

‘ARM mbed’ Example Codes

You can find the list of APIs of mbed OS5

- <https://os.mbed.com/docs/mbed-os/v5.13/apis/index.html>

Also, there are many more examples found in

- <https://os.mbed.com/code/>
- <https://os.mbed.com/teams/ST/code/>

GPIO LED control	
Blinking	LED control with a button
<pre>#include "mbed.h" DigitalOut led(LED1); int main() { while(1) { led = !led; wait(0.5); // 0.5[sec] } }</pre>	<pre>#include "mbed.h" DigitalIn button(USER_BUTTON); DigitalOut led(LED1); int main() { while(1) { if(!button) led = 1; else led = 0; } }</pre>
UART (polling)	
Writing to PC	Receiving from PC
<pre>#include "mbed.h" Serial pc(USBTX, USBRX, 9600); int main() { while(1) { pc.printf("Hello!\r\n"); wait(1); } }</pre>	<pre>#include "mbed.h" Serial pc(USBTX, USBRX, 9600); int main() { char RXD; while(1) { if(uart.readable()){ RXD = pc.getc(); pc.printf("%c", RXD); } } }</pre>
Analog Measurement	
Measuring Analog Voltage	
<pre>#include "mbed.h" Serial pc(USBTX, USBRX, 9600); AnalogIn sensor(A0); int main() { float measure; while(1) { measure = sensor.read(); // 0 ~ 3.3V -> 0.0 ~ 1.0 measure = measure * 3.3; // 0.0 ~ 1.0 -> 0 ~ 3.3V pc.printf("measure = %f [V]\n\r", measure); wait(0.2); } }</pre>	

PWM**Period and pulse-width setting**

```
#include "mbed.h"

PwmOut      pwm(D10);

int main(void) {

    pwm.period_ms(60);    // period      = 60ms
    pwm.pulsewidth_us(10); // pulse-width = 10us

    while(1);
}
```

Interrupt(external)**Edge trigger Handler**

```
#include "mbed.h"

InterruptIn button(USER_BUTTON);
DigitalOut  led(LED1);

void pressed()
{
    led = 1;
}

void released() {
    led = 0;
}

int main()
{
    button.fall(&pressed);
    button.rise(&released);
    while(1);
}
```

Timer**Measuring Time**

```
#include "mbed.h"

DigitalOut  led(LED1);
Timer       timer;
Serial      pc(USBTX, USBRX, 9600);

int begin, end;
int cnt = 0;

int main(void) {

    timer.start();

    begin = timer.read_us();

    led = 1;
    led = 0;

    end = timer.read_us();

    pc.printf("Blinking LED takes %d [us]", end-begin);
}
```

Ticker: Timer interrupt

```
#include "mbed.h"

Ticker      tick;
DigitalOut  led(LED1);

void INT() {
    led = !led;
}

int main(void) {
    tick.attach(&INT, 1); // 1[sec] 마다 INT 함수 실행

    while(1);
}
```