1. Display 0~F
   (1) How to send data to MAX7219?
   Bit 0~7 是 data, bit 8~11 是 address.
   ➔ 送出的資料 = (address << 8) | data
   送資料的時候，要先送 MSB
   送完一次資料之後，要送出一個 clock posedge
   送完全部的資料之後，要送出一個 CS posedge
   Code:(same in every question) (din: PA0 clock: PA4 CS: PA1)

```
MAX7219Send:
  //input parameter: r0 is ADDRESS , r1 is DATA
  // send r0 << 8 | r1
  and   r1, r1, #0xFF// mask excessive bits in r1
  lsl   r0, r0, #8
  orr   r0, r0, r1
  mov   r2, #12
  ldr   r3, =GPIOA_ODR
  for_loop:
      subs r2, r2, #1
      lsr   r4, r0, r2
      and   r1, r4, #1// take the last bit of r0
      str   r1, [r3]
      mov   r1, #0b10000// clock posedge
      str   r1, [r3]
      bne   for_loop
  mov r1, #0b10// CS posedge
  str r1, [r3]
  bx lr
```

   (2) What to send?
   (I) Shutdown=1
   To turn on MAX7219
   (II) Scan_limit=0
   Scan only digit 0
   (III) Intensity=0xF(optional)
   Set the brightness of LEDs to the brightest
   (IV) Decode_mode=0
   Turn off decode mode for all digits
   (V) Digit0, data
   Send patterns of 0~F with delay in between

2. Display student ID

   What to send?

   (I) Shutdown=1

   To turn on MAX7219

   (II) Scan_limit=6

   Scan only digit 0~6

   (III) Intensity=0xF(optional)

   Set the brightness of LEDs to the brightest

   (IV) Decode_mode=0xFF

   Turn on decode mode for all digits

   (V) Digit 0~6, data

   Send digits of student ID in its actual number

3. Display fibbonacci

   (1) Debounce and hold

   When a few 0 is read, the button is pressed

   When a lot of 0 is read, the button is held

   Also, a flag will be set when the button is held so that the button will not be "pressed" again after being released

   (2) Find the digits to display and determine the scan limit

   Find digits by doing modulus 10 and divide by 10 repeatedly

   Count up the number of digits to display in the process as well

   Store them in the memory for display