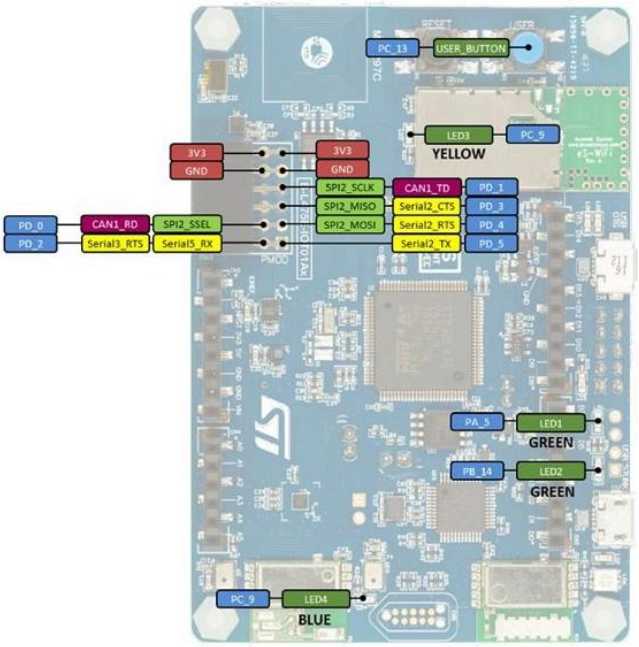
110590022 陳冠晰

1. How do you look for a digital pin using the first pinout diagram and the second pinout diagram?

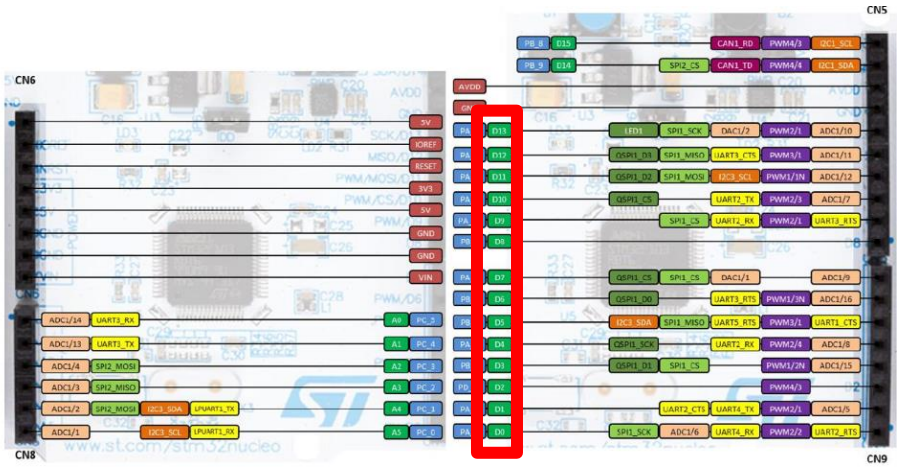
   Check whether the pin name start with D(digital) at the second pinout diagram.

   Also can refer the PinName.h or use Arduino pin names.

   First pinout diagram:



   Second pinout diagram



2. Please write a mbed program. The program should monitor the state of the push-button switch. When the switch's state is zero, the 7-segment display should cycle through the digits 0 through 9 in ascending order. Conversely, when the switch's state is one, the 7-segment display should cycle through the digits 9 through 0 in descending order.

main.cpp

```
#include "mbed.h"

// 7-segment display
BusOut display(D6, D7, D9, D10, D11, D5, D4, D8);
char table[10] = {0x3F, 0x06, 0x5B, 0x4F, 0x66, 0x6D, 0x7D, 0x07, 0x7F, 0x6F};
// push button
DigitalIn mypin(BUTTON1);
DigitalOut myled(LED1);

int main()
{
    // check mypin object is initialized and connected to a pin
   if (mypin.is_connected())
   {
      printf("mypin is connected and initialized! \n\r");
   }

   // Optional: set mode as PullUp/PullDown/PullNone/OpenDrain
   mypin.mode(PullNone);

    while (1)
    {
        printf("mypin has value : %d \n\r", mypin.read());
        myled = mypin; // toggle led based on value of button
        if (mypin.read() == 0) {
            for (int i = 0; i < 10; i = i + 1)
            {
                display = table[i];
                ThisThread::sleep_for(1s);
                if (mypin.read() == 1) break;
            }
        } else {
            for (int i = 9; i >= 0; i = i - 1)
            {
                display = table[i];
                ThisThread::sleep_for(1s);
                if (mypin.read() == 0) break;
            }
        }
    }
}
```

Problems × Output × Libraries × DISCO-L4S5I (B-L4S5I-IOT01A) ×

```
mypin has value : 0
mypin has value : 1
mypin has value : 0
mypin has value : 1
mypin has value : 0
mypin has value : 1
mypin has value : 1
```