

UART Configuration

Objective:

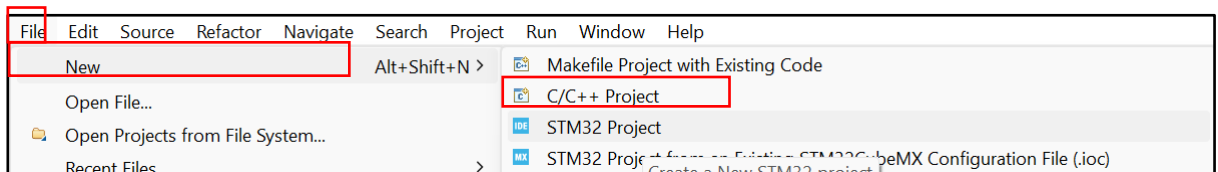
This experiment features the Serial Communication peripheral also known as UART. This lab forms the basis of designing dataloggers. Here, we learn the technique to send text or numeric data from the STM32 board to the PC.

Requirements:

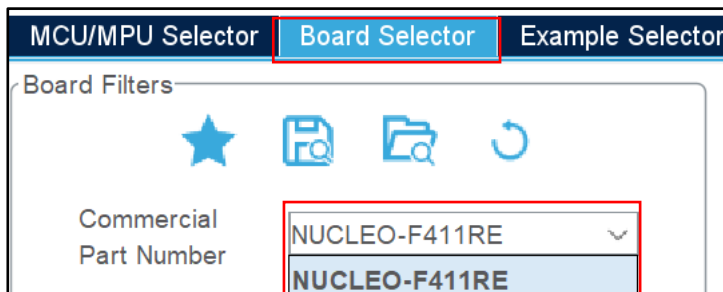
1. STM32 Cube IDE software.
2. STM32 Microcontroller.
3. USB Cable for the microcontroller.
4. PC or Laptop.

Procedure:

1. Click on **File**→**New**→**STM32 Project** to start your project on Cube IDE.



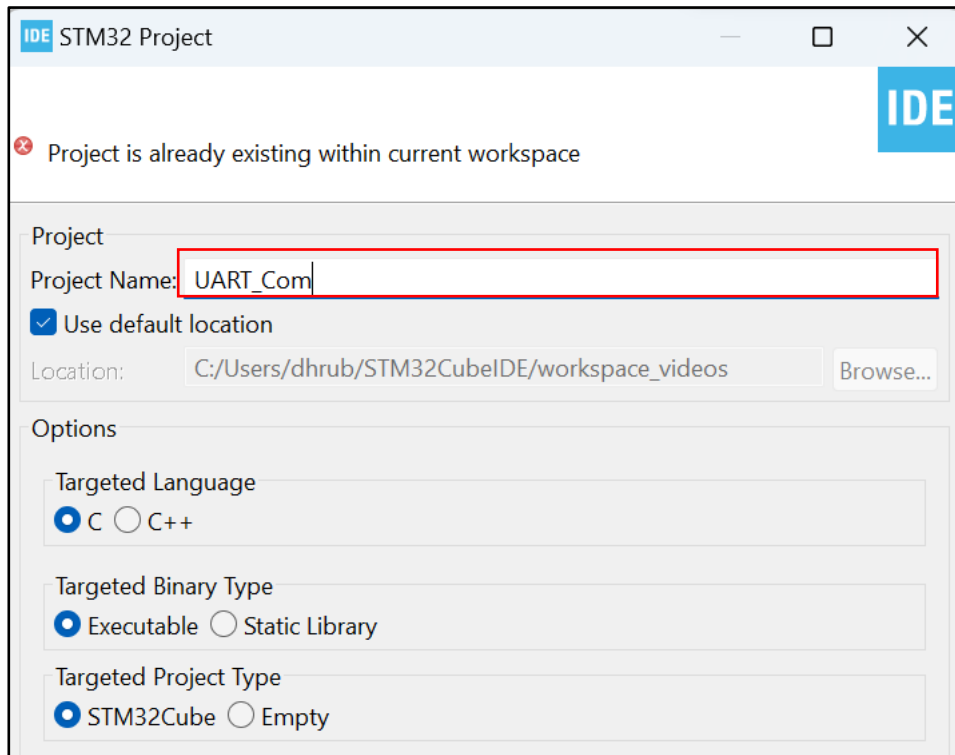
2. A **Target Selection** window will open. Click on **Board Selector**, where you need to select the microcontroller board you are working with.



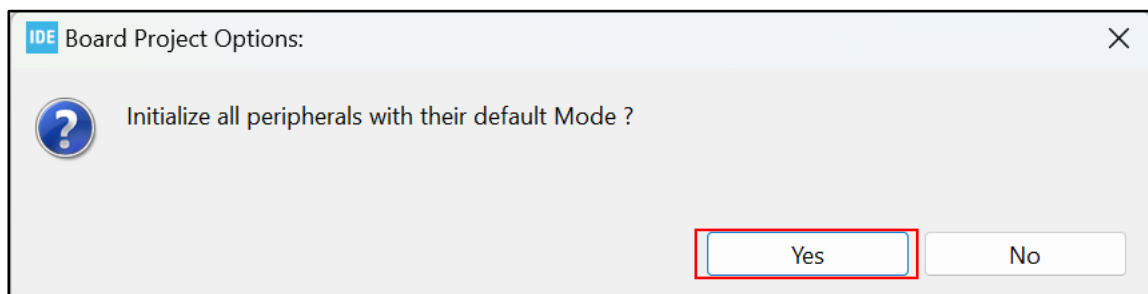
3. After this on the right-hand side of the window, under **Board List** you will see the board you have selected. Click on the board and then click on **Next**.



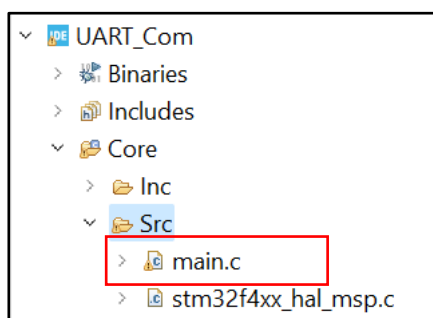
4. In the next window you need to give your project a name, rest of the things will remain by default as it is for now. Click on **Next**.



5. Cube IDE will ask if you want to initialize all peripherals with their default mode, click on **Yes**.



6. Press **Ctrl + S** to generate your code or you can go to **Project → Generate Code**. On the left-hand side of the Cube IDE, under **Project Explorer** go to the project you have created (For example I have named my project as (UART_Com) **UART_Com → Core → Src → main.c** (double click to load the code).




7. Cube IDE automatically generates a code format based on the configurations you have done. Cube IDE uses HAL libraries. Below is the code snippets, please put your code in the appropriate places in the **main.c** file.

```

95  /* Infinite loop */
96  /* USER CODE BEGIN WHILE */
97  while (1)
98  {
99      if(HAL_UART_Transmit(&huart2, "HELLO ", 7, 100) != HAL_OK)
100     {
101         Error_Handler();
102         HAL_Delay(100);
103     }

```

8. Now click on the build  symbol on the top left corner on your Cube IDE. If you have done everything correctly your code should be built without any errors.


```

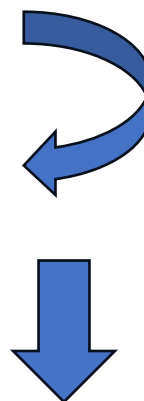
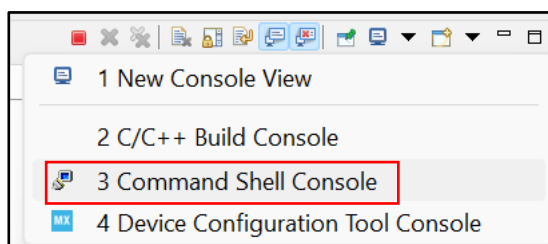
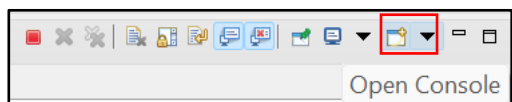
CDT Build Console [UART_Com]

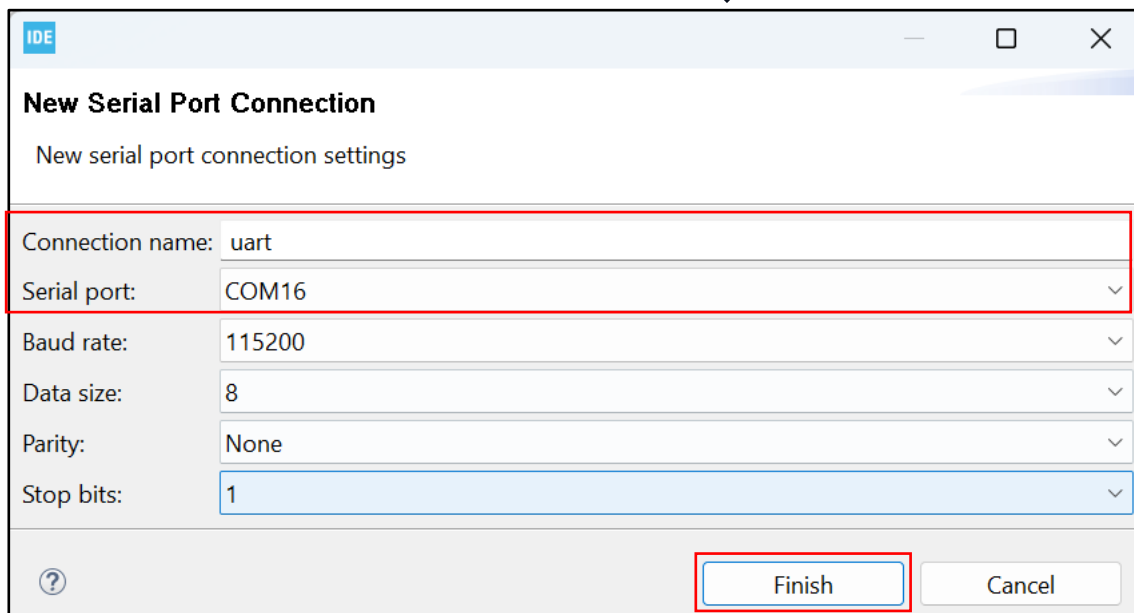
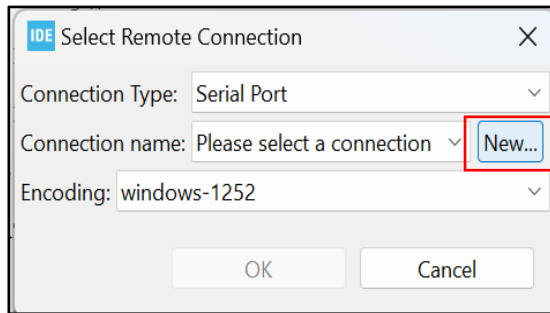
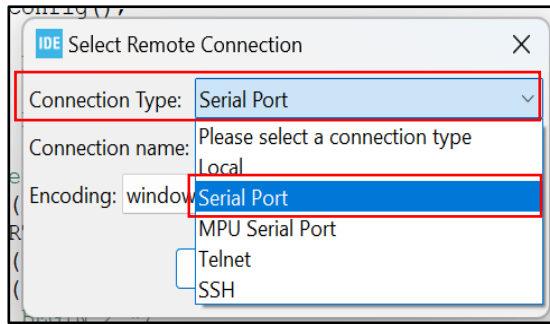
Finished building: UART_Com.list


16:23:41 Build Finished. 0 errors, 1 warnings. (took 4s.901ms)

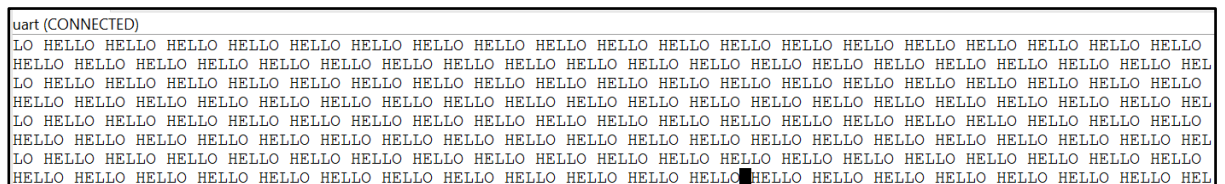
```


9. Next connect your STM32 board with your audio sensor connect to it to your PC and click on the **Debug**  icon to start the Debugging process. An **Edit Configuration** window will open, click on **OK**, without making any changes.
10. In the debug mode, go to the bottom right hand side corner, click on open console. Select the **Connection Type** as **Serial Port**, then click on **New**. In the new window, in **Connection name** give some name to your new connection, and select the **Serial port** correctly. Then click on **Finish** and then **Ok**. A console with the given name will be opened at the bottom of your screen.





11. Click on the **Resume** icon  to run your code. You should be able to see **"HELLO"** continuously displayed on the console.



12. Before moving out of the debugging mode, click on **Disconnect** and close the console then click on the **Terminate** icon . You will be moved out of the debugging mode.



Note: All important steps and parts are highlighted with a red colour box for the proper understanding of the user. This document is for the use of education purpose only.