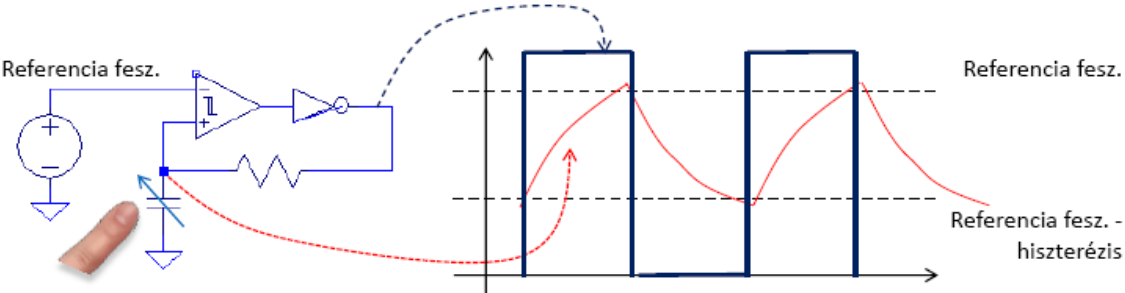


1.	<p>Which processing unit (microcontroller, FPGA, DSP) would you use to implement the following functions: a) elevator operator interface, b) 32-channel high-speed data collection unit. Explain the choice in one sentence.</p> <p>a): microcontroller: general task, does not require high computing power or special peripherals</p> <p>b) FPGA: it requires many peripherals operating in parallel in time and fast operation.</p>
2.	<p>Explain the operating principle of the touch slider on the EFM32 Giant Gecko STK card: what physical quantity is affected by the proximity of the fingers, how we convert this quantity into a signal that can be measured by the microcontroller, what the microcontroller measures directly.</p> <p>The proximity of the fingers affects the capacity of the sensing surface. The capacitance is converted into a frequency with the help of an oscillator built from a hysteresis comparator, which is measured by the microcontroller using a timer/counter.</p> 
3.	<p>In an application-level program, which statement would you use to turn on an LED? Justify your choice.</p> <p>the)SetLED();</p> <p>b)GPIO->P[5].DOUT = 1 << LED_BIT;</p> <p>Method a): direct handling of peripherals in application-level code should be avoided. (e.g. code portability, transparency)</p>
4.	<p>What is a tracer?</p> <p>It enables a timely examination of the control of program execution. e.g.: Program execution, series of commands, saving the continuous monitoring of the value of a given variable</p>
5.	<p>In a makefile we see the following two lines:</p> <pre>UARTinit.o: UARTinit.c gcc -o UARTinit.o UARTinit.c</pre> <p>Does the compile command run if the creation date of the UARTinit.c file is 2017-10-10, 16:53 and the creation date of the UARTinit.o file is 2017-10-10, 16:51? Justify your answer.</p> <p>The c file is newer, so the compile command will run.</p>
6.	<p>Why must the associated interrupt flag be cleared before enabling an interrupt?</p> <p>It is possible that an interruption request from a previous state may be stuck, which causes a problem, because a false interruption takes effect immediately after the authorization.</p>

7. Describe the weighted circular program organization with a short pseudocode.

```
void main() {  
while (TRUE){  
if (sensing_state==active) {speed_summon() ;}  
if (sensing_state==active) {speed_summon() ;}  
if (button1_pressed==true) {menuallapot_valtas() ;}  
if (sensing_state==active) {speed_summon() ;}  
if (sensing_state==active) {speed_summon() ;}  
if (button1_pressed==true) {menuallapot_valtas() ;}  
if (sensing_state==active) speed_display();  
...  
}  
}  
}
```