

Home

Problem

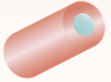
Coding

PROJECT I

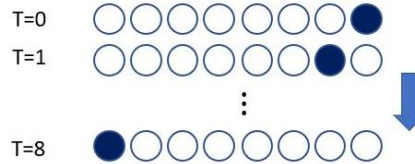
NATTARACH SAEKAOW 6210550380
TATPONG THUNYAUDOM 6210552617
KAWINPOP CHUMCHUENSUK 6210552650

01205311 Microprocessor

PROBLEM



- Connect your microcontroller board to 8 LEDs like in the example
- When you start up your board LEDs will display one LEDs from right to left bit by bit every about 1 sec



- After the display the last 2 digits of your student IDs from the first member to the last member in your group one by one every about 1 sec for example: 13, 54, 69 and stop program at the last student ID



CODING

```
.thumb
.syntax unified
.equ GPIOA_CRL, 0x40010800
.equ GPIOA_ODR, 0x4001080C
.equ RCC_APB2ENR, 0x40021018
.equ STACKINIT, 0x20005000
.equ LEDDELAY, 2500000

.text
.org 0

vectors:
.word STACKINIT
.word _start + 1

.global _start
```

Home

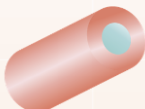
Problem

Coding

CODING

_start:

```
LDR R6, = RCC_APB2ENR
MOV R0, 0x04
STR R0, [R6]
LDR R6, = GPIOA_CRL
LDR R0, = 0x33333333
STR R0, [R6]
LDR R6, = GPIOA_ODR
```



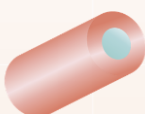
CODING

```
loop1:  
  STR R2, [R6]  
  LSL R2,R2,1  
  LDR R1, = LEDDELAY
```

```
delay1:  
  SUBS R1, 1  
  BNE delay1  
  CMP R2,#0x100  
  BNE loop1  
  BEQ show1
```

```
show1:  
  MOV R2, #0x17  
  STR R2, [R6]  
  LDR R1, = LEDDELAY
```

```
delay2:  
  SUBS R1, 1  
  BNE delay2  
  CMP R2, #0x17  
  BEQ show2
```



CODING

show2:

MOV R2, #0x50

STR R2, [R6]

LDR R1, = LEDDELAY

delay3:

SUBS R1, 1

BNE delay3

CMP R2, #0x50

BEQ show3

show3:

MOV R2, #0x80

STR R2, [R6]

LDR R1, = LEDDELAY

delay4:

SUBS R1, 1

BNE delay4

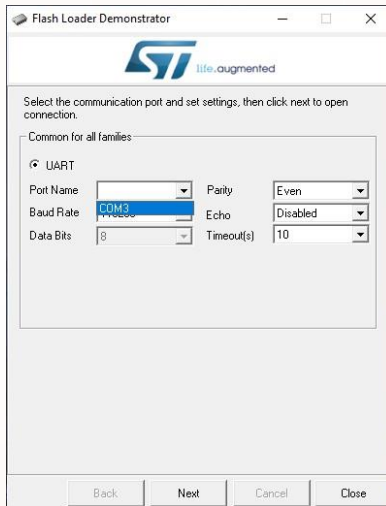
CMP R2, #0x80

BEQ done

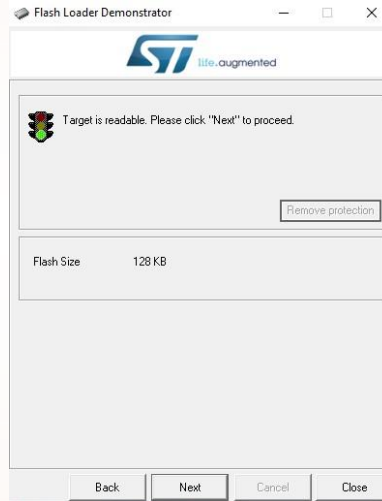
done:

B done

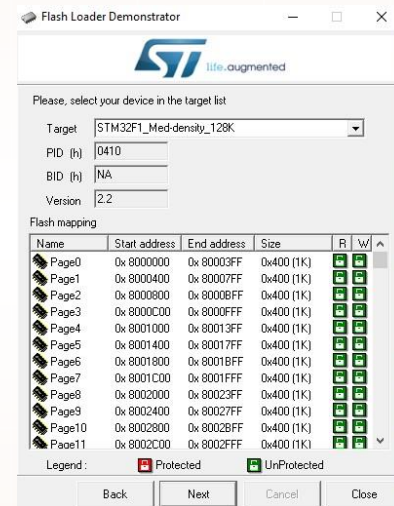
CODING



1



2



3

Home

Problem

Coding

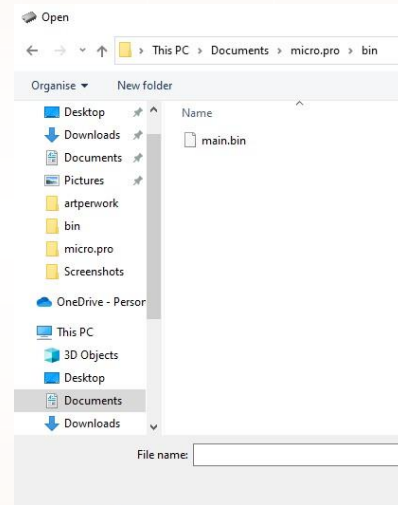
CODING



4



5

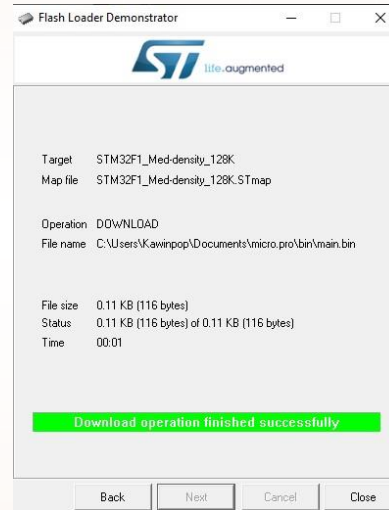


6

CODING



7



8

Home

Problem

Coding

CODING



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19043.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Kawinpop\Documents\micro.pro\bin>
```

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19043.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Kawinpop\Documents\micro.pro\bin>arm-none-eabi-as -mcpu=cortex-m3 -mthumb -o main.o main.s
C:\Users\Kawinpop\Documents\micro.pro\bin>arm-none-eabi-ld -Ttext 0x80000000 main.o -o main.elf
C:\Users\Kawinpop\Documents\micro.pro\bin>arm-none-eabi-objcopy -S -O binary main.elf main.bin
C:\Users\Kawinpop\Documents\micro.pro\bin>_
```



LIVE DEMONSTRATION

