|  |  |
| --- | --- |
| **Mark** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Team name: | *A2* | | |
| Homework number: | *HOMEWORK 04* | | |
| Due date: |  | | |
|  |  |  |  |
| Contribution | NO | Partial | Full |
| Hui Jiang |  |  | *x* |
| Mattia Sironi |  |  | *x* |
| Gabriele Landi |  |  | *x* |
| Arturo Caliandro |  |  | *x* |
| Luigi Lizzini |  |  | *x* |
| Notes:  none | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Project name |  | | |
| Not done | Partially done   (major problems) | Partially done   (minor problems) | Completed |
|  |  |  |  |

|  |
| --- |
| We have done the whole homework, here is our explanation:  **Project 2b:**  Firstly, we have configured the board as shown below:  The only configuration we have done is configure the pin PA1 as ADC1\_IN1.  Secondly, we have configured the timer2 as the exercise is required to use a timer to control the conversation rate at 1Hz:  We have set the Clock Source to “Internal Clock”, and then set Prescaler and Counter Period to 8399,9999 respectively as (8399+1)\*(9999+1) = 83e6. We have configured also the Trigger Event Selection to “Update Event”(from the project hint 2).  Thirdly, we have configured the ADC1 as shown below:  We have configured the Sampling Time to 480 Cycles in order to give the ADC enough time to Sample & Hold charge/discharge its internal capacitance. Then in order to make timer 2 to trigger the ADC every time it counts to its maxium value, we configured the External Trigger Convers… as “Timer 2 Trigger Out event”.  Fourthly, we configured the NVIC as shown below:  Until this point, we have configured all the stuffs related to the Board, then we went to the “main.c”, and in the main, we have the following code:  In the main, we initialize both timer2 and ADC in a safe way.  After doing that, we implemented our callback function:  In the callback function, we just do the same thing as the project1 and project2a, nothing new.  And the board works as we expected:  Project 2c:  Firstly, we have configured the board as shown below:  At a glance, we have configured a lot of things in this project, but this is not true, because the only diference with the previous project is that we just added those pins to control the LCD.  Secondly,we have configured the timer2, ADC1 and NVIC(just disabled the UART interrupt because we don’t use it at this project) exactly the same as the previous project:  In the timer2 configuration, we have set the period to 1999 as (8399+1)\*(1999+1)/84e6 = 0.2S => 5Hz.  Until this point we have done all the configurations related to the board, then in order to use the LCD, we added the two documents in our project as shown below:  After doing that, we go to the “main.c”, and first we add some include:  Then, in the main, we initialize the LCD, ADC and Timer2:  After doing that, we implemented the callback function:  In the callback function, we actually do the exactly the same thing as the previous project, but this time we need to send the information to the LCD. And according to the argument of the lcd\_drawBar(), it comes from the slide:  We just do some small matematical trick here.  And, the code works as we expected:  Note: on the page 20 of the slide, it says that we need to set the conversion rate to 1Hz, but in the page 21, the conversion rate becomes 5Hz. As the conversion rate is controversial, we just set to 5Hz(and it is very easy to set to 1Hz,just change the value of Counter Period of Timer to 9999).  Note for both of the previous projects we have configued this: |
| Professor comments: |