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| **Mark** | **/11** |

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| Team name: | *A5* | | |
| Homework number: | *HOMEWORK 04* | | |
| Due date: | 13/10/2024 | | |
|  |  |  |  |
| Contribution | NO | Partial | Full |
| Alessio Spineto |  |  | *x* |
| Riccardo Lamarca |  |  | *x* |
| Sofia Cecchetto |  |  | *x* |
| Annamaria De Togni |  |  | *x* |
| Emma Crespi |  |  | *x* |
| Notes: none | | | |

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| Project name | USART DMA + LCD | | |
| Not done | Partially done  (major problems) | Partially done  (minor problems) | Completed |
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| **Part 1a:** Complete the UART project with Direct Memory Access functions.  The two USART pins are enabled by default.    In the connectivity section of the GUI, we selected USART2, opening its ‘Mode and Configuration’ page.  There, in the DMA settings, we added a new DMA request, selecting the transfer mode USART2\_TX.    In the same window, under Parameter Settings, we selected a 115200 baud rate and 8 bit word length.    Inside the *main()* function, we first defined the string that we wanted to transmit, then we computed its length with *strlen()* function. In the *while(1)* loop we transmitted our string with HAL\_UART\_Transmit\_DMA function. We then implemented the requested delay of one second between each transmission using the HAL\_Delay function.    After connecting our pc to the Nucleo board, we can use a terminal emulator of our choice to see the output, by setting the same baud rate as the one set to transmit data. Then, we also selected the right COM port connected to the Nucleo board. | | | |
| **Part 1b:** Write on the LCD the name of each member of your group, one per line, in alphabetical order.  We configured the PA4, PB1, PB2, PB12-15 pins as *GPIO\_Output* and imported and included the “PMDB16\_LCD” library.    We defined an array containing the names of the group members and an *insertion\_sort* function to sort the names in alphabetical order.      We initialized the LCD controller and its backlight and defined an array containing the names in the main.c before the while(1) loop.    First, we manually wrote the first name in the second row. After that, at each iteration the names scroll in alphabetical order appearing first in row ‘1’ and then in row ‘0’. The elements of the *members* array are selected using the remainder of the integer division by 5, which does not require the counter to be reset. | | | |
| Professor comments: | | | |