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| **Mark** |  |

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| Team name: | *A2* | | |
| Homework number: | *HOMEWORK 01* | | |
| Due date: | 1/10/23 | | |
|  |  |  |  |
| Contribution | NO | Partial | Full |
| Hui Jiang |  |  | *x* |
| Mattia Sironi |  |  | *x* |
| Gabriele Landi |  |  | *x* |
| Arturo Caliandro |  |  | *x* |
| Luigi Lizzini |  |  | *x* |
| Notes: none | | | |

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| --- | --- | --- | --- |
| Project name | SND and PWM | | |
| Not done | Partially done  (major problems) | Partially done  (minor problems) | Completed |
|  |  |  | *x* |
| Explanation:  We successfully completed the homework.  Next, we explain all the steps for completing the homework:  **Part 1a:**  Firstly, in “Green PCB board Schematics.pdf”, we find that the pin PA8 is connected to our microphone: SND\_IN.  Hence, in the IDE configure the pin PA8 as GPIO\_EXTI8:    Secondly, we enable the EXTI interrupt as shown below:    Thirdly, we configure the pin PA8 as shown below:    In order to generate an interrupt every time there is a rising edge. Our idea is that every time we make a sound to the microphone, the state of LED changes. Therefore, we don’t consider the falling edge.  Fourthly we go to the “main.c” and add the code as shown below:    Which means that every time we make a sound to the microphone, the state of LED changes. And we have proved it.  **Part 1b:**  Firstly, in the IDE, we have configured the pin PA5(the pin of green led) to TIM2\_CH1:    Secondly, we configured the TIM2 as shown below: | | | |
| Where the Prescaler is 8399, Auto Reload Register is 9999 and Pulse 4999 which means the duty cycle is 50%, according to PWM DC formula shown below, where ARR is the value in Auto Reload Register and CCRx is Pulse.      As we can see in the PWM frequency formula that is shown above, with this ARR and PSC, the PWM frequency is 1.  Thirdly, in the “main.c”, we put the code as shown below:    And we have proved it also. | | | |
| Professor comments: | | | |