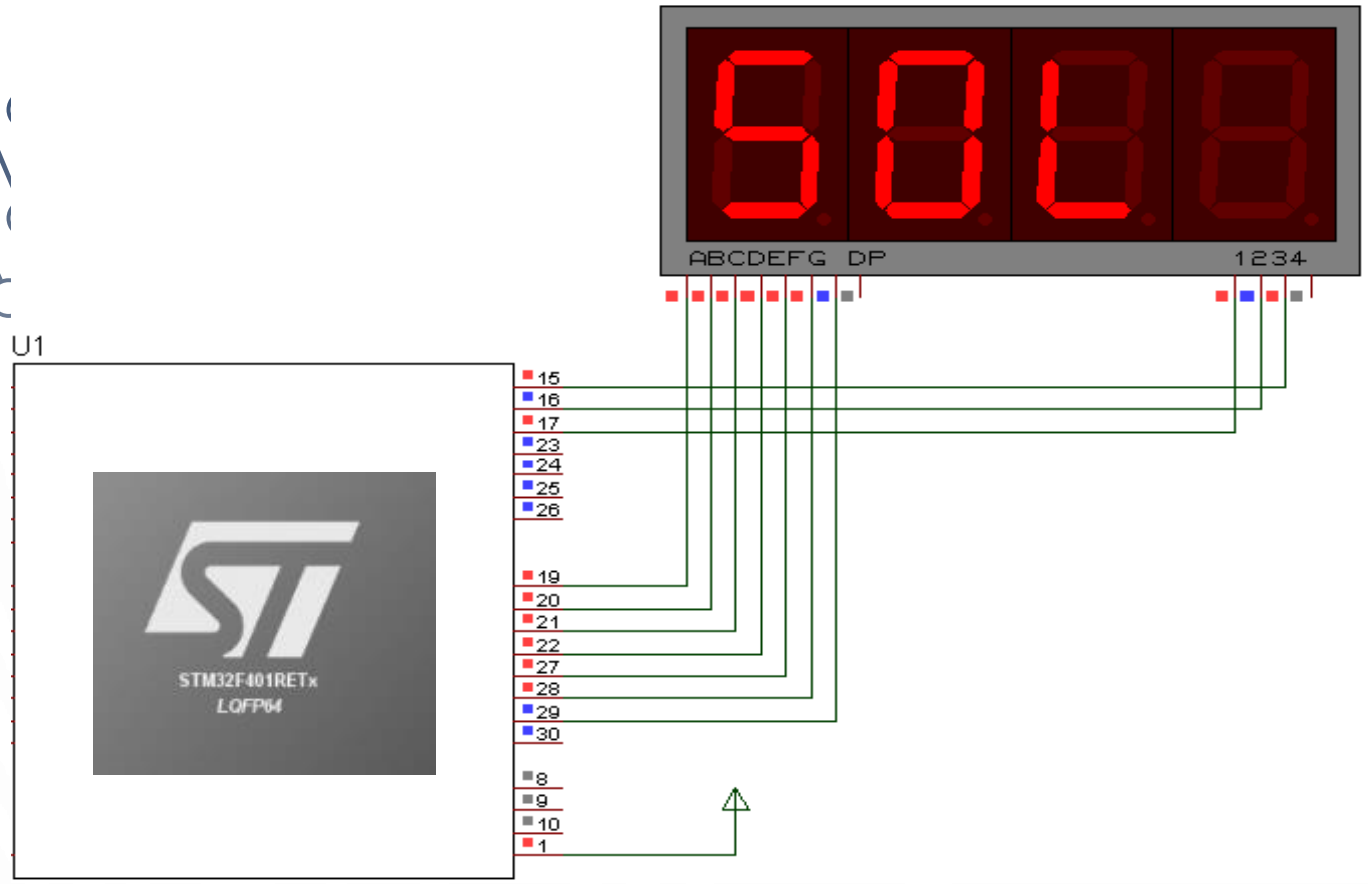
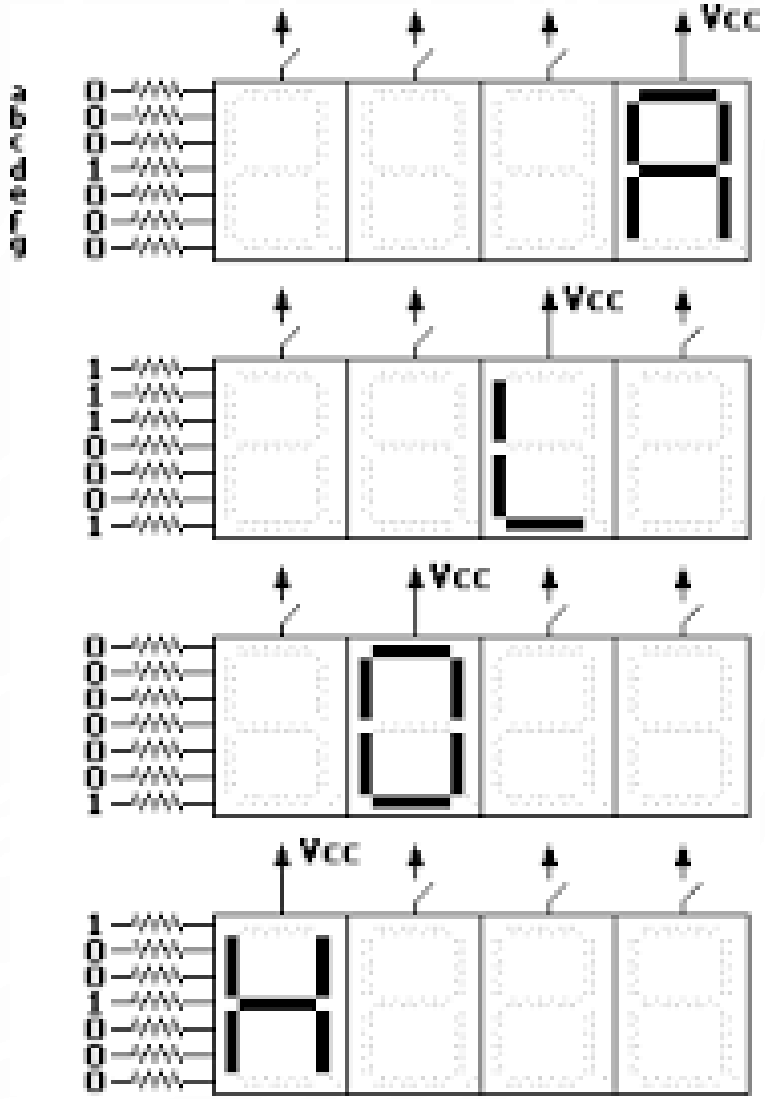
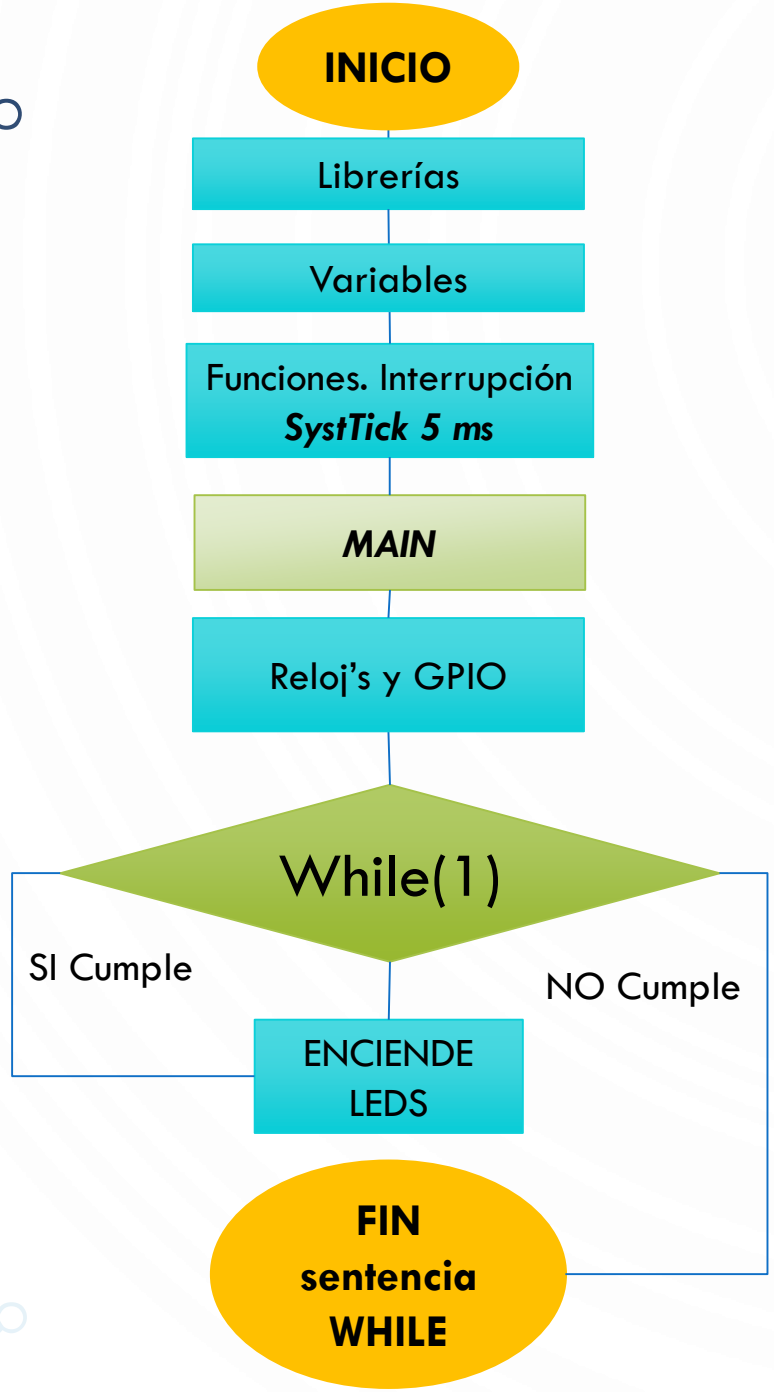
MICROS 32 BITS
STM – VD/GPIO

ROBINSON JIMENEZ MORENO


ABCDEFG DP
1234
U1
STM32F401RETx
LQFP64
15
16
17
23
24
25
26
19
20
21
22
27
28
29
30
8
9
10
1

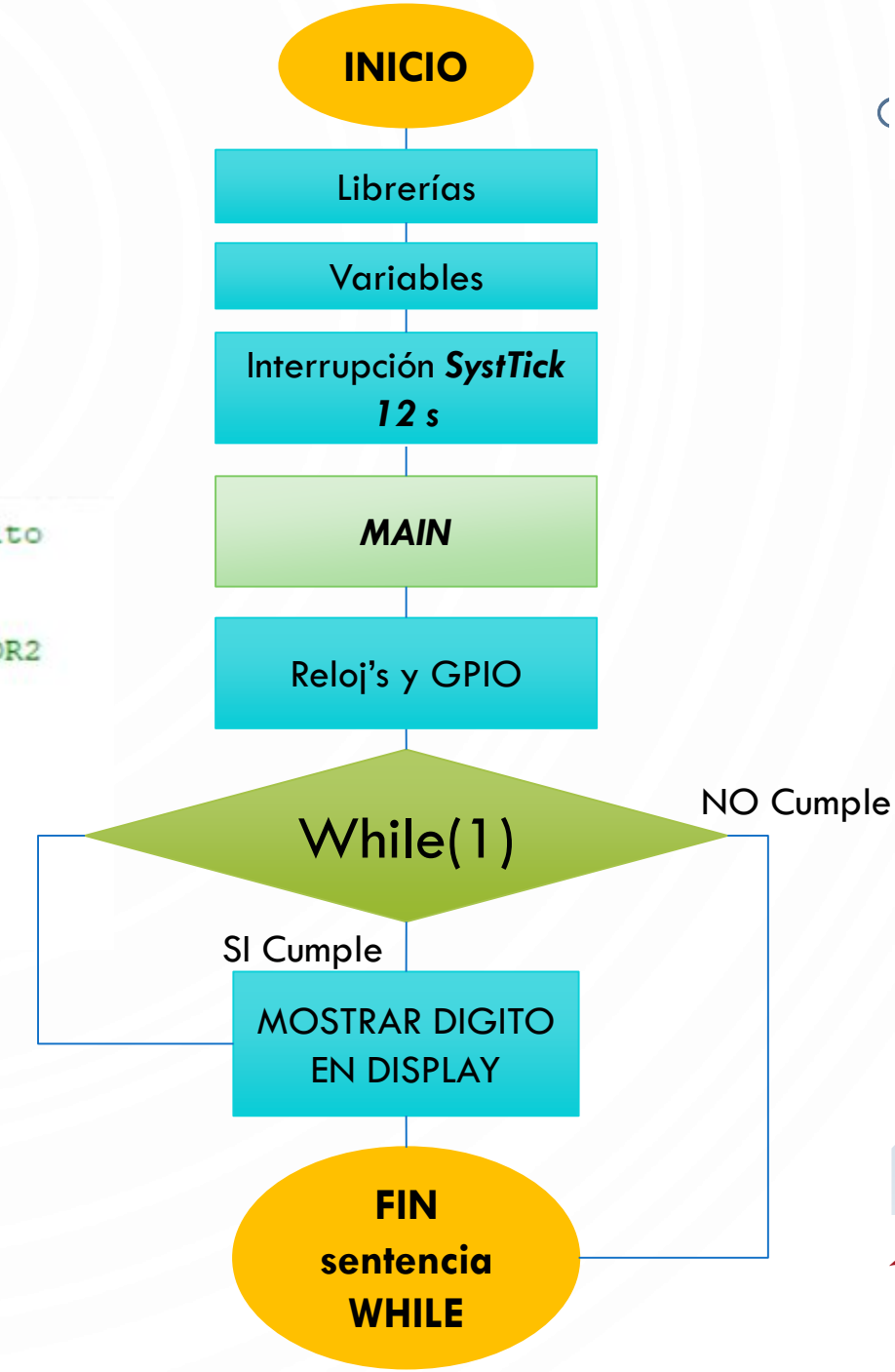

a
b
c
d
e
f
g
Vcc
0 0 0 1 0 0 0
1 1 1 0 0 0 0 1
0 0 0 0 0 0 0 1
1 0 0 0 1 0 0 0



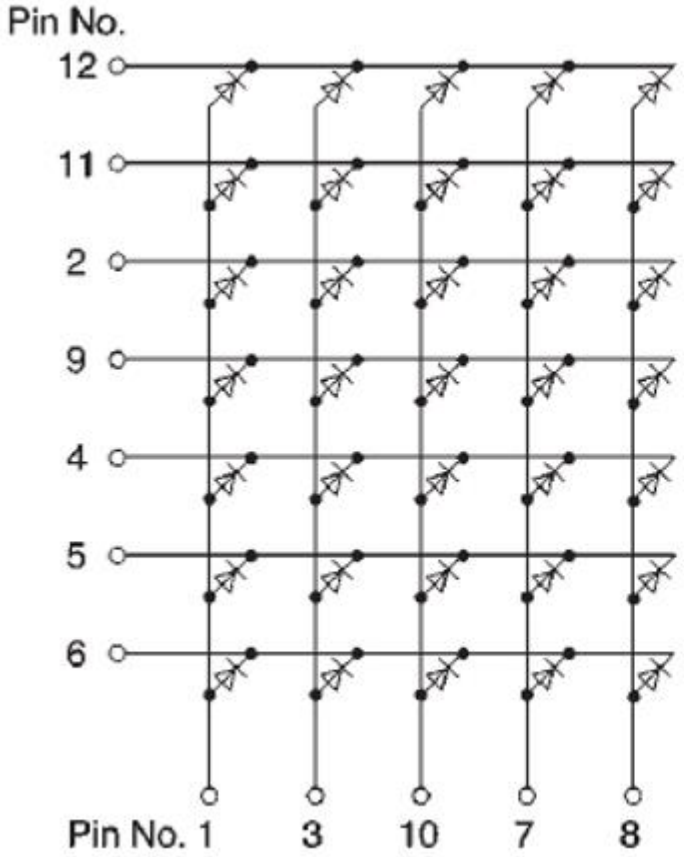

```c
#include <stdio.h>
#include "stm32f7xx.h"
int numeros[10]={126,48,109,121,51,91,95,112,127,123};
int c,a,b,tiempo=0;

extern "C"
{
  void SysTick_Handler(void)
  {
    tiempo++;
    if(tiempo == 5000){
      tiempo = 0;
    }
  }
}

int main(void){

  RCC -> AHB1ENR = 0X2; //PUERTO B
  GPIOB -> MODER = 0X555555; //SALIDA PARA LOS LEDS
  GPIOB -> OTYPER = 0X0; //PUSH PULL
  GPIOB -> OSPEEDR = 0X555555; //VELOCIDAD MEDIA
  GPIOB -> PUPDR = 0; //PULL UP;
  SystemCoreClockUpdate();
  SysTick_Config(SystemCoreClock/1000);

  while(1){
    for(a=0;a<10;a++){
      for(b=0;b<10;b++){
      for(c=0;c<10;c++){
            GPIOB->ODR= numeros[b];GPIOB -> ODR = (0UL <<7);
            while(tiempo<5000){}
            GPIOB->ODR= numeros[a];GPIOB -> ODR = (1UL <<7);
        while(tiempo<5000){}
            }
    }
  }}
}
```

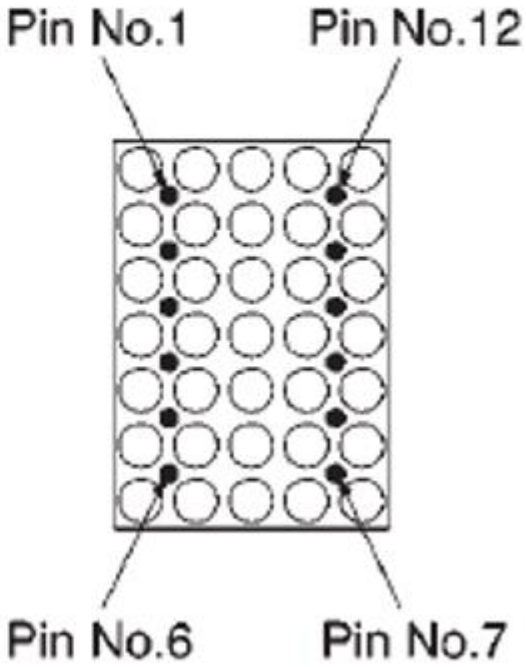
```
//////////////NUMEROS BASICO MULTIPLEXADOS DESAPARECIENDO//////////////////////

#include "STM32F7xx.h"

int time=1000,time2,cont=0;

char BCD [14] = {0XC0,0xF9,0XA4,0XB0,0X99,0X92,0X83,0XF8,0X80,0X98,0xBF,0x7F};
extern "C" // GESTOR DE INTERRUPCIONES
{
void SysTick_Handler ()// Interrupción cada 100ms
{
  time2++;
  if (time2==12)time2=0;

}//fin Systick
}// fin extern
int main(void)
{ int i=0;
  //CONFIGURACION "CLOCK"
  RCC->AHB1ENR =0xFFFF;
  //CONFIGURACION DE PINES
  GPIOF->MODER   = 0x55555555;
  GPIOF->OTYPER  = 0;
  GPIOF->OSPEEDR = 0x55555555;
  GPIOF->PUPDR   = 0x55555555;

  GPIOG->MODER   = 0x55555555;
  GPIOG->OTYPER  = 0;
  GPIOG->OSPEEDR = 0x55555555;
  GPIOG->PUPDR   = 0x55555555;
  GPIOF->ODR=0X0;
  GPIOG->ODR=0X0;
  //  // ****************************************+
//// CONFIGURACION SYSTICK
  SystemCoreClockUpdate();
SysTick_Config( SystemCoreClock );
```

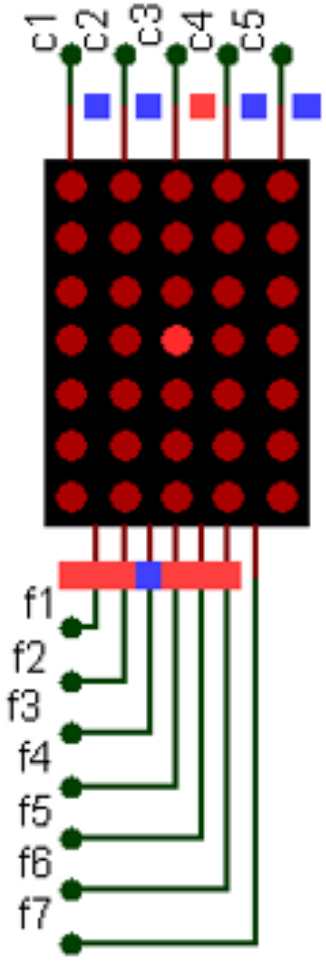
```
  while(true){          //bucle infinito


for(cont=time2;cont<12;cont++){ //FOR2
    GPIOG->ODR=BCD[cont];
    GPIOF->ODR |= (1UL<<(cont));
    for(i=0;i<time;i++);
    GPIOF->ODR = 0;
} //FIN FOR 1
}
}
```

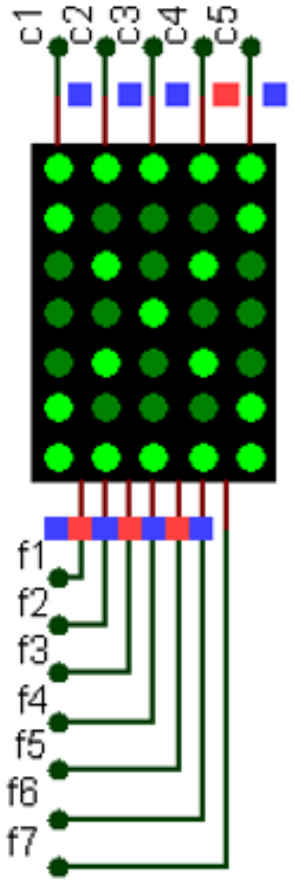


```
////////////////////////////////////////////////////////////////
//////////////////////LETRAS DESPLAZADAS//////////////////////////////77777

#include <stdio.h>
#include "STM32F7xx.h"

int time=1000,cont=0,carac=12,time2=0, incrementa=0,a;
char BCD [24] = {0XAB,0xAB,0XF9,0XC6,0XAF,0XC0,0X92,0XBF,0XA4,0XC0,0xF9,0x98,0XFF,0XFF,0XFF,0XFF,0XFF,0XFF};
char valor[4]={0x0,0x0,0x0,0x0};

extern "C" // GESTOR DE INTERRUPCIONES
{
void SysTick_Handler ()// Interrupción cada 100ms
{
  a++;
  if(a==13)a=0;

}//fin Systick
}// fin extern

int main(void)
{ int i=0;a=0;
  //CONFIGURACION "CLOCK"
  RCC->AHB1ENR =0xFFFF;
  //CONFIGURACION DE PINES
  GPIOF->MODER   = 0x55555555;
  GPIOF->OTYPER  = 0;
  GPIOF->OSPEEDR = 0x55555555;
  GPIOF->PUPDR   = 0x55555555;

  GPIOG->MODER   = 0x55555555;
  GPIOG->OTYPER  = 0;
  GPIOG->OSPEEDR = 0x55555555;
  GPIOG->PUPDR   = 0x55555555;
  GPIOF->ODR=0X0;
  GPIOG->ODR=0X0;
// CONFIGURACION SYSTICK
  SystemCoreClockUpdate();
SysTick_Config( SystemCoreClock );
  //**************************************
  while(true){        //bucle infinito
  for(cont=0;cont<12+a;cont++){ //FOR1
    GPIOG->ODR=BCD[cont];
    GPIOF->ODR |= (1UL<<(cont+a));
    for(i=0;i<time;i++);
    GPIOF->ODR = 0;
} //FIN FOR 1


}//cierra while
}//cierra main
```


Pin No.
12
11
2
9
4
5
6
Pin No. 1
3
10
7
8


Pin No.1
Pin No.12
Pin No.6
Pin No.7


c1
c2
c3
c4
c5
f1
f2
f3
f4
f5
f6
f7


c1
c2
c3
c4
c5
f1
f2
f3
f4
f5
f6
f7