Lab End Semester Exam (ES)

G. P. Anirudh
180905452
Section - (B)
Roll no. - (59)
4th Semester
CSE
ES
Lab End
Semester Exam
G. P. Anirudh
1/6/2020
(Signature)

1.)

```
        AREA RESET, DATA, READONLY
        EXPORT __Vectors

__Vectors

        DCD  0x10001000
        DCD  Reset_Handler

        ALIGN
        AREA mycode, CODE, READONLY
        ENTRY
        EXPORT Reset_Handler
Reset_Handler

        LDR R0, ~~=number~~ =num
        LDR R1, [R0] ; R1 will have the number
        MOV R2, #0 ; R2 initialised for sum
        MOV R3, R1 ; R3 has the ~~num~~ number
        MOV R4, #0x0A
        LDR R9, =dat

up      CMP R3, R4
        BCC exit
        MOV R5, #0; has the quotient

up1     CMP R3, R4
        BCC ex1
        SUB R3, R3, R4
```

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```
        ADD  R5, #1
        B    up1

ex1     MOV  R6, #0
        MUL  R6, R3, R3 ; R6 = R3 * R3
        MUL  R6, R6, R3 ; R6 = R6 * R3 (R6 = R3 * R3 * R3, :- R6 = R3 * R3)
        MOV  R3, R5 ; R3 has the quotient
        ADD  R2, R2, R6
        B up

exit    MOV  R6, #0
        MUL R6, R6, R3
        MUL  R6, R3, R3
        MUL  R6, R6, R3
        ADD  R2, R2, R6
        CMP  R2, R1
        BEQ  op1
        MOV  R8, #0xAA
        STR  R8, [R9]
        B STOP

op1     MOV  R8, #0xFF
        STR  R8, [R9]

STOP    B STOP

num DCD 153
    AREA mydata, DATA, READWRITE
DST DCD 0
    END
```

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2.)
```
#include <LPC17xx.h>
#define PRESCALE (3000 - 1)
                    // 3000 pclk clock cycles to increment TC by 1
#define first_seg 0xF87FFFFF
#define second_seg 0xF8FFFFFF
#define third_seg 0xF97FFFFF
#define disable_all 0xFA7FFFFF
#define fourth_seg 0xF9FFFFFF
void delay_ms(unsigned int milliseconds);
void initTimer0(void);

// 0, N, L, I, t, E, S
unsigned int lookup = {0x3F, 0x37, 0x38,
0x36, 0x78, 0x79, 0x6D};
int pattern = 0; // 0 = onLII, 1=test
void display(int pattern)
{
    // disable all segments
    LPC_GPIO0 -> FIOCLR = 0x000000FF;
    LPC_GPIO0 -> FIOPIN = DISABLE_ALL;

    // onLII
    if (pattern = 0)
    {
```

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```
// *
LPC_GPIO0->FIOPIN = first_seg;
LPC_GPIO0->FIOPIN
        = lookup[3]<<4;

// L
LPC_GPIO0->FIOPIN = second_seg;
LPC_GPIO0->FIOPIN = lookup[2]<<4;

// N
  LPC_GPIO0->FIOPIN = third_seg;
  LPC_GPIO0->FIOPIN = lookup[1]<<4;

// O
  LPC_GPIO0->FIOPIN = fourth_seg;
  LPC_GPIO0->FIOPIN = lookup[0]<<4;

}
else //TEST
{
    // T
     LPC_GPIO0->FIOPIN = first_seg;
     LPC_GPIO0->FIOPIN = lookup[4]<<4

    // S
     LPC_GPIO0->FIOPIN = second_seg;
     LPC_GPIO0->FIOPIN = lookup[6]<<4

    // E
     LPC_GPIO0->FIOPIN = third_seg;
     LPC_GPIO0->FIOPIN = lookup[5]<<4;
```

```
    //t
    LPC_GPIO0->FIOPIN = fourth_seg;
    LPC_GPIO 0->FIOPIN
                = lookup[4]<<4;
  }
}

int main()
{
  LPC_PINCON->PINSEL0 &= 0xFF0000FF;
  //P0.4 to P0.11

  LPC_PINCON->PINSEL3 &= 0xFFC03FFF;
  //P1.23 to P1.26
  LPC_PINCON->FIODIR = 0xFF<<4;
  LPC_GPIO 0->FIO DIR = 0xF
  init Timer0();
  while(1)
  { display(0);
    delay_ms(1000);
    display(1);
    delay_ms(1000);
  }
}
```

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```
void Init Timer 0(void)
{
   LPC_SC->PCONP |= (1<<1);
   LPC_SC->PCLKSEL0
                 &= ~(0x3<<3)

   LPC_TIM0_CTCR = 0x0;
   LPC_TIM0->PR = PRESCALE;
   LPC_TIM0->TCR = 0x02;
}
void delay_ms(unsigned int milliseconds)
{
      LPC_TIM0->TCR = 0x02;
      LPC_TIM0->TCR = 0x01;
      while (LPC_TIM0->TC < milliseconds);
      LPC_TIM0->TCR = 0x00;

}
```