```
 1     .include "Equates.s"
 2
 3     .global InitLEDs    //init GPIOB9-6 for LEDs
 4     .global DisplayNum //display 4-bit # on LEDs
 5     .global PhaseDisplay
 6
 7     .syntax unified
 8     .section    .text.LEDdrivers
 9
10 // GPIOB initialization for LEDs: PB9-8-7-6
11 InitLEDs:
12     ldr r0,=RCC         //RCC register block
13     ldr r1,[r0,#AHBENR] //read RCC_AHB1ENR
14     orr r1,#GPIOBEN     //enable GPIOB clock
15     str r1,[r0,#AHBENR] //update AH1ENR
16     ldr r0,=GPIOB       //GPIOA register block
17     ldr r1,[r0,#MODER]  //current mode register
18     bic r1,#0x000FF000  ///MODER[19-12] = 00000000
19     orr r1,#0x00055000  //MODER[19-12] = 01010101
20     str r1,[r0,#MODER]  //update mode register
21     ldr r1,[r0,#ODR]    //output data register
22     bic r1,#0x03C0       //PB9-6 = 0000 (all LEDs off)
23     str r1,[r0,#ODR]    //update output data register
24     bx lr
25
26 ////---------------------PHASES--------------------------//
27 PhaseDisplay:
28     push {r1,r2,r3,r4,lr}
29     ldr r1,=PHASE
30     ldr r2,[r1]
31     cmp r2,#0
32     beq Phase0
33     cmp r2,#1
34     beq Phase1
35 //---------------------PHASE 0--------------------------//
36 Phase0:
37     mov r2,#0
38     bl DisplayNum
39     pop {r1,r2,r3,r4,lr}
40     bx lr
41 //---------------------PHASE 1--------------------------//
42 Phase1:
43     ldr r1,=PATTERN
44     ldr r2,[r1]
45     bl DisplayNum
46     pop {r1,r2,r3,r4,lr}
47     bx lr
48
49 //---------------------------------//
50
51 DisplayNum:
52     push {r1,r2,r3}
53     ldr r3,=GPIOB
54     ldrh r1,[r3,#ODR]
55     bic r1,#0x03C0
56     lsl r2,#6
57     orr r1,r2
```

```
58      strh r1,[r3,#ODR]
59      pop {r1,r2,r3}
60      bx lr
61
62      .end
63
```